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INTRODUCTION

Research & Teaching

Exploring Academia – From Practice to Publishing

In contemporary academia the boundaries between research and teaching are blurred and complex. Sometimes deliberately. Oftentimes by chance. Other times by need. We live in an age of research-informed teaching, practice-based learning, academic publishing and global collaboration. As a result, we are simultaneously educators, researchers, authors and practitioners. We are place-bound but international in outlook. It is a complex scenario further complicated by cross-disciplinary thinking and an ever-growing emphasis on impact, rankings, internationalization, our social role and most recently, the digital turn and AI.

In this context, the understanding of what we do as academics is far from clear. In the arts, educators continue to practice. In design, professionals engage in teaching and learning. In our schools, teachers are involved in lifelong learning. In the humanities and sciences, what we teach is often the very thing we research. In every discipline, whatever our country, we are frequently asked to publish, engage communities and adapt to change.

This volume is focused on a series of general educational issues, the overall publication seeks to better understand current practices in research and teaching from across focused disciplinary and geographical boundaries. It is interested in presentations on specific research projects, innovative teaching, questions of ethics, equity and inclusion, innovations in academic publishing and the impact of technologies and AI on how we operate. In all cases, it seeks an interdisciplinary perspective.

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HARNESSING GENERATIVE AI FOR CULTURAL COMPETENCE TRAINING: EXPLORING THE POSSIBILITIES

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INTRODUCTION

Achieving equitable access, particularly in higher education (HE), has long been a challenge.[1] The rise of artificial intelligence (AI) has added complexity for HE institutions already grappling with inclusion and systemic bias.[2] In Australia, a national review has called for a more equitable and innovative HE system as key to transforming institutional cultures and addressing deep-rooted structural barriers.[3]

One foundational capability required to achieve this systemic transformation is cultural competence (CC), understood as an active, ongoing commitment to creating inclusive, ethical, and culturally responsive environments that honour the dignity of all people. It requires individuals and organisations to examine cultural positioning, power, and privilege within systems. CC fosters equity and social justice by embedding principles of critical self-reflection (CSR), relational accountability, and continuous learning into institutional policies, practices, and leadership. The CC learning journey requires motivation, self-awareness, and the capacity to engage in CSR.[4]

Part of CC teaching and learning requires an understanding of the concept of racism as "a marriage of racist policies and racist ideas that produces and normalizes racial inequities".[5] Along with this comes an understanding of what it means to be anti-racist, or "one who is supporting an antiracist policy through their actions or expressing an antiracist idea".[6] Without an explicit focus on anti-racism, CC training risks inadvertently reinforcing the inequities it seeks to address. If misconceptions (such as the idea that racism is only about individual actions, the myth of meritocracy, the belief that not 'seeing' race is sufficient, or the assumption that racism is a thing of the past) are not directly confronted, they may persist, undermining the effectiveness of the training and hindering progress toward CC.

Embedding anti-racism into CC education ensures that learning moves beyond surface-level cultural awareness to critically engage with the realities of racial inequity, Eurocentrism, and systemic exclusion. However, discussions around race and racism often cause emotional distress,[7] as individuals may hold back questions or ideas out of fear of embarrassment, being judged or attacked, or causing harm. As individuals move through this learning journey, they may encounter both internal and external resistance that impedes deeper engagement. This resistance often arises when confronting uncomfortable truths about one's own positionality (described as the various social

identity markers that afford advantages (i.e., power, privileges, and dominance) and disadvantages (i.e., oppressions) one experiences in society[8]), complicity in systems of oppression, or inherited biases. The emotional labour required to engage in CC work can lead to avoidance or defensiveness.[9] To assist in navigating the emotional complexities of this learning journey, a trained AI interlocutor may help to scaffold reflection vital on the journey of CC.

In this paper we share the findings from our pilot study evaluating the use of a generative AI agent designed to support users in exploring and deepening their understanding of racism and anti-racism. Our research question investigates whether such an agent can help mitigate some of the interpersonal and emotional challenges that often arise in anti-racism education. By offering a low-stakes, non-human interlocutor, the agent enables engagement with sensitive topics that individuals may otherwise avoid. In doing so, this research contributes to emerging scholarship on the role of AI in improving our uniquely human intelligence. This innovative application of AI is timely as the existing literature tends to examine AI applications related to productivity enhancement[10] and content generation.[11]

In the following section, we examine the central role of critical self-reflection in CC and anti-racism work.

CRITICAL SELF-REFLECTION

CSR is foundational to the development of CC, prompting individuals to examine how their personal histories, identities, and values are shaped by broader social, political, and historical systems of power and privilege.[12] This process is rarely easy or comfortable, as it involves confronting privilege, complicity, and inherited assumptions, yet such discomfort is a necessary part of transformative learning.[13] CSR asks individuals to locate themselves within systems of racialised power, a crucial step towards anti-racist praxis. It is through engaging in continuous and meaningful CSR that individuals discern the enablers of racism within their context and take action to challenge them. Our AI agent aims to scaffold this process by creating a safe space for early-stage, dialogic reflection that might otherwise be avoided due to fear, shame, or uncertainty.

Given the centrality of CSR to anti-racism and the potential of AI to support this reflective work, we now turn to the aims and research questions that informed our investigation.

RESEARCH AIMS AND QUESTIONS

Our aim is to explore how an AI agent, which uses the Socratic method, might guide users to explore concepts around race and racism, and to provide insights into how the agent can be used to overcome the challenges in training by providing the user with opportunities to chat about issues which may be challenging to discuss with others.

The research questions guiding this study are:

1. What is the potential impact on participants' understanding and awareness of race/racism after using our trained AI agent?
2. How comfortable do participants' feel discussing issues of race and racism with the AI agent compared to a human facilitator?

To answer these questions, we employed the following methodology.

METHODOLOGY

Theoretical framework(s)

This pilot study drew on the theories of CC[14] and anti-racism[15] to inform the design of a generative AI agent aimed at supporting users in developing a deeper understanding of race and racism in the Australian context. The agent was intended to prompt users to critically self-reflect on their positionality within existing systems and consider actions they could take to contribute to a more socially just society.

Cross et al. [16] conceptualise CC as a developmental process; an ongoing journey that requires intentional planning, sustained engagement, and transformation at personal, interpersonal, and systemic levels. In alignment with this view, the AI agent was designed to support users in progressing along this journey by facilitating structured reflection, particularly through the lens of anti-racism. Drawing on Kendi's [17] definition of anti-racism as the active support of policies and ideas that challenge racial inequity, we sought to operationalise anti-racism as a developmental and reflexive process. To do so, we employed the 'Becoming anti-racist' framework [18] (see Figure 1), which maps users' movement through the zones of fear, learning, growth, and transformation.

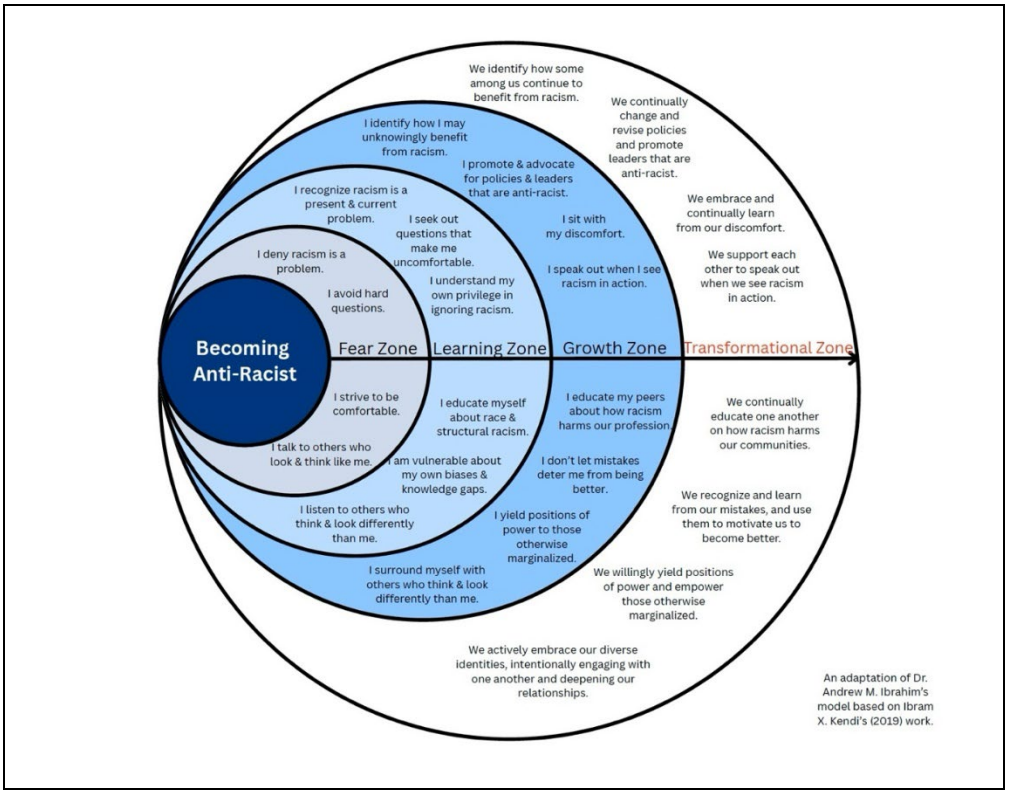

Figure 1. Becoming anti-racist framework

Agent design

Cogniti, a generative AI agent built at an urban university within the Australian higher education sector, is a customisabile tool that enables educators to input specific instructions and resources, ensuring responses are tailored and context specific**,** in contrast to the content generation typically associated with large language models.

For this study, we developed a version called the Anti-racism Agent, which was trained to facilitate CSR using the Socratic method. The anti-racism agent is capable of multilingual interaction and

guides users through discussions about race, privilege, and bias. Creating a Cogniti agent is achieved by writing a 'system message', which operates in the background and is respected by the AI each time it generates a response. The basic parameters for our system message can be seen in Table 1.

Role	An expert mentor and guide on helping people overcome racism.
Task	To have an honest conversation with users to lead them towards anti-racism in the Socratic style
Instructions	A list of rules and parameters dictating the AI as to how to behave in its role
Resources	A curation of open educational and/or informational resources for the AI to retrieve from

Table 1. The parameters of the anti-racism agent's system message

The resources used to write the system message and to train our agent consisted of the following:

- National Centre for Cultural Competence online module 'Racism runs deep'[19]
- Excerpts from the National Centre for Cultural Competence's 'Confident conversations about race and racism' MOOC[20]
- NSW Government's *Communicating positively: A guide to appropriate Aboriginal terminology*[21]
- Ibram X. Kendi's anti-racism framework[22]
- Australian Human Rights Commission's *5 Common Myths and Misconceptions about Racism: Self-Reflection and Education Guide; Racism. It Stops with Me Conversation Guide*; and *Let's talk race conversation guide*[23]
- Article published in the Conversation written by Fethi Mansouri: Racism is still an everyday experience for non-white Australians. Where is the plan to stop this?[24]
- Article published in the Conversation written by Peter Anderson: Racism at work: a call to anti-racist action for Australian organisations[25]

The user is greeted with a generic message (Table 2) outlining the agent's purpose and initiates conversation.

I'm an AI agent here to help you unpack your understanding and experiences of race and racism. You can talk to me about anything you want in any language. If you are unsure where to start, would you like me to give you some questions to think about?

Table 2. The anti-racism agent's greeting to users

Participant eligibility

Participation was open to all students and staff aged 18 and over at a large public urban university in Australia. This criterion aligned with the study design as the platform used to access the agent operates within the university's closed digital ecosystem and required a valid institutional login.

Data Collection

Anonymous pre- and post-surveys asking quantitative and qualitative questions were administered via university-approved research software. Data was collected between February and May 2025. A total of 21 participants completed all three phases of the study: the pre-survey, a minimum of 30-minute anonymous interaction with the agent, and the post-survey.

Data analysis

We used descriptive statistics to analyse quantitative responses, and reflexive thematic analysis (RTA)[26] to identify themes from participants' responses to two open-ended post-survey questions:

1. How did interacting with the AI agent influence your thoughts and feelings about race and racism?
2. Did the AI agent prompt you to think differently/more critically about your own beliefs and biases regarding race and racism? Please explain.

In line with the principles of RTA, our analysis was inductive and recursive, involving repeated reading, open coding, theme development, and ongoing reflexive engagement with our own assumptions and positionalities. Both authors independently coded the data and engaged in regular discussions with one another to reflect on interpretations, refine themes, and ensure alignment with our theoretical frameworks. Reflexivity was supported through analytic journaling and memo-writing, enabling us to surface our own biases and potential areas of unawareness throughout the process. RTA was selected for its alignment with our interpretivist stance and its suitability for exploring meaning-making around complex and emotionally charged topics such as race, identity, and bias. [27] We approached meaning-making as an interpretive process rather than a pursuit for objective truth, recognising researcher subjectivity as a valuable resource in qualitative inquiry. [28]

All participants who completed the post-survey (n = 21) provided responses to at least one open-ended question, and all responses were included in the thematic analysis. Participant quotes are included in the findings to illustrate key themes.

FINDINGS AND DISCUSSION

Quantitative Findings

After using the AI agent, 76% of participants indicated they would feel moderately to highly comfortable discussing race and racism with the agent, compared to a human interlocutor. This suggests a relatively high level of openness to engaging with generative AI on topics that are often emotionally charged or avoided in interpersonal settings.

Regarding self-assessed learning, 44% of participants reported that their understanding of race and racism remained the same, while 33% reported an improvement after the interaction. These results suggest that the agent has potential to support anti-racist learning, while also highlighting the variability in participants' prior knowledge. In contrast, 22% said their understanding decreased, and 1% did not provide either a pre- or post- response. For these individuals, the experience may have exposed gaps in their knowledge, fostering a deeper awareness of what they still need to learn. Similarly, participants with prior experience in CC training or anti-racist practice may require more complex and nuanced dialogue to continue their growth.

Qualitative Findings

RTA of the two open-ended post-survey questions surfaced three themes: 'safe space', 'racial literacy', and 'building capabilities.'

Theme 1 – Safe Space

The notion of a safe space, where participation and the honest sharing of ideas is encouraged[29], emerged consistently across participant responses. The agent was trained using a curated set of resources (listed above) specifically designed to foster safe conversations around race and racism. This careful selection of materials, chosen for their ability to promote respectful dialogue without inflaming or causing harm, is perhaps a key reason why users reported feeling safe. In contrast to human facilitators, participants described the AI agent as offering a uniquely safe and non-

judgmental environment. They felt able to ask questions, express uncertainty, and reflect on their biases without fear of causing harm or being judged. As one participant noted: "...it was nice being able to troubleshoot without judgment. In fact, I was praised for my honesty!"

While the agent's design aims to provide a supportive environment, it is important to acknowledge that true safety in discussions about race and racism cannot be fully guaranteed, even in technologically mediated settings. Scholars [30] have critiqued the assumption that safety can be ensured in interpersonal interactions, particularly for marginalised individuals, who may experience microaggressions or power imbalances despite best intentions. Unlike human facilitators, the AI agent is not susceptible to harm nor does it bring emotional reactions into the interaction. It is designed to perform anti-racism by gently challenging assumptions, prompting reflection, and avoiding harm through research-informed responses[31] (Figure 2).

While an AI agent cannot replicate the relational depth of human dialogue, its neutrality and predictability make it uniquely helpful for early engagement with anti-racist reflection, particularly for those who may hesitate to enter these conversations due to fear, shame, or uncertainty. In this way, the agent serves as a valuable scaffold for users beginning their CC journey.

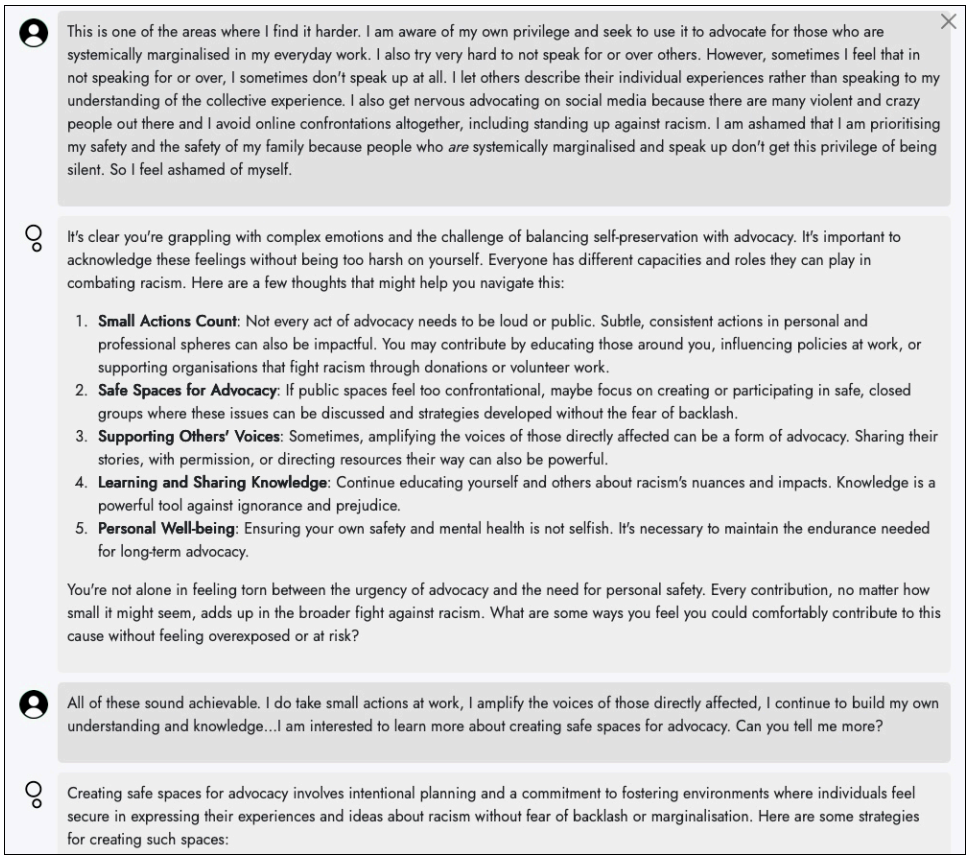

Figure 2. A snapshot of the interaction between the anti-racism agent and a user

Theme 2 – Racial Literacy

The second theme, racial literacy, captures participants' reflections on gaining new vocabulary, concepts, or perspectives that helped them better understand racism as a structural and systemic phenomenon. Drawing on Guinier's conception of racial literacy as "the capacity to engage in a sustained examination of the ways in which race and racism function in society,"[32] participants

described moments of insight prompted by the agent's questions. For some, this involved reframing their understanding of racism from being solely about individual attitudes to recognising its embeddedness in institutions and histories. As one participant noted:

It made me think critically about how to identify and address racism on a micro level within my social circles. It also supported my understanding of institutional racism through the example of healthcare systems which I used to work in and the ways racism can perpetuate and be embedded into healthcare practices.

Responses suggest that, even in brief interactions, the AI agent has potential to scaffold racial literacy development by prompting users to explore concepts like privilege, systemic inequality, and historical context, particularly for users who may be unfamiliar or uncertain about these terms. In our case, the agent was trained for the Australian context and so provided responses accordingly.

Theme 3 – Building Capabilities

The third theme, building capabilities, reflects participants' sense of increased confidence, motivation, or readiness to engage more actively in anti-racist learning or action. Several users reported that the conversation helped them clarify their values, identify knowledge gaps, or reflect on how they might take meaningful steps toward becoming more anti-racist in their personal or professional lives. As one participant reflected:

I think I can do more in taking a proactive approach to addressing bias in the community, having seen the ideas the GAI tool offered. I also see that a lot of my interactions and environments I frequent reinforce my racial identity rather than provide exposure to other cultures. I also need to view processes and policies in my workplace with more scrutiny from inclusiveness standpoint.

Importantly, participants indicated that this sense of capability was not about mastery, but about movement from uncertainty toward clarity, or from passivity toward reflection, as exemplified by one participant: "…it's building confidence to have conversations about racism and cultural competence...if I used it regularly it would be very helpful." This developmental framing is consistent with Cross et al.'s [33] and Kendi's [34] work, which view growth as a process rather than an endpoint.

Together, these three themes illustrate the AI agent's potential to scaffold early-stage engagement with anti-racism by addressing some of the key barriers to learning. The finding that 76% of participants felt more comfortable discussing race with the AI agent than with a human interlocutor reinforces the theme of safe space, highlighting the value of non-judgmental environments in enabling users to take interpersonal and cognitive risks. This sense of safety appeared to create the conditions necessary for the development of racial literacy, as participants engaged more openly with unfamiliar concepts, reflected on systemic inequities, and reframed their understanding of racism as structural rather than solely individual. These reflections align with the 72% of participants who reported that their understanding of race and racism had improved or remained the same after using the agent, suggesting that even brief AI-mediated interactions can spark meaningful insight. In turn, this deepened understanding contributed to participants' emerging sense of capability, or a readiness to act, reflect, or continue learning, particularly among those newer to anti-racism work. Taken together, the data suggest that AI-facilitated reflection may offer a valuable complement to traditional CC and anti-racism education by supporting users to practise CSR in a low-stakes, structured, and psychologically safe environment.

LIMITATIONS AND AREAS FOR FURTHER RESEARCH

This study was conducted within a single institution and involved a small sample, comprised mostly staff, which limits the transferability of findings, particularly to student populations. The study design may have contributed to lower participation rates.

Future iterations will prioritise broader student involvement to capture a wider range of perspectives and experiences. Additionally, analysing user–agent interaction data could yield more nuanced insights into how reflective prompts shape learning. This analysis may inform refinements to the agent's responsiveness and personalisation. Longitudinal research could further assess whether AI-supported reflection contributes to lasting shifts in racial understanding and anti-racist praxis.

CONCLUSION

Our research demonstrates that generative AI can play a meaningful role in supporting the CC journey by providing a low-stakes, dialogic space for CSR. By prompting reflection and offering scaffolding for those hesitant to engage with the complexities of race and racism, the AI agent has shown potential to complement traditional educational approaches to anti-racism. Future analysis of the data will offer further insights into how such tools might be refined and integrated to support more equitable, inclusive, and anti-racist learning environments.

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THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE TEACHING-LEARNING PROCESS

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INTRODUCTION

Artificial intelligence (AI) has emerged as a defining element of our dynamic global landscape. In the 21st century, efficiently solving problems and acquiring knowledge are needs that drive our relentless pursuit of speed and minimal effort.

Among the most profound innovations of the last five decades, AI, in conjunction with the World Wide Web, has significantly reshaped modern society. These influential technologies have become indispensable since the global COVID-19 pandemic, extending their reach in various domains such as automotive engineering, economics, travel and tourism, offering both online and offline utility. The field of education is similarly undergoing significant transformation. Learning technologies, which encompass AI-driven applications such as adaptive learning platforms, automated assessment systems and virtual tutoring, are progressively being adopted by higher education institutions worldwide.[1]

Given AI's rapid societal impact, particularly in education, comprehending educators' viewpoints on this transformative technology is vital because of its capacity to redefine pedagogical approaches. The integration of AI into educational environments involves actively reconfiguring teachers' responsibilities and their engagement with technology.[2]

The significant potential of artificial intelligence (AI) in supporting both instructors and students in the areas of assignments and thesis creation is shown here.[3]

Artificial intelligence (AI) technologies include machine learning algorithms and natural language processing technology, providing personalized feedback and recommendations, and increasing the educational experience of students.[4]

GLOBAL STUDENT PERSPECTIVES ON AIED

The integration of artificial intelligence into secondary education has sparked a global transformation, with students worldwide demonstrating diverse, yet increasingly sophisticated engagement patterns. Surveys from across the world reveal that while adoption rates and institutional frameworks vary, students are actively shaping AI's role in their academic journeys, balancing its utility with concerns about authenticity and learning outcomes.

Ali Ateeq and his coauthors[5] examine the transformative role of artificial intelligence in higher education through a systematic review of the literature published between 2019 and 2023. Research highlights AI's potential to enhance personalized learning, academic writing, and research skills while

addressing critical challenges in educator preparedness and ethical implementation. They have discovered that AI tools demonstrated significant improvements in adaptive learning pathways, with studies showing 37% higher retention rates in courses using AI-driven tutoring systems. Platforms like Grammarly and ChatGPT enhanced writing quality for 68% of students, particularly nonnative English speakers. Also, AI applications reduced research time by 42% through automated literature reviews and data analysis tools and chatbots improved thesis formatting compliance by 55% in institutions with standardized AI referencing policies.

Examples from around the world

Parul Dubey and his coauthors[6] revealed in their study that middle school students' perspectives on AI integration in education evolved following structured AI acculturation activities. Conducted at Life Bloom Academy (Cagnes-sur-Mer, France), the research reveals how students reconcile AI's transformative potential with ethical and practical considerations. 84% of the participants reported weekly AI use for homework help, idea generation and problem solving. Older students (grades 11-12) showed higher engagement, linking AI proficiency with career readiness. However, there were also various negatives. For example, students advocated for transparent AI policies in schools, emphasizing the need for guardrails against misuse. And paradoxical attitudes surfaced as well: 63% viewed AI as essential for learning, but 38% expressed guilt about overreliance.

Germany presents a markedly different picture, with significant public scepticism toward AI in educational settings. An eco Association survey found that only 18.3% of Germans view AI use in schools as positive, while 60.8% view it negatively. This cultural resistance may influence how German secondary students approach AI tools, potentially creating a more cautious and deliberate adoption pattern compared to countries with more enthusiastic public reception. Despite growing governmental support for AI education initiatives, with twelve federal states planning to offer AI solutions, the cultural context suggests that German students may be more critical and measured in their AI adoption.[7]

Asian countries demonstrate some of the highest rates of AI adoption among secondary students, with surveys revealing both widespread usage and sophisticated institutional responses. Singapore's comprehensive approach is exemplified by a CNA survey of 500 students aged 15-25, which found that 100% of respondents have used AI tools for homework assistance, and 84% of secondary school students use AI at least weekly. With 29% of students using AI several times per week and the rest using it at least monthly, Singaporean secondary students have integrated AI into their regular academic routines.[8]

Examples from Hungary

The National Media and Infocommunications Authority (Hungary) conducted a survey from September to November 2024. 1197 respondents filled in the questionnaire the age between 13 and 16. It shows that most Hungarian teenagers used artificial intelligence (AI) for schoolwork. The highest usage rate was recorded among 16-year-olds at nearly 77%.[9]

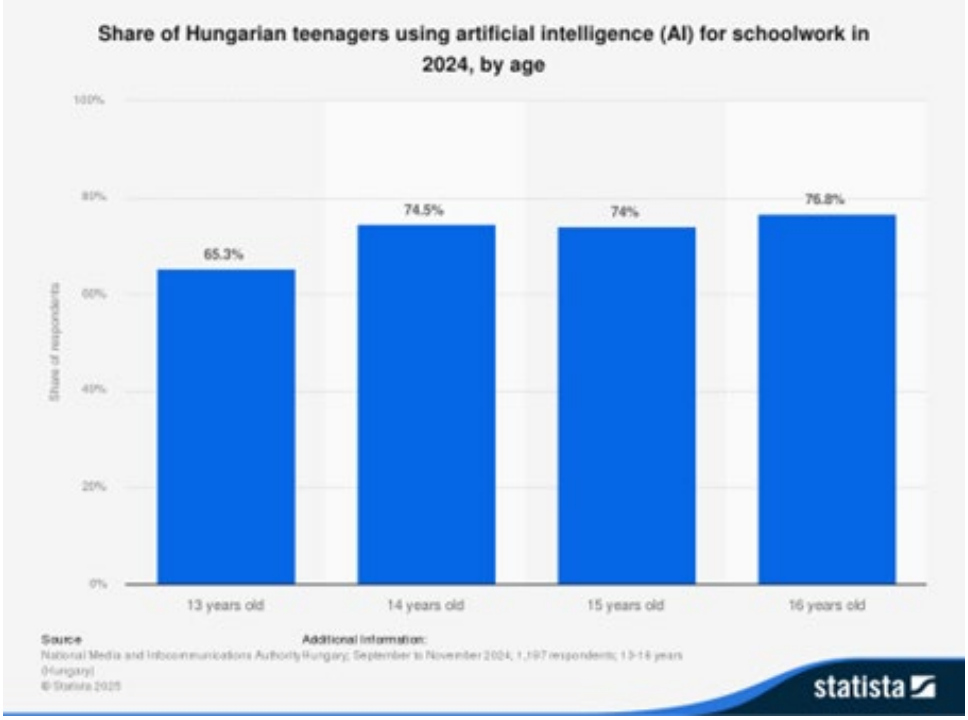

Figure 1. Share of Hungarian teenagers using artificial intelligence (AI) for schoolwork in 2024, by age

The NMHH said that while in international comparisons, respondents to similar surveys tend to identify security risks as the number one concern when it comes to AI, Hungarian respondents say the possibility of job losses (29.6%) and the loss of human relationships (23.6%) were their biggest concerns.

Qualitative interviews conducted by Hungarian journalists uncovered that 68% of secondary school student-respondents frame AI adoption as unavoidable for career success; 29% of them describe AI as a gaming-style tool to "beat the system" of rigid curricula; 22% express discomfort with human-like AI outputs, particularly in creative writing. These narratives reveal tensions between Hungary's traditional educational values and rapid technological change. [10]

The study by Marta Folmeg, Imre Fekete, and Rita Koris (2024) explores the perceptions of Hungarian higher education students of AI tools like ChatGPT and identifies key components of AI literacy. Conducted through semi-structured interviews, the research reveals that students primarily use ChatGPT for brainstorming, topic selection, information retrieval, translation, and text creation/reformatting. Although many found it effective for academic tasks (e.g., essay writing, CV preparation, language learning), challenges included generic responses, outdated information, and exam-related issues.

RESEARCH

This study examines Hungarian secondary school students' perceptions of AI-based technologies in education, with a particular focus on students from Győr. The database was created between January and February 2025. The two questionnaires had been developed at the end of 2023.

Approximately 584 thousand secondary school students were in the 2024-25 academic year in Hungary.[11] 140 Hungarian Győr-located secondary school students (from 14 to 19 years of age) filled out my questionnaire (77 female; 63 male).

Date of birth

2002	1,0
2004	1,0
2005	30,0
2006	15,0
2007	25,0
2008	29,0
2009	31,0
2010	8,0

Sexes

Woman	77,0
Man	63,0

Figure 2. Tables of date of birth and sexes

The questionnaires are self-complete; the respondent received the questionnaire via QR code and sent it after completion online. Online research can be shorter than face-to-face interviews. This has the advantage of not influencing interviewers. Anonymity and the possibility of self-complete make honest answers more likely.

My questionnaire contains 26 questions divided into three main topics:

- general information and data;
- the opinion of AI;
- the future usage of artificial intelligence in education.

Results

First, most of the respondents have already encountered and used AI technology (69%).

This finding is consistent with the results of another study. While an overwhelming majority of students (94.9%) had heard of AI tools, only about two-thirds (60.9%) had used them. This finding suggests the existence of a "digital divide" and highlights the need for educational initiatives to bridge this gap.[12]

When asked if AI could improve learning experience, 51.7% said yes. I only presented the most significant results, and I show you some of them in my study. I have chosen the 3 most important questions about positive thinking of AIEd.

1. When asked how students think about using text-generating tools (e.g., ChatGPT) in the classroom, the following responses were given. Tasks, ranked by percentage completion, were search for information (83%), drawing (76%), answering complex questions (53%), and searching for resources (56%).

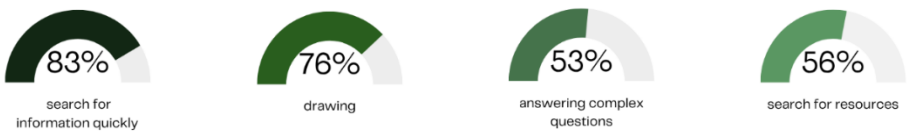

Figure 3. Using text-generating tools

A meta-analysis of 51 experimental or quasi-experimental studies (November 2022 – February 2025) examined ChatGPT's influence. It significantly improves students' learning, especially when they are incorporated into problem-based activities and keep it up to a few weeks. However, gains in deeper

thinking are modest and depend on deliberate instruction design. Educators should pair ChatGPT with strong structures, clear learning objectives and ongoing evaluations to unlock the full academic potential of ChatGPT while avoiding excessive dependency.[13]

Another survey said that students primarily used AI tools for productivity-enhancing tasks rather than content creation. The most common applications included: summarizing information (48.2%), spelling and grammar checks (47.5%), paraphrasing content (42.4%), clarifying understanding through questions (46.0%).[14]

2. When asked how likely AI would perform specific tasks, 43% of the respondents were completely sure that it would happen. However, they cannot imagine that AI would hold classes (66%) or allow people to be admitted to classes (62%).

Despite AI's capabilities, students emphasized the continued importance of human interaction and emotional connection, particularly in fields requiring empathy and personal relationships like the other survey.[15]

3. When asked what superpowers they think AI can give them, they responded as follows. The first three are time savings (69%), automatic repair (63%) and automatic feedback (60%). Then personalized learning and individual learning pathways (50-50%) are followed.

On the other hand, there are some negative points as well. The problems of AIEd also exist in the survey. Students mentioned:

- the lack of modern electrical equipment's and inadequacy of information technology hardware,
- the inadequacy of the consistent Internet,
- the high cost of data,
- the lack of skills of using AIEd.

These are the key challenges that limit the realization of the power of artificial intelligence in secondary education in the questioned 4 schools.

FUTURE PLANS - HUNGARY

AI predictions can be highly accurate. As early as 2017, Rose Lucking of the University of London noted that AI can help teachers better understand their students.[16] It is therefore essential to approach AI as a partner in the educational process. Her stance reflects a broader commitment to teacher–AI cooperation, which is also supported by Hungary's collaborative training programs for educators. These initiatives provide a solid foundation on which further developments can be built.

The Hungarian Teachers' Union is now warning: 'If the effective and ethical use of artificial intelligence in public education is not launched, Hungary's competitiveness will suffer.'[17] By 2030, Hungary's updated national AI strategy will ensure that all educational institutions integrate personalized learning platforms supported by AI, extending beyond the current pilot program. The strategy aims to train 100,000 citizens in AI technologies as part of the national digital literacy campaign, and education is the main means of delivery.[18]

There are steps to integrate these programs into education nowadays as well. One of the first initiatives is Yettel's ProSuli programme. It has launched a practical online training of artificial intelligence for teachers in April 2025, and they continue this programme in the future.[19]

Teachers are at the forefront of the educational transformation of AI. Their roles will go from teaching to mentoring, from implementation of policies to guiding best practices. The future of education will be determined by collaboration between teachers, students and technology, where responsible and creative AI integration will improve the human aspects of teaching and learning, not replace them.

Challenges for teachers all over the world will be highlighted. First, maintaining ongoing AI literacy training to meet the needs of students. Secondly, balance academic integrity with the inevitable and beneficial effects of the use of AI. Thirdly, addressing concerns about biases or misinformation arising from AI-generated content. And finally, the navigability of the access and enthusiasm differences between different demographic groups of students. These results come from the Student Generative AI Survey 2025, UK. [20]

CONCLUSION

AI is changing the landscape of education quickly, and students are excited and cautious. Their voice was clear: the next chapter should give priority to equality, and genuine partnership between students, teachers, and technology. Institutions that listen to these expectations and adapt help define not only the most advanced and deeply human education system. [21]

Students and learners do not want to treat AI as something they should fear or avoid. Instead, they want practical support to help them make good use of it. This means clear policies, consistent guidance and training in the ethical, effective and responsible use of AI. They want to build skills that help them stay current in a rapidly changing world, skills such as critical thinking, quick writing, fact-checking and understanding where AI is appropriate. [22]

In conclusion, Győr students also have positive perceptions of AI in education, recognizing its potential to improve personalized learning experiences and improve educational outcomes. However, concerns have been expressed about the lack of modern electrical equipment**,** ethical issues, overreliance, and the lack of personal connection between students and teachers. The findings emphasize the need to integrate formal AI training into curriculum, implement effective policies and guidelines for the use of AI in classrooms.

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THE NEW APPROACHES IN ANTHROPOLOGY OF EDUCATION IN THE AGE OF AI

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INTRODUCTION

We may all agree that the contemporary educational landscape becomes overly complicated when we take into consideration the impact and significance of the new ICT technologies invading the public sphere on a global scale. The technological divide emerging from this fact becomes also a problematic issue in terms of education and modern schooling. The significant presence of ICT in the institutional structures of many schooling systems is thus a factor of a key change which is placed not just in the context of the learning toolsets applied today in the educational processes, but more in the registry of the rapidly changing socio-cultural foundations every educational endeavor is placed in. Those foundations are to be considered as the very basics of the learning experience humans share with others in specific learning communities. As those communities were until recently associated with classrooms and institutional frameworks, it becomes obvious that they have evolved today, thanks to the rise of ICT, into something of a more less obvious nature. The technological environment in which people gain knowledge and acquire new abilities is being saturated with elements that have affected the starting point of every learning curve. The lasting effects of this environmental transformation are yet to be evaluated. What we do know however at this point of time is the key direction the educational field is heading towards. The clearly visible technological determination of many aspects of life and the socio-cultural reality becomes also problematic under various conditions for many modern students struggling to meet the formal criteria set in order to measure educational success. This issue is mostly set in the context of the generational divide among different age cohorts.[1] Due to very different socialization patterns of groups like the Generation X and Generation Z it is quite difficult to establish a common ground for all these diverse subjects in one coherent system of education as all of them have different expectations, attitudes, and different competencies.[2] The direction and the dynamics of a global educational change are however intriguing, foremostly in anthropological terms and therefore it can be considered as an object of analysis from the perspective of a relatively new and still emerging subdiscipline which is anthropology of education.

ANTHROPOLOGY OF EDUCATION AND ITS PERSPECTIVE

Anthropology of education combines several different approaches and traditions in social sciences. Those diverse approaches are being linked by a key common denominator – the diversity of the human experience and the ability to shape its surroundings in various ways. The goals achieved in this

process are also characterized by culturally conditioned formats of learning and therefore are becoming the main object of analysis. The notion of the cultural difference becomes for this subdiscipline, as for social and cultural anthropology in general, an unit of basic definition of reality and is being treated as a constant conceptual companion in the process of formulating the answer to the question of human action and worldviews. For anthropology of education cultural diversity alone is however not enough as for a full comprehension of educational sphere in various settings. It pursues a much more profound goal of delivering an in-depth analysis of the very nature of interactions between humans and their environment with a special emphasis on the learning processes occurring on every level of that relation. This assumption shapes the detailed dimensions of inquiry and allows us to understand better the effect culture may have on human development in the context of competencies and their plasticity when facing different environmental challenges.

The field in which the process of adaptation takes place is being treated is structurally ordered. The current mass implementation of ICT solutions affect that structure and changes key signifiers, shifting simultaneously the direction of systematic change on both formal and informal level of education.[3] The structural transformation of socialization patterns and the institution of school with all of its features and shortcomings. As the key dimension in which the mentioned transformation resonates in its most culturally profound aspect we can point out the relations between people and their material world of given learning tools and educational aids. The cultural ecology of learning is now an integral idea within anthropology of education. It might serve in the context of ICT applications as one of the elements constructing the theoretical framework in which every modern cultural analysis is being put into, but certainly not the only one. Other ideas and concepts necessary to fully understand contemporary education are made by the cognitive approach.[4] Especially in the light of current state of research in neuroscience we know today how the human mind adapts and reacts to various stimuli. This data serves us as a matrix for the design of actual learning technologies in the form of specific algorithms behind artificial intelligence models applied directly today on a massive scale in the educational reality by students and teachers alike.

THE IMPACT OF AI ON GLOBAL EDUCATION

The rise of AI driven education is certainly a challenge to traditional forms of learning and the institution of school in particular.[5] The outdated formats of education are becoming clearly obsolete and are not treated as useful by any means by young learners. The representatives of the Generation Z and the still emerging Generation Alpha demand often and welcome AI solutions without major reservations. It becomes thus crucial to understand how these attitudes of young generations towards algorithmic learning transform into a new educational paradigm, as well how the human-machine interactions (HMI's) are becoming a new testing ground for modern anthropological inquiry. Anthropology of education in the contemporary sense is therefore challenged by the dynamics of the ongoing environmental change due to the constant presence of the technological „prosthetics" and their effect on human behavior. Certainly, it is still open to debate how the mentioned effect will condition our actions and worldviews, but social practice and intersubjectively shared cognitive frameworks will certainly be one of the first aspect of life presenting the short term results of the impact of AI. This fascinating dimension of the technologically determined human presence in the world opens also some opportunities in social sciences, unless disciplines like anthropology or psychology want to remain relevant in the future. The necessity of facing these contemporary and future dilemmas allows us to ask some questions on the issue of the scale and form of HMI's. On the other hand we have to ask how future education is to be efficiently constructed and effectively maintained as a system in a world where machines take over some of our duties and force us to learn

new professions. In order to learn how to thrive as an individual in a AI driven reality of tomorrow we can look at anthropology of education as a helpful toolset and a database serving the purpose of reforming the existing solutions in education and to design new ones based on empirical studies grounded directly in the pedagogical reality where ICT and AI are constantly stimulating communication and interactions on a global scale.

The basic models all AI solutions that are functioning today in education and are applied in various learning contexts can be divided into three main dimensions: 1) cultural, 2) cognitive, and 3) behavioral.[6] Their application can be found in both – human and machine learning. These dimensions are obviously intertwined and have to be considered holistically when we want to get real insight into the core processes regulating the internalization of skills and information. By joining these key assets in the process of competencies and worldview formation we gain on the same occasion an opportunity to create a better curriculum for future educational needs. In the light of the demands expressed by young learners, especially the representatives of the Generation Z, it becomes a pivotal move in keeping the students within the schools in terms of identification and community relations. Thus it is important to design schooling reforms with the bottom-up approach in mind, a methodological perspective distinctive for anthropology and ethnographic work in the field. This approach remains in the center of any debate on redefining the role in the school as the key institution that harnesses and allows to grow the learning and creative potential of students. We may agree on that level of the debate that the existing solutions in the form of teacher inspired pedagogical work leave little room for student driven innovation, intergenerational dialogue, direct mentoring and careful channeling the potential of individuals who still want to combine their learning and schooling experiences together.

CHANGING THE CONTEMPORARY EDUCATIONAL LANDSCAPE

The necessity of a change in that matter becomes obvious in the light of the key tendencies we observe in education nowadays. They are to be ordered as followed: 1) hybridization of the learning experience (combination of digital and analog experience), 2) increased personalization of education, 3) direct application of knowledge and skills into professional practice, and 4) deterritorialization of learning and teaching (digital nomadism and use of metaverse technologies). These tendencies represent several distinctive domains of public life affected by the implementation of AI and ICT. As a result a clash between the human and AI driven goals are to be observed, and thus also to be analyzed form the anthropological perspective as they affect the area of HMI directly. The tendencies mentioned above are certainly of high significance also to the teaching approaches and didactic methods yet to be fully established and implemented on a larger scale directly in the national schooling systems. Their local distinctive features will of course have to be adjusted to the socio-cultural, political, and economic context, as well tied closely to the human and infrastructural resources presented by each system, allowing the methods to be fully applied in the pedagogical praxis, gain feedback and adjust to the developing challenges of the fast changing schooling reality. This reality is being shaped today by the technological turn in the first place, but nonetheless it is affected by the growing discontent with the existing limited possibilities for combining the machine and human learning processes on a level that brings deeper understanding to the main purpose of every educational action – the shaping of our collective knowledge and shared abilities to change the world around us in a way that brings positive outcomes and growth to all agents involved.

So, we may ask the crucial question now – how to effectively design pedagogical innovation in the times of AI without loosing the principal human component and falling into the seemingly inevitable automatization of educational practices? Even more important question is also formed by the issue of transforming the contemporary schooling systems with the human-centric approach in mind, but still

implementing the technological advancements brought to the table by large language models for example. The interactions between the machine and human element produces some interesting data and allows us to develop a new perspective in analyzing the deeper consequences of the global digital transformation and the proliferation of the Industry 4.0 model.[7] This model, based on the assumption that the future will be regulated by the interconnectivity paradigm on the level of material applications of AI driven solutions, is also present in the educational domain through blended learning and deign thinking approaches. The latter, is especially interesting from the perspective of anthropology of education

NEW CHALLENGES IN TEACHING AND DIDACTIC METHODS TODAY

As design thinking involves the human centric approaches and puts it in the very center of its core processes of iteration design we can clearly see that it also demands the application of some AI features.[8] It creates a distinctive level of accessibility to the design process for all and thus requires a degree of universalism that goes beyond social and cultural differences, but yet still remains within an ethnographic understanding of their influence on various ways people use the objects and solutions designed.[9] Design thinking becomes in this light an innovative method for combining creation, testing and rethinking most important elements of a particular solution from the point of view of its actual users. It binds together the product with the customer and his/hers needs and empathizes with them. This close relations between the industry makers and customers resembles the ethnographic fieldwork in several ways. First it requires the designer to put on hold his/hers own ethnocentric perspective in order to understand the other's (user's in this case) patterns of thinking and their relation to action (user experience). Such a link becomes of obvious importance in the successful application of any given digital means. It opens therefore possibilities to look at AI presence through the anthropological lens and mapping idealization turn into action process in a structural sense. Secondly, design thinking involves the necessity of the holistic overview of the perceived reality and thus it also requires a high degree of analytical skills with the ability to adapt and iterate our own ideas in relations to the emerging field data. Thirdly, the design process is always related to the user's order of reality and all the practices placed within a given cultural framework. This framework is in the first place of symbolic nature and demands some degree of humanistic interpretation of the particular „native" language. In consequence a design thinking specialist must be directly and actively involved in the process of symbolic translation in order to recreate the dictionary of key notions the end user is using in the real world praxis and to spot the connections between language and action. This observation is today also of high value to the designing of diverse AI based solutions based on speech and living languages in general.

The application of large language models (LLM's) in classroom is certainly the most widespread form of blending traditional education with the AI based tools. The most popular LLM's like ChatGPT (in all of its versions), Copilot, and Gemini are gaining popularity among students and teachers alike in that context, allowing them to retain online information faster, create schematic content with ease, systematize and typologize knowledge, or identify patterns in complex wholes otherwise not visible to the untrained human mind. Their development and the fast pace of implementation of their further iterations raises however some questions on the ethical side of these new technological toolsets among young learners in the everyday schooling practices. Those issues are addressed today by decision and policy makers across the globe, and perceived as one of the most significant challenges AI imposes on modern industrial societies. It is not only problematic in terms of student cheating and plagiarism, AI hallucinations and misinformation, but in a growing extent, the macro-economy of knowledge production. The availability of most LLM's serves often the purpose of building the

matrix for machine learning, constructing data bases and harvesting big data and personal information about the users themselves. The training of AI demands large date bases of the most diverse samples in a given domain and thus the input and the prompts written or even spoken in a natural conversation with a chatbot help immensely to boost this process and to give it its valuable output. It is worth noting that the model of surveillance capitalism explained by Shoshana Zuboff[10] is taken even further recently by Yannis Varoufakis by suggesting the establishing of a new kind of digital feudalism and new AI based inequalities in accessibility and usage of advanced ICT solutions[11] (Varoufakis: 2025).
On the other side, what seems to be an advantage of AI implementation in education is the democratization of education and the increased accessibility to knowledge for the unprivileged and minority groups placed usually outside the educational mainstream and stripped of real agency in that regard. The cultural diversity is being reflected also in the different forms of educational experience represented by particular groups and individuals characterized by cultural difference not just in ethnic or racial terms. The generational divide mentioned earlier gains nowadays increasingly a cultural shape, contributing to the formation of not just different skills and attitudes towards education, but also different learning styles and learners identity. Generation Z's entering now a brand new world of technological possibilities is getting on the same hand an unique opportunity to discover non-standard educational paths and setting new ones themselves. The transdisciplinary nature of AI and the ability to reshape through AI implementation classroom organization allows the Gen Z learners to establish unorthodox methods and to reform the existing ones accordingly with the identity patterns and fitting to the demands of the younger students. Therefore they are able to see and understand the fact that diversity in education involves an assumption typical to any anthropological inquiry – the acceptance of diversity and non-ethnocentric views as an integral part of the knowledge formation process. In this context AI application in education contributes to settling of anthropological relativism.

CONCLUSION

The relativist approach in educational applications of AI is related to challenging the Standard View on Technology, a complex set of Western ideas and beliefs assuming there is just one single use of technology. As the contemporary schooling reality shows in every possible aspect this is not the case in educational terms, where different generational, ethnic or other culturally defined differences occur when it comes to the application of ICT in the classroom. By looking at the problem through anthropological lens and with the relativist rationale in mind we may observe the wide range of real life challenges formed by the cultural dynamics observed in the context of educational technology applications and their use on the interpersonal level. These challenges may encompass not just the different practices and utilitarian applications of technology, but on a much deeper level – different forms of understanding of the role technology plays in our lives. Therefore they demand the development of various sensemaking practices to be incorporated in the curricula of tomorrow in order to maintain the necessary cognitive integrity. In consequence, placing latest and most complex ICT solutions in the personal experience of humans raises over and over again a profoundly anthropological question of our ability to reshape and control the very environment modern information societies created for themselves. In the context of debates on the advancements AI and the implementation of quantum computing this question remains pivotal for the global future of education.

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INSIGHTS UNLEASHED: HARNESSING AI FOR LEARNING ANALYTICS

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INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force in educational research and practice. In the domain of learning analytics, AI enables researchers to uncover patterns in learner behavior, predict performance outcomes, and personalize educational interventions at scale. As noted in Siemens and Long's foundational work,[1] the integration of analytics into education represents a 'new model of data-driven decision-making.' This paper explores the theoretical underpinnings and empirical findings surrounding AI-enabled learning analytics, drawing from recent literature and applied case studies to identify best practices and future opportunities.

EVOLUTION OF LEARNING ANALYTICS

The evolution of learning analytics is best understood in relation to both the emergence of educational data mining (EDM) and the broader field of institutional research. Early experiments often borrowed heavily from business intelligence dashboards, focusing on metrics such as time-on-task or log-in frequency. However, as researchers such as Ferguson[2] argued, the field quickly recognized the need to connect descriptive indicators to theoretical models of learning. EDM contributed algorithms optimized for test performance prediction, clustering student behavior patterns, and analyzing fine-grained interaction logs. Learning analytics, by contrast, emphasized actionable insights for instructors, curriculum designers, and policy makers. Over time, the distinction between EDM and LA blurred, leading to hybrid conferences and shared methodological toolkits. Cross-disciplinary influences, particularly from cognitive psychology, HCI, and computational linguistics, also expanded the scope of the field. By the mid-2010s, large-scale projects such as the Open University's OULAD dataset[3] provided researchers with open benchmarks, accelerating methodological rigor and replication across contexts.

Beyond these methodological advances, scholars in educational data mining (EDM) and the Learning Analytics and Knowledge (LAK) community have emphasized the broader role of AI in shaping learning research and practice. As educational environments grow more complex, AI offers opportunities not just to enhance instruction but to study the learning process itself. Researchers in the field of educational data mining (EDM) have pointed to the dual role of AI as both an analytic and interventionist technology. In contrast to traditional statistical approaches, AI allows for dynamic feedback loops in real-time learning systems, opening possibilities for adaptive experimentation and embedded design-based research.

The Learning Analytics and Knowledge (LAK) conference community has played a central role in advancing theoretical foundations. Researchers like Gašević,[4] Dawson,[5] and Siemens[6] have outlined socio-technical frameworks that situate learning analytics within the broader educational ecosystem. Rather than viewing learning as a product of isolated student actions, these frameworks emphasize context, motivation, and the influence of instructional design.

The field of learning analytics has evolved rapidly since its formal inception in the early 2010s. According to the Society for Learning Analytics Research (SoLAR[7]), learning analytics encompasses the collection, measurement, analysis, and reporting of data about learners and their contexts. Early implementations relied on descriptive statistics from LMS platforms, such as clickstream data or login frequency, as proxies for engagement. Recent advances now incorporate predictive modeling, unsupervised clustering, and natural language processing (NLP) to analyze both structured and unstructured educational data. This shift marks a transition from learning management to learning optimization, with data science techniques at the core. Researchers have increasingly adopted hybrid methods from educational data mining (EDM) and learning analytics (LAK), demonstrating the value of interdisciplinary approaches.

CORE AI TECHNOLOGIES IN EDUCATION

AI technologies in education encompass a wide spectrum beyond the traditional categories. Supervised learning models now include not only logistic regression and decision trees but also ensemble methods such as random forests and gradient boosting, which have been applied to predict student attrition with high accuracy. Neural networks, including recurrent and transformer-based architectures, allow for sequential modeling of student responses and engagement over time. Unsupervised techniques, meanwhile, range from k-means clustering to more advanced topic modeling (e.g., Latent Dirichlet Allocation) and graph-based methods for social network analysis of discussion forums. Reinforcement learning is emerging as a particularly powerful tool for adaptive learning, where systems learn optimal policies for presenting content based on student responses. In natural language processing, sentiment analysis has expanded to include stance detection, argument mining, and conversational agents capable of scaffolding critical thinking. Large language models (LLMs) such as GPT-4 and beyond are increasingly tested in classroom pilots, raising both enthusiasm and concern over their integration as co-instructors, tutors, and assessment aides.

AI technologies used in learning analytics include supervised machine learning models (e.g., logistic regression, decision trees, and neural networks), unsupervised models (e.g., k-means clustering and topic modeling), and rule-based systems for intelligent tutoring. For instance, Hawkins et al.[8] demonstrated how Bayesian Knowledge Tracing (BKT) could be combined with real-time student interaction data to refine adaptive feedback. NLP methods are increasingly applied to student writing and discussion forums, enabling sentiment analysis and discourse-level feedback. Large language models, such as ChatGPT, represent the newest frontier, offering potential for real-time interaction, automated tutoring, and even formative assessment. However, concerns about factual hallucinations and lack of explainability remain prevalent in the literature.

PERSONALIZED LEARNING EXPERIENCES

The promise of personalization through AI rests on decades of research into adaptive systems. Meta-analyses of Intelligent Tutoring Systems (ITS), for instance, consistently find effect sizes comparable to or exceeding small-group human tutoring. VanLehn's[9] "two sigma problem" highlighted the challenge of replicating the benefits of expert tutoring at scale; AI-driven ITS offer one avenue toward that goal. More recently, adaptive systems have begun to incorporate multimodal data, such as eye-

tracking, voice tone, and keystroke dynamics, to refine estimates of cognitive load and emotional state. This integration of affective computing enables not only content adaptation but also empathetic response. However, personalization is not culturally neutral: studies show that adaptive systems trained on Western student populations may fail to generalize to learners in Global South contexts. Thus, localization, multilingual NLP, and culturally responsive pedagogical models are becoming critical components of personalized AI. The potential extends beyond academics: AI-driven mentoring bots and social-emotional learning companions are being piloted to support motivation, self-regulation, and resilience.

AI-driven personalization is grounded in the principle of learner variability, recognizing that students differ in their backgrounds, cognitive profiles, and preferences. Adaptive learning systems such as Knewton and ALEKS apply real-time assessment to tailor learning paths, using reinforcement learning algorithms to optimize challenge and support. As described by VanLehn[10] intelligent tutoring systems (ITS) mimic the benefits of human tutoring by responding to student errors and prompting metacognitive reflection. These systems have been shown to significantly improve learning outcomes compared to static content delivery. A growing body of research also supports affective computing for detecting student emotion via facial recognition or typing speed, which can further adjust pacing and feedback strategies.

PREDICTIVE ANALYTICS AND STUDENT SUCCESS

Predictive analytics has been most visible in the development of early-alert systems for student success. Jayaprakash et al.[11] demonstrated how open-source predictive pipelines could be embedded within institutional systems to identify at-risk students with substantial accuracy. Institutions such as Georgia State University have since implemented predictive analytics at scale, combining registration data, transcript histories, and LMS interactions to guide proactive advising. The challenge remains ensuring that predictions are explainable and actionable: advisors need not only to know that a student is “at risk” but why. Recent research integrates interpretable machine learning frameworks, such as SHAP values, to decompose predictions into comprehensible risk factors. Fairness-aware algorithms further adjust predictions to reduce disparate impact on historically marginalized groups. Beyond higher education, K-12 school districts have begun experimenting with predictive models for attendance, course placement, and even behavioral interventions, though these raise sensitive ethical debates. Ultimately, predictive analytics illustrate both the promise and the peril of AI in education: they can improve retention and equity when used responsibly, but risk amplifying inequities when applied without context.

Predictive models are widely used to identify at-risk students based on behavioral and demographic data. Tools such as Civitas Learning and EAB Navigate integrate institutional data with machine learning models to deliver actionable insights to advisors and instructors. Early warning systems improved course completion rates when coupled with timely human intervention. Recent studies also examine the role of explainability in predictive systems, ensuring that outputs are interpretable by educators. Multilevel models and SHAP (SHapley Additive exPlanations) values are gaining traction in this area. These developments underscore the need for transparent AI to ensure trust and actionable use in educational settings.

AI-ENABLED ASSESSMENT TOOLS

Assessment remains one of the most active frontiers for AI in education. Automated Essay Scoring (AES), as synthesized in Shermis and Burstein’s[12] cross-disciplinary volume, has demonstrated that NLP-based features can approximate human raters across diverse prompts and populations. Yet

construct validity concerns persist, particularly regarding whether AES rewards surface features such as word count or syntactic complexity over genuine argument quality. Adaptive testing platforms, building on Item Response Theory, offer dynamic adjustments to test difficulty based on real-time student performance, enhancing both efficiency and fairness in high-stakes evaluations. These platforms leverage AI to optimize item selection and provide immediate feedback, though challenges remain in ensuring cultural relevance and accessibility across diverse learner groups.

ETHICAL CONSIDERATIONS

AI in learning analytics raises profound ethical questions. Privacy concerns are paramount, as student data, ranging from behavioral logs to biometric signals, can reveal sensitive information about mental health, socioeconomic status, or even political views. Dawson[13] emphasizes the importance of self-regulated learning in an analytics-driven world, where students must be empowered to understand and control their data footprints. Algorithmic bias is another critical issue: models trained on unrepresentative datasets may perpetuate inequities, such as lower accuracy for underrepresented minorities. Binns et al.[14] highlight perceptions of justice in algorithmic decisions, noting that opaque systems can erode trust among stakeholders and the potential for misinterpretation or misuse of predictive indicators.

CASE STUDIES

In another example, the Open University UK developed an early-warning system using logistic regression models to flag students at risk of dropping out. The intervention led to a significant increase in retention, especially for online-only learners[15]. Their model incorporated data such as assessment timing, forum activity, and login frequency to generate weekly risk levels visible to advisors and tutors.

Similarly, in Australia, the University of New England's 'AIM' project used real-time analytics to support both academic and pastoral care services. Students flagged as disengaged received personalized support via text message or phone call, with a reported 15% improvement in course completion rates. Such interventions illustrate the multifaceted impact of analytics, not just academic, but social and emotional as well.

Another promising development is the emergence of AI-powered learning companions, embodied agents or chatbots embedded within course interfaces. Studies by Winkler and Söllner[16] indicate that such agents can foster social presence and increase student motivation, particularly in asynchronous learning contexts.

Real-world implementations illustrate both the promise and complexity of AI in education. At Georgia State University, the use of AI-powered chatbots to handle admissions queries contributed to a 3.3 percentage point increase in enrollment yield.[17] Arizona State University piloted an AI tutor in introductory biology, reporting higher homework completion and improved course satisfaction.[18] In the corporate sector, IBM’s SkillsBuild platform uses AI to personalize learning trajectories for workforce upskilling. Despite these gains, few of these initiatives report open access evaluations or external audits, highlighting the need for more transparent and peer-reviewed reporting of effectiveness metrics.

CHALLENGES AND LIMITATIONS

Beyond technical and regulatory issues, institutions also face organizational and cultural challenges that can slow the adoption of learning analytics. Studies show that resistance to change, unclear data governance structures, and lack of faculty involvement remain major barriers. Cross-departmental

collaboration and shared language between technical teams and educators are vital for overcoming these challenges.

Despite growing interest, implementation challenges persist. First, technical infrastructure and integration costs can be prohibitive, particularly for smaller institutions. Second, many faculty lack training in data literacy and algorithmic interpretation, which hinders effective adoption.[19] Third, educational data are often incomplete, siloed, or lack standardized formatting, affecting model performance. Lastly, regulatory frameworks around data governance and student rights (e.g., FERPA, GDPR) limit data sharing and experimentation. These barriers necessitate cross-functional teams, clear institutional policies, and ongoing faculty development to realize the full potential of AI in education.

FUTURE DIRECTIONS

The future of AI in learning analytics is poised to be both technically and ethically transformative. Explainable AI methods, including SHAP and LIME, will likely become baseline requirements to ensure that stakeholders trust and act upon system outputs. Federated learning is gaining traction as a privacy-preserving method, enabling global collaboration without centralizing sensitive student data. Immersive and multimodal analytics, integrating VR, AR, biometric sensors, and emotion recognition, are opening new possibilities for embodied learning research. The integration of Universal Design for Learning (UDL) with AI systems could ensure inclusivity by proactively addressing barriers for students with disabilities or atypical learning needs. Policymakers and global organizations, including UNESCO,[20] have emphasized the alignment of AI in education with Sustainable Development Goal 4, which calls for inclusive and equitable quality education. Finally, as large language models become embedded within learning platforms, the field must balance innovation with careful validation, ensuring that these tools support rather than supplant pedagogical relationships.

In addition to technical innovation, global policy and inclusive pedagogical frameworks highlight the importance of embedding AI within equity-focused and sustainable educational goals. Moreover, funding bodies and policy reports, from the U.S. Department of Education, have emphasized the strategic importance of AI-driven learning analytics in achieving Sustainable Development Goal 4 on inclusive and equitable quality education. Thus, this paper is situated at the intersection of learning sciences, AI ethics, and institutional decision-making.

One underexplored area is the integration of learning analytics with Universal Design for Learning (UDL) frameworks. By linking AI systems with inclusive pedagogical design, institutions can proactively identify and address barriers faced by learners with disabilities or non-traditional backgrounds.

Emerging trends point to more responsible and inclusive AI practices. Explainable AI (XAI) methods such as LIME and SHAP enable stakeholders to interpret model decisions. Federated learning offers a privacy-preserving approach by training models across distributed institutions without sharing raw data. Immersive learning analytics, combining VR/AR with biometric feedback, offer new pathways for embodied cognition research. Researchers are also calling for culturally responsive AI systems that reflect global diversity in learning environments. As noted by Kitto and Knight,[21] the next wave of learning analytics must balance technical innovation with ethical foresight and interdisciplinary collaboration.

CONCLUSION

AI-enhanced learning analytics provides both opportunity and obligation. The opportunity lies in scalable personalization, predictive insight, and continuous assessment that can make learning more adaptive, inclusive, and effective. The obligation lies in ensuring that these tools are used ethically, transparently, and in alignment with pedagogical goals. Researchers, practitioners, and policymakers must therefore work collaboratively, embedding rigorous evaluation, fairness audits, and stakeholder voice into every deployment. If done well, AI-enabled learning analytics can help institutions meet the twin imperatives of educational excellence and equity in an increasingly complex world.

AI-enhanced learning analytics offers powerful tools for understanding and improving education at scale. Yet, their success depends not only on technical sophistication but also on alignment with pedagogical goals, ethical standards, and institutional capacity. As the field matures, researchers must prioritize transparency, equity, and collaboration in the design and evaluation of these systems. By embedding research rigor and stakeholder voice into AI initiatives, educators can better harness these tools to support inclusive, data-informed teaching and learning.

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BEYOND THE ALGORITHM: RETHINKING AI, EQUITY, AND INCLUSION IN HIGHER EDUCATION

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INTRODUCTION

Artificial intelligence (AI) has moved rapidly from the margins to the infrastructural core of higher education. Universities now rely on algorithmic systems to process admissions applications, predict student retention, automate assessment, detect plagiarism, monitor examinations, and manage administrative workflows. These systems are frequently justified through familiar institutional narratives: efficiency, scalability, personalization, and fairness. In a sector strained by massification, budgetary pressures, and performance metrics, AI appears to offer technical solutions to structural problems.

Yet this framing obscures a more consequential shift. As scholars in science and technology studies and critical data studies have long argued, technologies do not merely assist institutional practices; they actively reorganize them. Technical systems encode assumptions about value, redistribute authority, and shape what forms of knowledge and behavior become legible to institutions.[1] In higher education, where decisions about admission, evaluation, and credentialing have material consequences for life chances, this reorganization is not incidental. It is political.[2]

This paper begins from a deceptively simple premise: AI in higher education should be understood not primarily as a pedagogical tool, but as a mode of governance. Algorithmic systems do not merely support teaching and learning; they increasingly govern academic life by embedding institutional priorities into infrastructural decisions: what data is collected, how students are classified, which behaviors are flagged, and how outcomes are evaluated. Through these systems, governance is exercised not through explicit policy debates, but through design choices that quietly structure possibility.[3]

Understanding AI as governance clarifies why debates about bias, transparency, or ethics often feel insufficient. When concerns about AI are framed narrowly as technical problems (i.e., model accuracy, dataset representativeness, or explainability, etc.), the deeper institutional question is left untouched: who is exercising power through these systems, and how? As Langdon Winner argued, technologies are political not because they are misused, but because they embody particular arrangements of power and authority.[4] Ruha Benjamin extends this insight by showing how ostensibly progressive technologies often reproduce racialized and classed hierarchies precisely through their infrastructural neutrality.[5]

This paper advances a single conceptual intervention: AI in higher education operates as **governance-by-design**. Institutional authority is increasingly exercised through algorithmic infrastructures that

classify, evaluate, and discipline students and educators, often without meaningful participation or contestation. To demonstrate this, the paper develops a cumulative argument across three institutional pressure points where governance-by-design becomes visible: automated sorting, opaque judgment, and surveillance-driven pedagogy. These are not discrete or parallel phenomena. Each builds upon the previous one, producing a progressively intensified form of governance, from **classification**, to **valuation**, to **discipline**.

Only after establishing this cumulative logic does the paper turn to its normative intervention: an equity-centered AI governance framework grounded in design justice. This framework does not appear as a moral add-on or best-practice checklist. Rather, it emerges as a structural necessity; an institutional response demanded by the form of governance AI has already become.

FROM TOOL TO GOVERNANCE: HOW DESIGN BECOMES INSTITUTIONAL POWER

Discussions of AI in higher education frequently rely on an instrumental vocabulary. AI is described as a tool that can be used responsibly or irresponsibly, ethically or unethically, depending on human intent. This framing is appealing because it preserves a familiar division of labor: technologies are neutral instruments, while responsibility resides with individual users, faculty, students, or administrators. However, the instrumental framing breaks down once AI systems become infrastructural. Unlike conventional educational technologies, algorithmic systems do not simply facilitate tasks; they classify, predict, and automate decisions at scale. They establish institutional categories –risk, success, engagement, integrity– and attach consequences to those categories. In doing so, they reshape how institutions see students and how students experience the institution.[6]

Julie E. Cohen's account of informational capitalism is instructive here. Cohen argues that contemporary governance increasingly operates through infrastructures that modulate behavior by shaping informational environments rather than through overt regulation.[7]In higher education, AI systems function precisely in this way. Dashboards, risk scores, similarity indices, and behavioral alerts do not merely describe reality; they actively constitute what counts as relevant, actionable, or deviant within institutional workflows. They reorganize labor (what advisors attend to, what instructors suspect), reconfigure accountability (who must justify decisions), and reassign authority (from interpretive judgment to model outputs).[8]

This infrastructural form of governance aligns with what Antoinette Rouvroy and Thomas Berns describe as algorithmic governmentality: a mode of governance that displaces normative judgment with automated correlation and prediction.[9] Rather than debating educational values explicitly, what equity means, how success should be defined, or when intervention is appropriate, institutions increasingly allow these questions to be answered indirectly through model design and threshold settings. The effect is subtle but profound: the university begins to govern through anticipation (predicting risk), optimization (maximizing retention), and compliance (monitoring integrity), while the normative conflicts embedded in those aims are rendered technical.

At this point, the equity question becomes unavoidable. If AI systems govern through categorization and prediction, then equity is not simply a question of "fair outcomes." It is a question of **how governance is performed**; who is categorized, by what criteria, with what consequences, and with what capacity to contest. The next sections therefore, move from the general claim (AI as governance) to the concrete sites where governance-by-design is enacted. The first site is where governance begins: **automated sorting**, the classification of students into institutional categories that regulate opportunity.

PRESSURE POINT I: AUTOMATED SORTING AND THE GOVERNANCE OF OPPORTUNITY

Automated sorting is often introduced as a benevolent application of AI in higher education. Predictive analytics systems promise to identify students who are "at risk" of failure or attrition so institutions can intervene early and allocate resources efficiently. Admissions triage systems promise to reduce inconsistency and manage scale by processing large volumes of applications. In each case, sorting is framed as a way of making the institution more responsive.

Yet sorting is never neutral. To sort is to rank, classify, and prioritize; to decide who receives attention, support, scrutiny, or exclusion. When sorting becomes automated, these decisions are encoded into models that operate continuously and often invisibly. The institution's authority is exercised not only in the interventions it provides, but in the categories it creates, and in the forms of evidence it treats as meaningful.

Consider the typical logic of early-warning systems. Students are flagged based on variables such as prior GPA, LMS activity, attendance, or assignment completion. Each of these variables is shaped by structural inequality. Prior GPA reflects uneven schooling and unequal access to preparation. LMS activity reflects stable internet, device quality, digital familiarity, and learning style. Attendance reflects caregiving responsibilities, employment, disability, and health. When these indicators are treated as predictors of individual risk, structural disadvantage is translated into personal liability.[10]

Virginia Eubanks's analysis of automated systems in public services is directly relevant here. Eubanks shows how data-driven tools often reframe social problems as individual pathologies to be managed rather than structural conditions to be transformed.[11] Higher education sorting systems can perform a similar move: students who experience systemic barriers are rendered as "risks," while institutional conditions that produce those barriers remain unexamined. The algorithm becomes a mechanism through which the institution manages inequity rather than dismantling it.

Sorting also reorganizes institutional attention. Students labeled "high risk" become subject to intensified monitoring and intervention, while others move through the institution relatively unmarked. This produces a differentiated university experience: some students are governed through continuous oversight (alerts, nudges, mandated advising), while others are afforded autonomy and trust. Here, governance is enacted through a seemingly caring logic, intervention, but it can function as a form of soft discipline. The risk label becomes sticky, shaping how advisors, instructors, and sometimes students themselves interpret academic possibility.[12]

This is the first step in the cumulative argument. Automated sorting establishes a governance infrastructure that (1) defines which traits count as institutional problems, and (2) positions certain students as objects of intervention. But sorting alone is not enough to govern academic life. Once students are classified, their work must be evaluated, often at scale. And it is here, in the automation of evaluation, that governance intensifies from classification to **valuation**.

PRESSURE POINT II: OPAQUE JUDGMENT AND THE AUTOMATION OF ACADEMIC VALUE

If automated sorting governs who receives attention, opaque judgment governs how academic worth is defined and recognized. AI-assisted grading, automated writing evaluation, and plagiarism detection promise consistency and scalability in assessment. In contexts of large enrollments and faculty precarity, these promises are institutionally attractive: automation is framed as an answer to workload. Yet judgment is not simply a technical procedure. Academic evaluation has always involved interpretive labor; contextual reading, disciplinary judgment, and a pedagogical relationship in which feedback is negotiated and intelligible.

When evaluation is automated, interpretive dimensions must be reduced to proxies that can be operationalized computationally. This is not a minor change; it is a transformation in what "learning" becomes legible as. Audrey Watters's historical critique of educational technology demonstrates that attempts to mechanize learning and assessment have long privileged standardization over diversity.[13] AI systems intensify this tendency because they require formalization: to score or classify student work, the system must encode a theory of quality. That theory is rarely neutral. Automated writing systems often privilege standardized academic English, conventional rhetorical structures, and familiar argumentative forms. Students whose knowledge is expressed through different linguistic, cultural, or cognitive modes are disadvantaged.

This constitutes what Miranda Fricker terms **epistemic injustice**: a harm that occurs when individuals are wronged in their capacity as knowers.[14] When algorithmic systems systematically devalue certain forms of expression, they do not merely misgrade students; they narrow the epistemic boundaries of the institution. They establish what counts as "credible academic work" in ways that often align with dominant norms.

Opacity compounds this harm. Frank Pasquale's critique of "black box" systems shows how proprietary decision-making undermines accountability by making the basis of decisions inaccessible to those affected.[15] In higher education, students flagged for plagiarism or assigned low automated scores often lack meaningful avenues for appeal. The authority of the system is difficult to challenge precisely because it appears technical rather than interpretive. The tool's output can become an evidentiary fact rather than a claim open to debate.

At this stage, governance has intensified. The institution does not merely classify students into risk categories; it also authoritatively defines academic value through systems that students may not be able to contest. But a further step follows almost inevitably. Once classification and valuation are automated, institutions face pressure to enforce integrity and compliance at scale. This is where governance shifts from sorting and valuing to **disciplining**, through surveillance infrastructures that normalize suspicion as pedagogy.

PRESSURE POINT III: SURVEILLANCE-DRIVEN PEDAGOGY AND THE DISCIPLINING OF STUDENTS

Surveillance technologies represent the most explicit expression of governance-by-design in higher education. Remote proctoring systems, behavioral analytics, and biometric monitoring tools are justified as necessary to uphold academic integrity and measure engagement. Yet surveillance is not simply a technical safeguard; it is a pedagogical relationship. It teaches students what the institution assumes about them: that they must be monitored, verified, and managed.

Simone Browne's work on surveillance demonstrates how monitoring technologies historically produce differential vulnerability by embedding suspicion into infrastructures that appear neutral.[16] In higher education, surveillance tools define normative behavior –steady gaze, quiet environment, uninterrupted focus– and penalize deviation. Students without access to private spaces, students with disabilities or anxiety, and students from marginalized backgrounds are disproportionately affected. The harms are not only privacy harms; they are dignity harms and belonging harms –harms that shape who experiences the university as a space of trust versus a space of suspicion.[17]

The technical literature on face and gender classification accuracy has documented significant disparities across categories of skin tone and gender presentation.[18] Even when institutions avoid facial recognition explicitly, proctoring systems rely on computer vision logics that can produce false flags and disproportionate scrutiny. More importantly, surveillance systems turn learning into compliance: they shift the institution's posture from "teach" to "detect." Ruha Benjamin's concept of

the carceral imagination helps illuminate the broader stakes. Surveillance technologies do not merely detect misconduct; they reorganize social relations around suspicion, preemption, and control.[19] In educational contexts, this transforms pedagogy itself. Trust is replaced by verification; learning is reconfigured as behavioral conformity. At this final stage, the cumulative logic becomes visible:

- **Automated sorting** governs *opportunity* through classification and intervention.
- **Opaque judgment** governs *value* by automating what counts as credible work.
- **Surveillance-driven pedagogy** governs *behavior* by institutionalizing suspicion.

Together, these are not three parallel concerns; they are a sequence of intensification. Sorting establishes categories. Judgment hardens those categories into value. Surveillance enforces compliance with those categories' norms. This is governance-by-design in action, and it produces a specific problem: the institution is reorganized through algorithmic systems that diffuse accountability, narrow contestability, and normalize managerial logics as educational common sense. That is why critique alone cannot be the endpoint. The analysis generates a practical, institutional demand: a framework capable of governing these infrastructures.

WHY A FRAMEWORK IS NECESSARY: FROM CRITIQUE TO INSTITUTIONAL RESPONSE

Up to this point, the paper has traced how AI systems in higher education operate as governance-by-design, sorting students, automating academic judgment, and expanding surveillance under the banner of efficiency, integrity, and support. Taken together, these pressure points show that AI is not simply a set of classroom tools or optional add-ons. It has become an infrastructural condition of academic life. It shapes how institutions see students, define responsibility, and exercise authority across pedagogical and administrative domains. This accumulation of effects poses a critical problem. If AI governs through design, and if its effects are distributed across multiple institutional sites, then piecemeal ethical interventions –guidelines for classroom use, technical bias mitigation, faculty training workshops, etc.– are structurally insufficient. The issue is no longer whether a particular tool is problematic in isolation, but how the institution as a whole is reorganized through algorithmic infrastructures. Critique, while necessary, cannot remain at the level of exposure. It must become a theory of institutional response.

Much of the existing discourse on "ethical AI in education" remains trapped at the scale of individual behavior. Faculty are encouraged to adopt best practices; students are advised to use tools responsibly; developers are asked to design fairer models. These efforts are not meaningless, but they misdiagnose the locus of power. As the paper's analysis shows, the most consequential decisions about AI are not made in a classroom. They are made upstream, in procurement offices, data governance committees, vendor contracts, and administrative dashboards. It is there that institutional priorities are translated into code, defaults, and thresholds that quietly govern academic life. Without a framework that operates at this institutional level, critique risks becoming repetitive rather than generative. We can continue to identify biased datasets, opaque models, and harmful surveillance, but without an account of how universities might govern differently, such critiques accumulate without resolution. The result is an impasse: we know the harms, but we lack institutional mechanisms to prevent recurrence, to enforce accountability, or to repair damage.

The framework proposed in the next section is therefore not a moral "solution" appended after the fact. It is a structural response demanded by the governance dynamics already described. Because automated sorting normalizes predictive intervention, opaque judgment delegitimizes contestation, and surveillance disciplines behavior in advance, institutions require governance mechanisms that (1) redistribute decision authority, (2) make algorithmic governance legible and contestable, and (3)

enforce accountability with repair. These requirements are not external ideals; they are what become necessary once governance has moved into design.

TOWARD EQUITY-CENTERED AI GOVERNANCE

If AI now operates as governing infrastructure within higher education, then equity must be understood as a question of governance rather than tool use. The task is not to decide whether AI should exist in the university; it already does, but to determine how it is governed, by whom, and according to which values. An equity-centered AI governance framework responds by reorienting institutional authority around three interdependent commitments: **power**, **legibility**, and **accountability**. These are sequential and mutually reinforcing: each addresses a failure that the prior analysis made visible.

Power: Reclaiming Authority over Design and Deployment

The first question raised by governance-by-design is one of power. Who decides which AI systems are adopted? Who defines the problems these systems claim to solve? And whose experiences shape the criteria by which success, risk, and integrity are measured?

In most universities, these decisions are concentrated among administrators, IT units, procurement offices, and external vendors. Students and instructors, those most affected, are typically positioned as end-users rather than co-governors. This asymmetry is not accidental; it reflects managerial logics that prioritize efficiency over deliberation. Design justice scholarship makes clear that such arrangements are not merely exclusionary; they are epistemically impoverished. When those most impacted by systems are excluded from their design and governance, institutions lose access to situated knowledge about harm, misalignment, and unintended consequences.[20] Equity-centered governance must therefore redistribute decision-making power by institutionalizing participatory mechanisms that include students, faculty, advisors, disability services, and other stakeholders with real authority – agenda-setting capacity, veto power, and resourcing. Participation must be more than consultation.

This is also a procurement issue. Vendor contracts are often treated as technical or legal matters, but they are design decisions. Equity-centered procurement would require auditability, accessibility, transparency, and alignment with equity commitments as non-negotiable conditions. Systems that cannot be meaningfully inspected or contested should not be adopted, regardless of their promised efficiency.

Legibility: Making Governance Visible and Contestable

Power redistribution collapses if systems remain opaque. Even participatory governance is hollow if participants cannot understand how systems operate or challenge outcomes. This brings the second pillar: legibility. Legibility is not mere disclosure. It is the capacity of institutional actors to understand, interpret, and contest algorithmic decisions. Opaque systems undermine equity by foreclosing contestation. When students cannot see why they were flagged “at risk,” when instructors cannot explain how a score was generated, and when administrators defer responsibility to “the algorithm,” governance becomes unaccountable. Decisions appear inevitable rather than constructed. Equity-centered governance therefore, treats contestability as essential. It requires clear documentation of data sources and decision logic, audit trails, and formal appeals processes that trigger human review with authority to override automated outcomes. It also demands institutional investment in critical AI literacy; faculty development, curricular integration, and student-facing resources; so that algorithmic outputs are treated as claims to be interpreted, not facts to be obeyed.[21]

Accountability: Governing Harm, Not Just Innovation

Power and legibility enable accountability, but do not guarantee it. Accountability requires institutions to accept responsibility for harms produced by AI systems, and to act when harms are identified. Too often, accountability is framed prospectively: ethical review before adoption, followed by silence. This is inadequate. Algorithmic systems evolve, interact with institutional practices unpredictably, and produce harms that may only become visible through use. Equity-centered governance therefore, treats accountability as an ongoing obligation: regular disparate-impact audits, mechanisms for reporting and investigating harm, and clear pathways for discontinuing systems that fail equity standards.[22]

Accountability also requires repair. If systems disproportionately harm marginalized students – through misclassification, surveillance, or epistemic exclusion– institutions must provide remedies: grade reviews, policy changes, data deletion, discontinuation of harmful tools, and support for affected students. Without repair, equity becomes symbolic.

CONCLUSION: GOVERNING THE UNIVERSITY WE ARE ALREADY BUILDING

This paper has argued that AI is no longer an external innovation entering higher education from the outside. It is an infrastructural reality through which universities already govern students, educators, and academic life. Automated sorting, opaque judgment, and surveillance-driven pedagogy are not speculative futures; they are present conditions. The question is therefore not whether universities should adopt AI, but how they will govern the systems they have already embraced.

By framing AI as governance-by-design, the paper shifts the equity debate away from individual use and technical fixes toward institutional responsibility. Equity is not something that can be retrofitted onto algorithmic systems through better training data or ethics guidelines alone. It is a matter of who holds power, how decisions are made visible and contestable, and whether institutions are willing to take responsibility for the harms their systems produce.

The equity-centered governance framework developed here does not promise frictionless solutions. Governance is necessarily slow, contested, and political. But that is precisely its value. It reintroduces deliberation into spaces that have been prematurely automated. It insists that efficiency cannot substitute for accountability, and that innovation cannot outrun responsibility.

The university is already being built through algorithms –through dashboards, risk scores, and surveillance infrastructures that shape everyday academic life. Governing this university requires more than technical expertise. It requires ethical clarity, institutional courage, and a willingness to redistribute authority. The future of equitable higher education will be shaped not by AI's capacities, but by the governance arrangements that decide what counts, who is seen, and who can contest decisions.

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THE IMPACT OF COVID-19 ON BRITISH COLUMBIA'S EDUCATION ASSISTANTS' STRESS LEVELS

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INTRODUCTION

In British Columbia (BC), Canada, COVID had a noticeable impact on elementary and secondary school students' education, with 76% of school-aged children claiming that their educational attainment and development were impaired due to the pandemic.[1] One reason for this impact was the students' sense of school connectedness, which is associated with life satisfaction and positive mental health. Students with disabilities may have been particularly affected by the loss of this connection due to school closures and the sudden inaccessibility of necessary services.

As inclusion policies have evolved in Canada, Education Assistants (EAs) have become integral to effective policy implementation. Since the 2012–2013 school year, the number of students in BC receiving special education designations has steadily increased.[2] As a result, the number of EAs has also grown, rising by 37% between 2017 and 2019.[3] Despite their central role in supporting students with disabilities, EAs' voices remain largely absent from academic literature on special education. This gap became especially apparent during and after the COVID-19 pandemic. While the impacts of the pandemic on education in BC and Canada have been widely studied, EAs have not been included in much of this research. Thus, their perspectives on how the pandemic altered their responsibilities and influenced their stress levels have been overlooked. This research aims to fill that gap by examining how the COVID-19 pandemic altered the EA role and impacted stress levels. As EAs form the cornerstone of inclusive education in BC, understanding their evolving responsibilities and pandemic-era challenges is vital to improving retention and workplace satisfaction.

LITERATURE REVIEW

Inclusion in British Columbia

The number of students with designated special education needs in BC has risen sharply, particularly among students with autism, whose enrollment increased from approximately 10,000 in 2016/17 to over 15,000 in 2019/20.[4] This rise has not been matched by a proportional adjustment in policy or resources, resulting in inconsistent service delivery across school districts.[5] The Ministry of Education's emphasis on a "continuous and flexible" process means that support strategies are heavily influenced by school-level factors such as class size, teacher availability, and administrative priorities.[6] According to Gacoin, districts often lack standardized language around class size and composition, leading to varied practices and caseloads that are shaped more by contextual limitations

than systemic design.[7] Giangreco adds that the quality of inclusivity experienced by students with disabilities often depends more on the educators' attitudes and school structures than on the students' disability.[8] This situates EAs as critical actors whose practices and experiences directly influence the quality of inclusion.

Educational Assistants

EAs are known by various titles across Canada—teacher assistants, paraprofessionals, and special education assistants—but their fundamental function is consistent: to support students with disabilities. Harber and Rao describe EAs as frontline advocates, facilitating inclusion and ensuring students' educational needs are addressed.[9] Currently the EA's role in BC is defined under the 1989 School Act as the following:

(1) A board may employ persons other than teachers to assist teachers in carrying out their responsibilities and duties under this Act and the regulations.

(2) Persons employed under subsection (1) shall work under the general supervision of a teacher or administrative officer.[10]

As evident above, the definition lacks specificity regarding qualifications and the specific student needs to be addressed, thereby contributing to the fluidity of EA's roles.

Despite the fluidity of the EA's role, studies have affirmed the value of EAs. Blatchford et al. found that EAs improve students' motivation, classroom behavior, and access to individualized instruction.[11] Similarly, Dmyterko reports that over 85% of teachers recognize EAs as having a significant and positive impact on student learning.[12] It is important to note that the ways EAs make an impact differs from EA to EA, as their tasks often extend beyond academic support, encompassing personal care, behavioral monitoring, and administrative tasks.[13] The variation in tasks became more evident when, budget cuts in 2002 prompted school districts to hire EAs as lower-wage substitutes for certified special education teachers.[14] As Surrey school board trustee Cindy Dalglish has stated, many districts rely on "warm bodies" rather than trained specialists.[15] As a result, EA's duties vary widely by school and district, leading to role ambiguity and inconsistent expectations.

EAs in BC

Roles and Responsibilities

The EA's role is highly variable, encompassing tasks such as academic support, personal care, behavioral intervention, clerical work, and social skills coaching.[16] However, research consistently highlights the inconsistency of EA duties across schools and the absence of clear job descriptions.[17] For example, Malcomson found that over 80% of EAs voluntarily worked unpaid hours to meet student needs, often filling gaps in services caused by underfunding.[18] This practice has led to the perception of EAs as stop-gap measures, reinforcing a problematic system where the least trained staff serve the most vulnerable students.[19]

Giangreco likens the use of EAs a stop-gap measure to "Maslow's Hammer"—a tendency to over rely on familiar tools while excluding other potential tools.[20] Assigning EAs to address all student needs (e.g., behavioral issues, parental concerns, teacher stress)undermines the pursuit of more effective, specialized solutions. Furthermore, as studies from the UK, such as the Deployment and Impact of Support Staff (DISS) and the Effective Deployment of Teaching Assistants (EDTA) reveal, an overreliance on EAs can negatively affect student academic performance, due in part to poor quality training, ineffective strategies for meeting student needs, and insufficient collaboration with teachers. Thus, the absence of standardized qualifications exacerbates the use of underqualified EAs to assume critical roles.[21]

Preparedness and Training

EAs in BC frequently report inadequate training and preparation time. Studies by Malcomson, Webster, and others have shown that professional development opportunities are often irrelevant, inconsistent, or nonexistent.[22] Furthermore, there is a lack of time and support for EAs to fully prepare for their role and responsibilities.[23] In addition to participating in training and preparing for classes, EAs are also expected to independently obtain information about the students they are supporting and about the class lessons. How EAs are meant to complete all their tasks without extra time or resources is not outlined in BC Ministry policy.

Stress

Although research on EA stress is limited, existing studies suggest parallels with Special Education teacher burnout. Naylor and White found that inclusive education demands were a major stressor for educators.[24] Froese-Germain's 2014 survey echoed these findings, highlighting time pressure, class size, and lack of resources as key contributors to stress.[25] EAs, meanwhile, report that their ambiguous roles, lack of recognition, and insufficient support from administration significantly contribute to workplace dissatisfaction.[26] Murdoch, a practicing EA, described the position as the "lowest paid and highest risk job" in education.[27] Testimonies like Murdoch's and studies by Malcomson underscore the urgent need for better working conditions and recognition to prevent burnout and improve retention.[28]

Educators during the Pandemic

The COVID-19 pandemic further intensified the stress experienced by educators. A Canada-wide study by the Canadian Teachers' Federation found that 97% of teachers reported increased workloads and emotional strain during the 2020–21 academic year.[29] In BC, Gacoin and Watt noted that over half of surveyed teachers received inadequate health information and experienced mental health declines.[30] A province-wide survey by UBC and CHÉOS revealed that 80.5% of teachers felt worse mentally and 66.6% reported increased workloads, with 40.3% considering leaving the profession.[31]

A recurring source of teacher stress and anxiety during the pandemic was the perceived lack of support from administrators and the government. An example of the perceived lack of government support was when Canadian teachers were not among the first people to get vaccinated despite being required to stay in school with students. However, EAs, despite facing similar or greater risks, were largely excluded from these studies, further obscuring the challenges they faced.

EAs during the Pandemic

While studies have addressed the pandemic's impact on teachers, the specific experiences of EAs was underexplored.[32] The existing research revealed that during the COVID-19 pandemic, EAs were called upon to provide extra student support and conduct mental health check ins, both remotely and in-person.[33] Although students with disabilities were prioritized for in-person instruction, EAs frequently reported that without clear guidelines or adequate protective measures from policymakers and the government they felt unsafe and unsupported.[34]

Given their proximity to vulnerable students and their central role in inclusive education, EAs deserve focused research attention to ensure that their perspectives inform future policy decisions.

METHODOLOGY

This study used a qualitative research design with semi-structured interviews to explore the experiences of EAs during the height of the COVID-19 pandemic. Interviews provided space for participants to reflect on their personal and professional challenges and allowed themes to emerge naturally from their narratives.[35]

Participants

Six EAs working in BC were recruited through purposive sampling. The group consisted of four secondary school EAs and two elementary school EAs, all of whom identified as female. Participants had a minimum of three years of experience and were working in public and private school settings during the pandemic. Their daily responsibilities varied, ranging from academic assistance to emotional and behavioral support.

Data Collection and Analysis

Data were collected through virtual and in-person interviews, each lasting between 24 and 50 minutes. Interview questions focused on the EAs' responsibilities, changes in roles due to COVID-19, experiences of stress, and perceptions of recognition. Once participants were given aliases, interviews were transcribed and analyzed using thematic analysis. Coding was conducted manually, and emerging themes were compared across interviews to identify patterns and anomalies.

RESULTS

Three primary themes emerged from the analysis: roles and responsibilities, stress, and recognition. These themes reflected the ways in which EAs' professional duties and mental health were impacted by the demands and uncertainties brought on by the pandemic.

Roles and Responsibilities

Before COVID-19, participants described their roles as clearly defined and focused primarily on providing in-class academic support to students with disabilities. However, during the pandemic, these roles changed significantly. As schools transitioned to online learning, EAs were asked to support students virtually and often without guidance. Many had to take on additional responsibilities such as troubleshooting technology, communicating with parents, and helping classroom teachers deliver and adapt content.

For additional responsibilities, Pamela noted that she was asked to support students who were not previously on her caseload.[36] As for changes in their role, once students were back at school, secondary school level EAs noted that they were asked to do supervision duties to ensure social distancing.. As well, multiple EAs described conducting one-on-one mental health check-ins online, roles that blurred the lines between academic, emotional, and social support.

Additionally, EAs reported that their responsibilities expanded to include assisting teachers more directly. Nancy remembered helping teachers create and manage Google Classrooms and troubleshoot technical problems during live classes.[37] As a result, EAs found themselves in new roles without clear expectations or adequate training, heightening the ambiguity of their positions.

Recognition

Participants reported that recognition was dependent on the group. Pre-pandemic interactions with school leadership were limited, and it did not improve during the pandemic. Ruth described administration as "not supportive or unsupportive" and simply absent.[38] At the Secondary school

level, Janet noted a lack of trust from administrators, while Ruth recounted being asked to log her work hourly.[39]

As for recognition from parents, all participants noted that it increased during the pandemic. Mabel reported daily communication to collaborate with parents to maximize student progress at home.[40] Nancy described a parent who, after experiencing working with her own daughter, emailed Nancy to acknowledge the difficult work EAs were doing.[41]

Teacher recognition also increased during the pandemic. Since collaboration became a key component to online teaching, teachers and EAs took the time to communicate with one another. Due to the feedback and support EAs would provide, teachers voiced their appreciation to the EAs. Nancy recounted how teachers expressed appreciation for her help in managing online classrooms and student engagement.[42] Despite the increase in communication and collaboration, participants emphasized that recognition was temporary. Once schools returned to in-person learning, communication and collaboration began to revert to pre-pandemic levels and ultimately, led to less voiced recognition.

Overall, recognition of EAs increased significantly during the COVID-19 pandemic, particularly from teachers and parents who depended more heavily on their support. In contrast, interactions with administration remained limited and, when they did occur, were often perceived as negative or distrustful—especially at the secondary level. As well, once schools resumed normal operations, recognition levels returned to pre-pandemic norms.

Stress

The last major theme was the increased level of stress experienced by EAs. All six participants noted a significant rise in anxiety during the pandemic. For elementary school participants, the main stressors included student disengagement in online learning and the difficulty of supporting young children remotely. Mabel shared the challenges of engaging a student who struggled with online schoolwork and the pressure to remain creative in developing strategies.[43]

Agatha and Mabel also expressed concern about the home environments of students and the limited insight they, as EAs, had into the personal challenges students were facing.[44] In some cases, EAs were tasked with encouraging students to complete assignments, all while being mindful of personal family issues that could be affecting student participation.

Among secondary school EAs, stress was amplified by the fear of job insecurity. Janet explained feeling “stuck” and overwhelmed by uncertainty.[45] At the secondary school level, EAs were asked to submit daily logs of their activities, which EAs interpreted as a lack of trust from administration. Ruth and Nancy commented that this caused a psychological toll of not knowing whether their positions would continue.[46]

Mental health resources for EAs were minimal. While generic coping information was distributed to all school staff, there were no targeted supports for EAs. As a result, participants developed their own strategies for managing stress, such as walking, connecting with friends and family, and, for some, increased alcohol consumption. Despite these challenges, most EAs noted that their stress levels decreased once schools returned to in-person learning.

DISCUSSION

This study explored how the roles of Education Assistants (EAs) in British Columbia changed before, during, and after COVID-19, and how these shifts affected their stress levels, training, and recognition. Before the pandemic, EAs’ roles were vague and inconsistent across schools, often requiring them to support multiple students academically without clear job descriptions. The onset of

COVID-19 intensified these ambiguities as EAs were assigned numerous new tasks, such as troubleshooting technology and conducting mental health check-ins, often without proper training or guidance. As explained by theories like Maslow's Hammer and Noddings' Ethics of Care,[47] the increased reliance on EAs to fill systemic gaps reflects ongoing issues in special education.

Maslow's Hammer, coined by psychologist Maslow and applied in educational contexts by Giangreco, describes the tendency to rely too heavily on a familiar tool regardless of whether it is the most suitable solution. [48] Giangreco observed that EAs are often treated as a "jack-of-all-trades," expected to take on increasingly complex responsibilities without the necessary training or professional oversight.[49] This overreliance leads to the neglect of more appropriate resources, such as mental health professionals or IT specialists, perpetuating a system that prioritizes convenience over effectiveness.

Noddings' Ethics of Care offers insight into why EAs often accept additional responsibilities. Rooted in the principle of relational ethics, Noddings argues that educators develop caring relationships with students that compel them to act in students' best interests, even when doing so stretches their professional limits.[50] EAs in this study often expressed a deep sense of responsibility toward their students, which made it difficult to refuse new tasks during the pandemic.

During the Pandemic, professional development opportunities for EAs were scarce and mainly focused on mental health awareness rather than on practical skills, leaving many EAs unprepared for the demands of remote learning. The lack of standardized training and clear job descriptions further undermined their effectiveness, particularly in sensitive areas like mental health support.

Stress levels among EAs rose significantly during the pandemic, driven by unclear expectations, increased workloads, job insecurity, and mandatory timesheets. The absence of administrative support worsened their feelings of role ambiguity and lowered self-efficacy, suggesting a need for greater empowerment by involving EAs in decision-making. When EAs are unsure of their responsibilities, they are less confident in their ability to meet expectations, which can diminish their sense of professional competence. Empowerment Theory, a theory by Rappaport, suggests that individuals feel more capable and motivated when they are given a voice in decisions that affect their work.[51] Applying this theory to EAs highlights the importance of including them in discussions about their roles, thereby increasing their confidence and overall job satisfaction.

Despite these challenges, EAs reported feeling more recognized by parents and teachers during COVID-19, fostering improved collaboration and a supportive "web of care." However, post-pandemic, this recognition decreased, and EAs noted that their role went back to supporting student academic success.

Conclusion

The study reaffirms previous findings that the EA role is fluid and ever-changing. Without a standardized job description or professional regulatory body, EAs were left to interpret and define their duties during the pandemic. This lack of clarity in their role led to a drastic change in their role, leading to heightened stress levels. Post-pandemic, although some recognition and collaboration gains persisted temporarily, most participants reported a return to pre-COVID conditions. Participants emphasized the need for clearer role definitions, more respect, and consistent professional development, echoing calls from past research.

Recommendation

The following are the recommendations to address the roles and responsibilities of EAs:

1. Standardize EA roles and qualifications at the provincial level to clarify roles and responsibilities.
2. Introduce a licensing body for EAs to promote professionalism and provide consistent training.
3. Mandate structured collaboration time between EAs and teachers to foster teamwork.
4. Increase recognition towards EAs from all stakeholders to acknowledge the importance of educational support in the education system.

These reforms would not only improve EA job satisfaction but also enhance the quality of support provided to students with special education needs. As one participant concluded, "just because EAs don't have the same amount of education as teachers doesn't mean they're less likely to be committed to doing their jobs."[52]

Limitations and Future Research

The study involved six participants, limiting generalizability. Several were personally known to the researcher, which may have introduced bias. Future research should involve more diverse participants across districts to ensure reliability and broaden understanding. Additional investigation is needed into EA training, communication with school personnel and parents, and the implications of limited qualifications on inclusive education. Such research could inform policies that better support EAs, improve working conditions, and ultimately increase recognition for the EA role in schools.

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THE DOTTED LINE: DEPICTING SELF-AWARENESS AS INTEGRAL TO TEACHER IDENTITY DEVELOPMENT

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INTRODUCTION

The education of teachers is a complex, multidimensional process. Among a multitude of priorities, teacher education programs must facilitate their candidates' development of pedagogical knowledge and skills, as well their developing teacher identity.[1] There is increasing recognition that teacher identity development is intertwined with well-being, requiring the cultivation of self-awareness.[2] At Tyndale University, a Christian institution in Toronto, Ontario, a faculty team of teacher educators developed a theoretical model that includes a dotted line to represent and situate self-awareness as a crucial aspect of developing teacher identity that can lead to well-being.[3] This paper describes the significance of the dotted line, as well as the design-based research cycles that were enacted to arrive at the decision to use this sort of line to integrate and contextualize self-awareness in the theoretical depiction (see Figure 1).

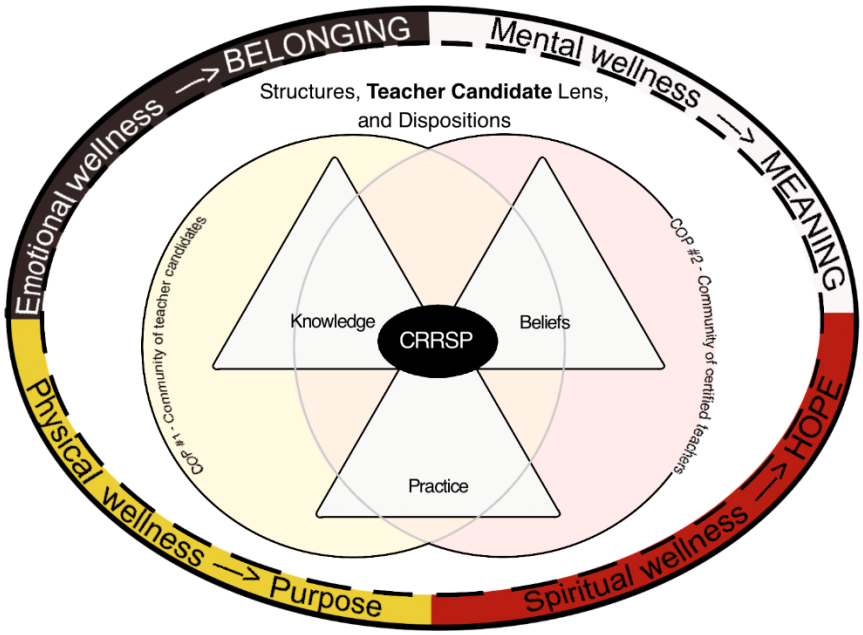

Figure 1. Teacher candidate identity model

Context and theoretical origins

The "dotted line" is one component depicted on the model of teacher candidate identity (TCI) theory, which was first published by Birch et al. with the title, Pre-Service Teacher Leader Identity in Well Communities of Practice (PTLI-WCoP).[4] To develop PTLI-WCoP theory, we first chose an existing teacher leadership model that was applicable to in-service teachers,[5] and using deductive qualitative analysis, we tested that theory and determined that it was also applicable to teacher candidates. Additional components that emerged during our analysis, which we added to our theory, included whole-person well-being, (as informed by Indigenous perspectives),[6] and culturally responsive, relevant, and sustaining pedagogy.[7]

The TCI model depicts a guiding, hopeful illustration of how teacher candidates actively grow in their knowledge, practice, and beliefs, and mature into integrated people who are well mentally, physically, emotionally, and spiritually. As teacher educators, we use the TCI model to inform overall program planning, faculty development, and course design, providing a shared model for supporting candidates' developing teacher identities. TCI theory guides our preparation of candidates to become self-aware professionals who are equipped for the joys, challenges, and complexities of teaching.

The dotted line in context

The dotted line (highlighted in Figure 2 below) illustrates a key component of teacher candidate identity theory, i.e., self-awareness, which is crucial to teacher identity development, but does not fully develop automatically. Teacher educators must apply intentional thought and specific actions to facilitate and nurture identity development among teacher candidates.

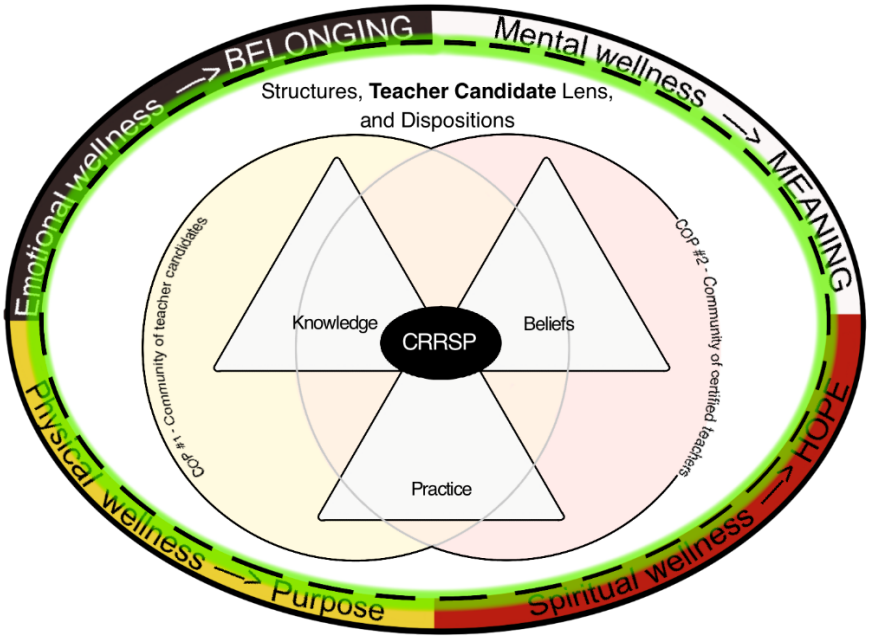

Figure 2. Teacher candidate identity model with the dotted line highlighted

The dotted line surrounds the two Community of Practice (CoP) circles that teacher candidates operate within. These two COPs can be essentially described as courses and practicum; within COP #1, candidates are enrolled in university coursework with their peers; and within COP #2, candidates are in K-12 schools, assigned to a host teacher, and completing their practicum placement requirements. The labels on each Community of Practice circle are intentionally placed.[8] The label,

"community of teacher candidates" appears fully inside the left circle to represent candidates' status as core members of the university-based community of practice, where they participate legitimately and centrally in shared coursework, norms, and routines, and where their voices and actions shape the life of the cohort. By contrast, the label, "community of certified teachers" is positioned on the boundary of the circle on the right to indicate that teacher candidates stand at the edge of that community, engaging in its practices as legitimate peripheral participants whose contributions are real, yet constrained by their novice status, lack of formal certification, and reliance on host teachers' authority.

Just inside the dotted line, representing the context in which teacher candidates engage in courses and practicum, three contextual factors are listed. Each of these factors, including structures, dispositions, and the teacher candidate lens, have an impact on developing teacher identity. Structures that affect identity development include both social and organizational structures, which can either restrict or empower the development of identity.[9] Certified teachers experience structural barriers such as limited time, inadequate funding, and scarce resources,[10] and this is true of teacher candidates as well.[11] Structures that influence teacher candidates disproportionately include financial constraints, and the systems of power in schools.[12] Each teacher candidate operates within structures in unique ways, shaped by their personal dispositions. In our original theory development research, we discovered that candidates self-identified with dispositions such as: empathetic, professional, motivated, committed, flexible, reflective, and persistent.[13] Teacher education programs do not alter personalities; rather, these core aspects of human nature are embodied by candidates as they move through teacher education, and are inseparable from their teacher identity development.[14] The teacher candidate lens is that through which the candidate views all of their experiences, and this lens is unique to a person navigating two distinct communities of practice.

Just outside the dotted line is a fourfold depiction of well-being that includes mental, emotional, physical, and spiritual dimensions, and illustrates the results of flourishing teacher identity development. This picture of flourishing is based on an Indigenous framework, described by the Thunderbird Partnership Foundation,[15] through collaboration among the First Nations and Inuit Health Branch, the Assembly of First Nations, and Indigenous mental health leaders, including Elder Jim Dumont, originally from Shawanaga First Nation.[16]

Why a dotted line?

The idea of adding a dotted line to teacher candidate identity theory emerged through a series of reflective and collaborative discussions among members of our faculty team about how to represent the significance of self-awareness within the visual representation of the theory. We explored possible graphic designs, including shapes and gradients, before recognizing that a line best illustrated self-awareness as both integrated and continuous. We experimented with variations of lines including straight and curved, solid and broken, and eventually agreed that a dotted line most effectively conveyed the idea of fluidity, growth, and connection.

The decision to use a dotted line helped us position self-awareness as a dynamic construct, with the potential for bigger or smaller spaces within the line at various times, and in different contexts. The spaces between the dots represent openness, i.e., opportunities for reflection, growth, and no barrier between what teachers know, do, and believe, and their experience of well-being. As teacher candidates actively grow, learn about themselves, and build bridges between their knowledge, practice, and beliefs, and their sense of self, the spaces between the dots in the line can grow larger, opening pathways to well-being. Large gaps between the dots in the line indicate a strong connection between teacher candidates' professional actions and well-being; more space between the dots

represents more space for reflection and integration of the understanding of the self. Small gaps between the dots in the dotted line would indicate that a teacher candidate is lacking a resilient and reflective sense of deepening self-awareness, with barriers between what they know, do, and believe, and how they are perceived.

METHODOLOGY

Design-based research

After the TCI model in its original form was created and shared, it began to function as a design artefact within the education department at our university. Faculty integrated the theory into their courses, raised questions and critiques, and discussed how easily the theory was referred to and applied by themselves and by the teacher candidates in their courses. This created cycles of application, input, and revision that are characteristic of design-based research,[17] where theory is repeatedly tested and refined in situ to improve its explanatory power and usability. Design-based research highlights the complexity of educational spaces and acknowledges that social interactions and context shape learning.[18] During faculty meetings, we shared our experiences using the dotted line in the context of TCI theory, and documented our findings related to needed changes. We recognized the need to revise both the model's illustration and the theory's content. We also discovered potential for the dotted line to serve not only as a community-based tool but also as a means for individual reflection and self-assessment.

FINDINGS

Terminology surrounding the dotted line

Our faculty team identified three terminology adjustments that would improve the clarity of teacher candidate identity theory.[19] First, the previous title included the term "pre-service teacher," and referred to the "pre-service teacher lens," because this was the terminology used by the researchers who put forth the guiding theory[20] that we used to develop our own. We have now shifted this language to "teacher candidate," which is the term we regularly use within our department to refer to our students. This terminology switch has no impact on meaning, but makes the theory, including the dotted line, easier to use and refer to in our context. Another terminology change was made to the triangles originally labelled 'competences' and 'performances.' In our context, these terms are not common, and as such, often required explaining and re-explaining. Therefore, we have shifted these two labels to "knowledge" and "practice," in reference to the professional knowledge and professional practice that teacher candidates develop and demonstrate, serving as comparable and readily understood terms in our contextual conversations and shared understandings.[21]

Indigenous understandings related to the dotted line

Another change to the depiction of the theory leaves the content intact but draws attention to the source and inspiration for one aspect. In our original illustration of the theory, the four-fold depiction of well-being (appearing just outside the dotted line) was a solid blue oval, and was not easily identified as an Indigenous conceptualization wherein the four aspects of well-being could be understood as four directions.[22] Therefore, we referred to the work of Nicole Bell, bear clan of Kitigan Zibi First Nation, who describes these four aspects, from an Anishinaabe perspective, as life-giving understandings of well-being for living "a good life," as directed by the Creator.[23] Based on Bell's shared knowledge, we added the directional colours of white, black, yellow, and red to the theory depiction, to signify that the four directions of meaning, purpose, hope, and belonging are interconnected gifts, guidance, and outcomes related to medicine wheel teachings.[24] There are many

layers to Anishinaabe understandings of holistic well-being that are not depicted in this model, but at least the colours clearly indicate our understanding of this holistic perspective as foundational to Indigenous ways of seeing, doing, relating, and reasoning.[25] As we make use of this holistic theory on teacher candidate identity development and well-being, the faculty team engages in ongoing learning from and with Indigenous scholars who prioritize whole-person learning, relationships, and connections, all of which can lead to wisdom and well-being.[26]

Teacher beliefs

When the teacher education program at our university was first accredited in 2007, its conceptual framework included Karen Hume's model of differentiated instruction, which explicitly positioned teacher beliefs as foundational to the teaching and learning process.[27] The framework recognized that teaching flows from who the teacher is and what the teacher believes. The guiding theory we used to develop teacher candidate identity theory did not include teacher beliefs as a distinct component.[28] While teacher beliefs were implicitly embedded, through discussion and reflection, we decided, based on our history and our priorities, on the importance of explicitly including teacher beliefs. We intentionally invite candidates to explore how their beliefs shape their understanding of learners, their values, and the vocation of teaching itself. Reintegrating "teacher beliefs" through adding a triangle labelled "beliefs," along with the two other triangles representing "knowledge" and 'practice," affirms this important aspect of teacher identity development.

Teacher identity

We made the decision to remove the "internal" and "external recognition" components that encompassed identity development, as first depicted by Campbell et al.[29] Valid questions were raised about the way these identity boxes related to teacher candidates, and how we first chose to depict these components and why. Although we deleted the identity boxes, we incorporated the reality of these components into the dotted line, which more broadly centers self-awareness, and reflects a shift from discrete forms of recognition toward a more integrated understanding of identity as emerging through relationship, reflection, and experience. This adaptation acknowledges that teacher candidates do not develop their sense of professional self through formal, external validation, (as in-service teachers might do), but through growing self-awareness, relational learning, and participation within university and practicum communities. This decision shifts the theory from emphasizing leadership identity to teacher identity more broadly, to better align with the developmental stage of teacher candidates. Teacher candidate identity development can absolutely include teacher leadership identity, and in many cases, it will.[30] Putting the focus on teacher identity allows leadership to emerge as one dimension of evolving teacher identity, rather than as its defining feature. We will not shy away from encouraging our teacher candidates to assume leadership as part of their developing teacher identity, because we recognize the well-established benefits of teacher leadership for schools, learners, and teachers themselves,[31] and the important role that teacher education programs can play in helping pre-service teachers develop an understanding of themselves as emerging leaders.[32]

Culturally relevant, responsive, and sustaining pedagogy

Our first publication of teacher candidate identity theory contained a culturally relevant, responsive, and sustaining approach (CRRSA) ring that encircled competences and performances, signaling that culturally informed practice was not an optional add-on but a necessary condition for ethical teacher leadership. Two issues pressed for change: confusion surrounding the A in the acronym, and the sense that confining cultural relevance to a ring around knowledge and practice underplayed its

pervasiveness across other components of the theory. In response, we updated the acronym to CRRSP, wherein the P stands for pedagogy, and is a highly familiar and well-used term within our department in relation to cultural responsiveness and relevance. We also moved CRRSP to the point of convergence where teacher candidate knowledge, practice, and beliefs meet. Placing CRRSP at the intersection of knowledge, practice, and beliefs illustrates that this pedagogical approach both influences and is influenced by these components, as well as the other components across the theory, including self-awareness. Importantly, this intersection functions within both primary communities of practice—the university campus and practicum schools—reflecting that culturally relevant, responsive, and sustaining dimensions must permeate the teacher candidate's experiences, interactions, and growth across both learning contexts.

Opportunity to use the dotted line for individual reflection

The dotted line, in contrast to a solid line, is intended to present self-awareness as an emergent, ongoing process, and not as a fixed trait or a static achievement. The dotted line suggests that development is always possible, inviting teacher candidates to continually reflect, adapt, and improve their levels of self-awareness. Conversations about the dotted line with faculty and teacher candidates led to our realization that, in addition to using the line as a program-level guide, the dotted line could also serve as a reflective self-assessment tool for individual teacher candidates.

For example, a candidate who uses the TCI model to self-assess each facet of their own well-being might draw a dotted line with large, open spaces in the quadrant of emotional wellness (belonging), while their line in the quadrant of physical wellness (purpose) might be virtually solid (See Figure 3). This type of drawing reflects the fact that a person's self-awareness in certain dimensions may be more highly developed and effectively practiced than in others. Mapping the presence or absence of self-awareness in relation to each well-being dimension, i.e., mental, physical, spiritual, and emotional, may allow teacher candidates to reflect upon and realize obstacles that are hindering their well-being or professional growth in specific areas. The diagnostic capacity of the dotted line, which can reveal both strengths and blind spots, may empower teacher candidates to take proactive steps toward overcoming challenges and achieving a more integrated sense of beliefs, values, and practice.

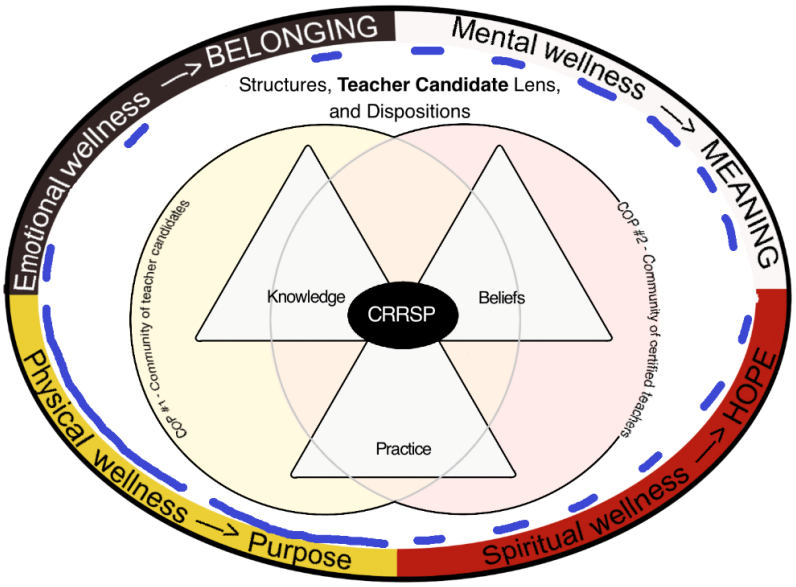

Figure 3. Teacher candidate identity model with the dotted line drawn in by an individual reflecting on their own self-awareness levels in relation to each wellness dimension

A teacher candidate who draws a completely solid line, indicating no openness or self-awareness, has little hope of experiencing a whole-person sense of well-being. Yet, if a teacher candidate is truly lacking in self-awareness to that degree, they may not have the capacity to draw a dotted line that accurately reflects how their self-understanding is related to each dimension of wellness. This creates an opportunity for dialogue wherein a teacher educator can ask prompting questions to help the candidate notice aspects of themselves that they may not have previously recognized.

CONCLUSION

The dotted line, within TCI, highlights the need for intentional, supportive structures and opportunities within teacher education programs to inspire and support growing self-awareness that is necessary for teacher identity development. The dotted line signifies that self-awareness levels, as part of teacher identity development, are relational, contextual, and continually changing. The dotted line is flexible enough to be both symbolic and functional. The positioning of the dotted line within the model of the theory is at the outside edge of the context within which knowledge, practice, and beliefs converge, in community, and lead to whole-person well-being. In both university coursework and practicum contexts, the dotted line can be used to discuss identity formation, providing candidates and faculty with a tangible artifact to observe, and a common language for discussing development in ways that impact mental, emotional, physical, and spiritual well-being.

Positioning self-awareness prominently within teacher identity development invites a human approach to teacher education, where the process of becoming a teacher is acknowledged as an inward journey, and at the same time, deeply embedded in community. For teacher educators, the dotted line offers a way to encourage reflection, relationality, and responsiveness as essential pathways toward professional identity. For candidates, the dotted line can become a guide for growth, as an image of potential barriers and openness that inform their teacher identity and practice, perhaps even beyond their teacher education program. Ultimately, the dotted line serves as a visual and conceptual reminder that self-awareness is not an end point but an ongoing goal. The dotted line is an organic component of teacher identity theory that represents our candidates' readiness for the transformative work of becoming teachers.

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ENHANCING CRITICAL THINKING IN TEACHER EDUCATION THROUGH SIMULATION: DEVELOPING PROFESSIONAL SUITABILITY – A COMPREHENSIVE REPORT FROM A NORWEGIAN PROJECT

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INTRODUCTION

Suitability assessment is a legal requirement in 38 professional education programs in Norway.[1] All teacher education programs must therefore conduct continuous assessment of students' academic, relational, and ethical suitability throughout their studies, ensuring that only qualified and professionally fit candidates enter the profession.

Teachers must handle classroom management, student diversity, critical incidents, and ethical dilemmas. Such skills require repeated practice and reflection, but short practicum periods, large cohorts, and pressure on placement schools limit opportunities to engage with complex, emotionally challenging situations. This has created a need for alternative or complementary practice formats. Simulation, rooted in experiential learning theory, provides an opportunity to bridge the gap between theory and practice through active experimentation, feedback, and reflection. It allows students to engage in authentic professional decision-making within a safe learning environment, where mistakes can become valuable learning moments rather than risks to real pupils.

Teacher Education 2025[2] introduced extended practice to strengthen coherence and quality through closer integration of theory and practice, innovative teaching methods, and stronger collaboration with the field. White Paper No. 19[3] highlights simulation as a potential form of extended practice on campus, preparing students for placement and providing experiences comparable to school practice. The National Council for Teacher Education[4] recommends campus-based activities such as simulation, role play, and case work to enhance self-efficacy and professional judgment. Together, these policy developments underscore a paradigm shift in Norwegian teacher education, toward more practice-integrated, research-informed, and reflective pedagogies that cultivate professional suitability as a developmental process rather than a static attribute.

From 2022–2025, simulation has been implemented as a pedagogical method in teacher education at two Norwegian institutions to strengthen professional suitability. A total of 754 primary and lower secondary teacher education students and 34 Practical Pedagogical Education students have participated. In addition, 52 students from the Social Educator program have completed and evaluated simulation as a learning method in their respective programs.

The authors planned and led the project, organized professional development days on suitability, and provided training in simulation methods to develop professional judgment, critical thinking, and engagement. These sessions combined theory and practice to strengthen the understanding of suitability assessment as a continuous pedagogical process. A total of 72 facilitators and role players from institutions and placement schools were trained in ethical guidelines, reflective questioning, and structured debriefing.

Scenario templates were co-developed with placement teachers, lecturers, and program coordinators, based on realistic professional challenges and ethical dilemmas such as offensive behavior, difficult student relationships, and challenging parent collaboration. These scenarios included clear learning goals, multiple decision pathways, and space for ethical reflection to enhance students' ability to navigate complex teaching situations.

The project has become a strategic initiative for promoting professional suitability, attracting national and international interest, and leading to collaborations with the UK and Australia. Four academic studies are in publication, and results have been presented at conferences and in research networks.

Through targeted competence development, collaboration with the field of practice, and research-based evaluation, simulation has proven to be a sustainable pedagogical tool for strengthening professional identity, critical thinking, and suitability. This report summarizes project experiences and provides recommendations for further development.

SIMULATION AS A METHOD FOR DEVELOPING PROFESSIONAL SUITABILITY

In 2022, the authors explored funding opportunities to secure financial support for the simulation project. A project plan and application were submitted to the Directorate for Higher Education and Skills, with a budget of 3.2 million NOK. The application described objectives, methodology, and expected outcomes, included a budget prepared with the project's financial officer, documented the academic foundation, presented a risk analysis with mitigation strategies, a project timeline, and an evaluation plan for implementation and goal achievement.

Although the project did not receive funding, valuable feedback from the Directorate improved its quality and clarified its relevance. This experience offered useful insights into the application process and enhanced the authors' understanding of how to develop project descriptions and documentation. The feedback also prompted reflection on the strengths and weaknesses of the simulation project and laid the groundwork for further development of simulation as a pedagogical method in teacher education.

The pilot study[5] examines how simulation activities support the development of professional suitability in student teachers. It engages students, campus-based teacher educators, and mentor teachers in scenarios reflecting real-world professional challenges. The interdisciplinary team argues that the project has transfer value for other professional education programs subject to suitability assessment.

Data were collected through a questionnaire mapping students' perceptions of self-awareness before and after simulations, focus group interviews after the intervention, and observations during the simulations. The research question was: How can simulation as a pedagogical method strengthen student teachers' self-efficacy and suitability?

Quantitative data provided insight into stress levels and skill development; qualitative data offered a deeper understanding of students' reflective experiences. Combined, the data give a holistic view of the pedagogical effect of simulation. Quantitative data were analyzed descriptively (Likert scale 1–7 and 0–100%), while qualitative data were analyzed thematically using a reflexive approach.

The study shows that simulation can help identify and develop key aspects of professional suitability such as the ability to reflect, communicate, maintain ethical awareness, and solve problems in complex situations. Participants reported that simulation provided a safe environment to test reactions and receive immediate feedback, strengthening professional confidence, sense of mastery, and self-understanding. However, the method requires academic awareness, careful facilitation, and adequate resources. The study emphasizes that simulation supplements rather than replaces practicum, enhancing preparedness and providing a broader basis for assessment.
Scenario templates, case studies, and statements from students, mentor teachers, and campus instructors are thoroughly presented in the study.

FIDELITY: HOW AUTHENTIC IS THE SIMULATION EXPERIENCE?

Fidelity in simulation-based learning refers to how realistically a simulation replicates the real situation it represents.[6] It concerns how credible and authentic the simulation feels regarding physical surroundings, interactions, and context. The project aimed to prepare teacher candidates for professional roles through the lens of professional suitability. This study investigated how fidelity in simulation-based learning can influence the development of professional suitability among teacher candidates.
Three datasets informed the analysis: a student survey, focus group interviews, and in-depth facilitator interviews. Findings show that material and cognitive fidelity influence each other. Material fidelity relates to the realism of the physical learning environment and equipment, while cognitive fidelity concerns how credible and intellectually demanding the scenario is. Both concepts depend on operational fidelity, tied to criteria, learning outcomes, and structure. The study concludes that strategic use of fidelity in simulations can improve suitability assessment practices, relevant for other professional education programs.
High fidelity can enhance learning outcomes by making simulations more engaging and relevant. However, lower fidelity can also be effective if the pedagogical intent is preserved. Students and faculty perceived realistic scenarios as increasing engagement and learning, with authentic facilitator feedback fostering deeper reflection.
The findings are interpreted in light of Vygotsky's sociocultural learning theories,[7] which emphasize the importance of social interaction and context in learning. This perspective supports how simulation can foster collaborative learning processes that prepare students for the complex challenges they will face in the classroom. Realistic simulations allow students to apply and demonstrate core professional competencies in safe environments. This contributes to the development of suitability by enabling students to practice skills such as communication, ethical judgment, and emotional self-regulation, while reflecting on their actions, receiving feedback, and adjusting behavior according to professional norms.
Challenges include resource limits and ensuring facilitators promote critical reflection without imposing personal opinions. Competent facilitators and structured frameworks are essential to support independent thinking and ethical awareness among students.
Strategic fidelity integration enhances assessment of students' readiness for professional roles and supports development of positive behaviors aligned with educational policy goals.[8] The study contributes to understanding simulation's role in teacher education by emphasizing practical application of theory, helping candidates improve decision-making and prepare for real challenges in educational environments. The article is under peer review at a Nordic academic journal.

ENHANCING CRITICAL THINKING

Findings from the fidelity study laid the groundwork for a new line of inquiry within the simulation project, exploring how simulation can strengthen critical thinking in student teachers and support the development of professional suitability. Critical thinking can be further developed through structured debriefing sessions that challenge participants to justify their decisions and examine the underlying reasons for their actions, thereby ensuring a more comprehensive learning experience. Critical thinking is essential for navigating complex teaching situations and making informed pedagogical decisions. In order to foster such thinking, reflection must go beyond simple discussions.[9] Encouraging teacher candidates to question assumptions, analyze alternative perspectives, and consider the consequences of their actions within simulations can stimulate deeper cognitive engagement. In this study, Bloom's taxonomy[10] is used as a framework to interpret the results, helping to categorize and analyze the depth of students' reflective thinking and higher-order cognitive skills, such as analysis, evaluation, and synthesis.

The study employs a mixed methods design, combining pre- and post-simulation surveys (N = 126) with qualitative data from focus group interviews. Findings indicate that simulation fosters deeper cognitive engagement by facilitating iterative reflection, perspective-taking, and critical dialogue in realistic professional contexts. Students described a dynamic cycle of thinking, acting, and rethinking that strengthened their ability to evaluate diverse viewpoints and question both their own and others' assumptions.

Survey data also showed a marked shift in students' perceptions of the value of simulation for developing critical thinking, while revealing a limited understanding of critical thinking before the intervention. For teacher education, this suggests that developing critical thinking requires deliberate scaffolding. Teacher educators must actively model analytical reasoning, inquiry, and reflective judgment, and facilitators must skillfully lead discussions that move students beyond superficial interpretations into deeper analysis.

The study contributes to the knowledge base for practice-oriented teacher education by investigating whether simulation can be structurally and sustainably integrated to develop critical thinking and, consequently, students' professional suitability. The article is currently under peer review at a Norwegian academic journal.

SIMULATION AND STUDENT ENGAGEMENT

The simulation project has further explored how simulation can promote student engagement within teacher education. Students, teacher educators, and practicum mentors participated in the study, which seeks to answer the following research question: How does simulation contribute to student engagement in teacher education, particularly regarding active learning, collaboration, and the development of teaching and classroom management skills?

Through semi-structured in-depth interviews with eight school-based mentors and a survey conducted among 50 students who participated in simulation-based learning, the study found that simulation contributes to increased motivation, active participation, and improved learning outcomes. Simulation provides space for reflective practice, allowing students to evaluate and adjust teaching strategies in response to immediate feedback.

Thematic analysis was guided by the four dimensions of the engagement model, behavioral, cognitive, emotional, and social,[11] and revealed that simulation influences engagement on multiple levels: Students exhibit active participation and ownership of their learning processes (behavioral), engage in deep reflection and processing of complex teaching situations (cognitive), report increased motivation and confidence through realistic scenarios (emotional), and experience a stronger sense of

belonging and professional community through collaboration and dialogue (social). The findings are discussed in light of Kolb's[12] experiential learning theory, showing that simulation promotes a reflective learning cycle that supports deeper understanding and skill development.

The study highlights simulation as an effective pedagogical tool to enhance student engagement and professional growth, and to prepare students for the complex and dynamic challenges of tomorrow's classrooms. Moreover, the findings suggest that simulation holds particular promise for extended practicum preparation by offering realistic and safe training opportunities on campus prior to field placements. This allows students to practice specific skills, test different approaches, and reflect on practicum experiences in light of professional standards and values. In doing so, simulation serves as a bridge between theory and practice, supporting more integrated and holistic professional learning.

The study will be published as a book chapter in a forthcoming anthology, currently under peer review.

CONCLUSION

Both research and practical experiences from this project indicate that simulation is an effective and pedagogically valuable method in teacher education. Simulation supports the development of professional suitability, enhances critical reflection, and increases student engagement. Through realistic practice-oriented scenarios, student teachers can rehearse classroom management, navigate challenging situations, and develop professional judgment within a safe and structured learning environment.

The project's findings suggest that simulation transfers well to professional teaching practice, contributing to the development of resilient and reflective teachers. The method is particularly useful in promoting pedagogical competence, interpersonal interaction, and awareness of professional conduct. Effective implementation requires adequate structural conditions and skilled facilitators, including thorough planning, appropriate facilities, and sufficient time for preparation and debriefing. The facilitator's role is crucial to achieving desired learning outcomes and is being further explored in ongoing research.

The question of transferability to other professional education contexts is particularly relevant, as the competencies developed through simulation, such as ethical awareness, communication, reflection, and professional judgment, are foundational across several fields subject to suitability assessment. Professions including nursing, social work, child welfare, and health and social care share similar challenges related to interpersonal interaction, ethical complexity, and the need for rapid decision-making in uncertain situations. The pedagogical principles underlying simulation related to structured reflection, debriefing, and experiential learning can therefore be adapted to support professional formation beyond teacher education. Transferability depends on contextual adjustment of scenarios, learning outcomes, and fidelity requirements, to ensure that simulations authentically reflect each profession's practice environment. At the same time, cross-professional collaboration in simulation design can promote shared understanding of ethical standards and strengthen interprofessional learning. By emphasizing transferable pedagogical frameworks rather than discipline-specific content, simulation emerges as a flexible, research-informed approach for developing professional suitability across education programs. Future initiatives should explore how such adaptation can support national efforts to ensure quality, integrity, and ethical competence in professions where suitability assessments form part of the qualification process.

The international interest in the project underscores simulation's significant developmental potential, also within a broader educational context. Future research should explore sustainable implementation, integration across phases of teacher education, and long-term effects the method may have on student

teachers' professional practice. Following students during practicum would provide valuable insight into how simulation experiences translate into real-world teaching.

NOTES

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[6.] Katie Adamson, "A Systematic Review of the Literature Related to the NLN/Jeffries Simulation Framework," *Nursing Education Perspectives* 36, no. 5 (2015): 281–91, https://doi.org/10.5480/15-1697
[7.] Lev S. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge, MA: Harvard University Press, 1978).
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PROJECT-BASED LEARNING AS A CONCEPT FOR EXTENDING PRACTICE-ORIENTED TEACHER SKILLS – PARADIGMATIC PERSPECTIVES ON ACCOMPANYING STUDENTS FROM CONCEPTION TO EVALUATION OF OWN TEACHING ON THE TOPIC AREAS GERMAN AS A SECOND LANGUAGE, DYSLEXIA AND GENDER EXPERTISE

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INTRODUCTION

In recent years, there has been a growing demand for practice-oriented teacher training, a trend that is particularly evident in Germany. In this particular context, project-based learning at universities should be viewed as a pedagogical approach for enhancing practice-oriented competencies among prospective teachers. The following article presents three different projects conducted for the benefit of students, teachers and pupils. All of the projects are unified by their conceptual essence. However, a divergence emerges in their practical implementation, manifesting in variations such as duration, the participation of students from diverse academic disciplines and universities, the subjects addressed, and the array of collaborative partners involved. The following discourse will commence with preliminary considerations based on teachers' perceptions of teaching pupils with difficulties in reading and writing, as well as challenges of working as a teacher. Following the objectives, the discourse will then proceed to present how project-based learning within teacher education can provide a solution to the numerous existing difficulties currently being experienced in educational systems. Furthermore, the implementation is reflected and the benefits for students, teachers and pupils are evaluated based on feedback and work results. The article concludes with a summary of how university teaching can further develop teacher training.

TEACHERS' PERCEPTIONS OF TEACHING PUPILS WITH DIFFICULTIES IN READING AND WRITING

The term “pupils with difficulties in reading and writing” is employed to denote those who demonstrate below-average levels of proficiency in these two fundamental skills at any point in their school career. It is acknowledged that difficulties may be both transient and persistent, and it is posited that these may be attributed to a variety of reasons. Dyslexia is also encompassed in the study,

given that approximately 5-10% of all pupils in Germany are affected. According to school performance studies, one in three children encounters challenges in reading and writing without receiving a formal diagnosis of dyslexia.[1] The study delves more deeply into teachers' perceptions, which are based on content knowledge, pedagogical knowledge and skills, and the first level of professional competence required to act accordingly.[2]

In the course of the research project, interviews were conducted in 2023 with ten German grammar school teachers who also support pupils facing challenges in reading or writing. All of them are employed as German teachers. By the paradigm of qualitative evaluation research, the data were collected via narrative interviews developed by Schütze, utilising narrative stimuli to ascertain subjective perspectives and procedures within the respondents' professional lives. Following the attainment of data saturation, the interviews were transcribed and adapted to written standard German. The analysis employed qualitative content analysis according to Mayring,[3] a technique that is regarded as both data-reducing and systematic in nature due to its adherence to specific rules and orientation towards categories. Consequently, latent structures of meaning were identified, and a combined approach was selected, incorporating both deductive and inductive categories.

The findings can be summarised with the following quote from an interview with a teacher who has accumulated a significant amount of experience over the years:

I think that my subject combination of German and English is no longer feasible in schools today because these challenges are simply increasing. And I often have the impression that I cannot help every individual child, which was the point of the question earlier. I cannot do that. How am I supposed to do that? I have forty-five minutes of class time, and I have thirty children sitting there. Of those thirty children, easily a third now have difficulties that go beyond the normal level, i.e. regular training and practice phases. And no teacher can manage that. I take that home with me, and it worries me a lot.

(T2, pos. 407-417)[4]

To summarise, it is evident that teachers encounter difficulties in meeting the needs of pupils experiencing challenges with reading and writing. Despite their best efforts, these teachers often find themselves unable to fulfil their personal and professional aspirations due to the constraints imposed by rigid institutional guidelines and framework conditions. The findings of the study indicate that teacher professionalisation also exerts an influence on teachers' insecurities, which are attributable to an insufficiency of content on reading and writing difficulties, as well as a paucity of practical relevance. The findings demonstrate a high level of generalisability about the entire pupil population, thus indicating excessive demands within various areas. However, these strategies are of particular pertinence when it comes to pupils with special needs, such as those experiencing difficulties with reading and writing.

PROJECT-BASED LEARNING WITHIN TEACHER EDUCATION

The projects' design attempts to consider the fact shown by the previously presented research project that in a globalised society characterised by growing diversity, “pedagogical challenge for teachers is constantly increasing”.[5] This is precisely where the approach commences, as the training and further education of (prospective) teachers can be regarded as the fundamental basis for the successful education of all pupils. This assertion is emphasised, for instance, by Greutmann et al.: “The decisive feature for teaching quality [...] are teachers’ professional competences”.[6] Despite the fact that such assertions have been made for an extended period, for example about the subject of gendering, there remains considerable scope for advancement with regard to a broad array of subjects and competencies among both current and prospective educators.[7]

The projects presented are intended to counteract this desideratum and can be used in a variety of ways. The range of activities extends from a one-semester mentoring programme for bachelor's students, aimed at enhancing their gender competence, to a longitudinal collaboration with master's students, who engage on a rotational basis to assist pupils with dyslexia over an extended period. Additionally, there is a long-term involvement of students from diverse disciplines, who provide support to children in the acquisition of German as a Second Language. The selection of schools is typically undertaken by private and public cooperation partners.

The objective of the projects is twofold to facilitate the development of a range of thematically linked competencies in students receptively and productively. On the one hand, students are to be sensitised to a seminar-related topic through theoretical input; on the other hand, they are to prepare for their later careers in school-based settings, based on this knowledge and develop teaching impulses or lessons in small groups, also incorporating existing materials, which are tested in different types of schools. The implementation of these units serves to provide pupils with targeted support, addressing their individual needs, while concurrently facilitating the development of their competencies. This approach, underpinned by the concept of "learning as experience", enables students to engage in collaborative reflection, guided by the university's support.[8] The projects under discussion are not only beneficial on a purely subject-related level, but also from a social point of view. This is due to the direct interaction between students and pupils, as well as the opportunity for students to experience their role as a teacher in schools before becoming a trainee teacher. This pedagogical approach has been lauded as a "highly effective learning concept" by Bartsch and Grottker,[9] who further emphasised the significance of learning situations grounded in real-life problems and the reflective engagement of practical experiences in the acquisition of competencies.[10] As the teaching and learning projects are anchored in the German teacher training programme, the focus of the content and didactics is on this subject, although students from other disciplines participate too, because the content is relevant to all subjects. This is particularly important in terms of language-sensitive subject teaching and the demand postulated by Neumann and Dobutowitsch to "consider the linguistic diversity of pupils even more in teacher training [in all subjects]", which can be seen as necessary for the topics selected in the teaching and learning projects.[11]

TEACHER TRAINING IN GERMANY

Teacher training in Germany is divided into two phases. The initial phase of the programme entails the pursuit of academic studies at a university. During this period, students undertake internships at educational institutions. Upon completion of their studies, students progress to the second phase of teacher training, known as the Referendariat. Trainees are employed within educational institutions, where they receive instruction from teaching staff and conduct lessons independently. During this phase, students receive support in the form of a study seminar, where they are provided with didactic input and, for instance, are re-taught the art of planning subject lessons or responding to disruptions. The further training of teachers who are employed by schools subsequent to the completion of their teaching internship is conducted on an individual basis.

The initial phase of teacher training at German universities is predominantly theoretical, despite an observed increase in practical components in recent years. Evaluation from seminars shows that students, at the inception of their academic pursuits, desire to work practically within the educational sector and to acquire knowledge about teaching as well as institutions. This desideratum legitimises the incorporation of further practical elements into the course of study. In current educational research, accompanied "learning as experience" is described as a "highly effective learning

concept",[12] whereby "learning situations based on real-life problems and the reflective engagement of practical experiences […] are given high priority regarding the acquisition of competences."[13]

PROJECT-BASED LEARNING: EXEMPLARY COURSES AND BENEFITS

The utilisation of practical elements in academic pursuits need not be confined to the domain of internships. Instead, the studies themselves must provide practical elements through the subjects, so that knowledge acquired directly in the seminar is linked to practical application in school. This enables students to acquire key skills for their future work as teachers in the first phase of their teacher training. Practical learning can be facilitated in a variety of ways during the course of a degree programme. Three distinct projects that have been successfully implemented at German universities are employed to illustrate the practicality of integrating learning into university courses across a range of formats.

1) Difficulties in Reading and Writing (Dyslexia)

The project has been operating successfully at Ruhr University Bochum since 2021 with Master of Education students from a range of subjects. Before commencing their duties at the educational facility, students are obliged to attend a three-day seminar, the duration of which is 14 hours. During the seminar, students are prepared for their work with pupils with difficulties in reading and writing and provided with information about reading and writing skills as well as difficulties including background information, diagnostics and intervention programmes. These skills also prove advantageous in their future work at the school.

In a school setting, students teach pupils who are experiencing difficulties with writing and reading two hours per week over a period of ten to fourteen weeks. The students are organised into small groups, with each group typically supporting between three and five pupils. In the course of their academic endeavours, students are required to maintain an independent portfolio, in which they meticulously document and reflect upon their learning progress as well as the pupils' improvements. The project is being developed and implemented in collaboration with a non-profit association based in Duisburg, and nine schools in the city are participating.

2) German as a Second Language

The project was initiated at the University of Münster in 2016 and has since been operating with great success, with approximately twenty students participating on an annual basis. Before assuming their roles at the institution, students undergo a two-day seminar programme, spanning a total of twenty hours, to ensure their preparedness for the responsibilities entrusted to them. Information regarding the work is distributed including background knowledge on immigration, teaching German as a Second Language in contrast to a first language as well as methods, and instruction is provided in the management of potential challenges using authentic case studies. After a period of approximately four months, students must also participate in a two-day workshop lasting 15 hours, the purpose of which is to provide them with further support to facilitate their work at the school. Due to some students participating for several years, the subjects taught vary and are adapted to the needs of the students. For instance, workshops have already been conducted on the management of disruptions, the utilisation of digital media, and the implementation of differentiation. Furthermore, reflection sessions are scheduled on a regular basis, which function as a medium for discourse with the group and with the lecturers.

The programme entails a period of training, during which students are expected to dedicate optional four or eight hours in a week to work in schools of various types. The objective of this training is to

assist children and young people who have recently relocated to Germany to facilitate their learning of the German language. Each student typically supports a small group of approximately four pupils. In the course of their academic endeavours, students are required to maintain an independent portfolio, in which they meticulously document and reflect upon their learning progress. In addition to the university, the Münster School Authority has been assigned responsibility for the project, making arrangements with the about fifteen participating schools as well as paying students. Students who are enrolled in a Bachelor of Arts or a Master of Education programme are eligible to participate, provided that they are usually studying German or another foreign language and have the appropriate qualifications.

3) Gender Expertise

The project has been implemented at TU Dortmund University since 2023. The structure of the programme is distinct from those offered by the universities of Münster and Bochum, adopting a weekly seminar format. At the commencement of the seminar, Bachelor of Arts students undergo training in two distinct formats. On the one hand, they acquire knowledge about gender competence and the promotion thereof in schools from a subject-specific and didactic perspective. On the other hand, students are instructed in the fundamentals of lesson planning to prepare the knowledge they have acquired for utilisation in schools. The objective of the seminar for students is to collaborate in groups to devise a lesson promoting gender competence for a grade of their choice, and subsequently to deliver this lesson in a school class. Before its implementation in educational institutions, the lesson is subjected to a preliminary trial in a seminar setting, wherein students provide feedback on its effectiveness and a revision process is stimulated. After teaching the lesson at school, a collective evaluation is conducted in a seminar setting again based on self-evaluation as well as pupils' feedback which enables conclusions to be drawn for future work. The only external partners required are schools in the vicinity of the university with whom a direct cooperative relationship is established.

To summarise, it can be concluded that there are various possibilities by which practice-oriented learning can be facilitated during university studies. The three projects presented differ in terms of their focus, objectives and target groups, but also in terms of the effort and resources required. It is important to note that thematic adjustments are entirely possible, allowing for a response to current developments in schools and teaching methods. For instance, the third project can be adapted with minimal notice in order to promote skills in the areas of democracy education, or education for sustainable development.

The practical teacher training programme has been found to offer numerous benefits, which are outlined below from the perspective of the various parties involved based on their feedback. The undertaking of a role within an educational establishment enables students to develop an understanding of their prospective career whilst continuing their academic studies. In this setting, they cultivate their pedagogical competencies within a controlled testing environment. Students have the opportunity to develop personally as well as professionally from the outset of their training.

Furthermore, the involvement of the students is advantageous for the pupils, as it facilitates the establishment of new groups and the organisation of learning in small groups on specific topics. The programmes are, in general, offered free of charge, a factor that is to the advantage of both pupils and their parents. Furthermore, the students' relationship to the pupils differs, given that the students are younger and the pupils are not subject to assessment. This results in the students assuming the role of exemplars for the pupils.

The provision of supplementary personnel assistance by students is of particular significance for the execution of long-term projects, which is of the utilisation of students as substitutes enables the

provision of supplementary services. This is of particular significance in marginal areas such as language support, writing support and reading support, since additional resources are rare despite the obligation to provide further help for pupils in these areas. The students contribute innovative ideas acquired during their university education, which in turn enables the teaching staff to acquire knowledge of new methods and materials. Evaluation suggests that practice-oriented training programmes offer considerable advantages for educational institutions and students.

CONCLUSION

The article emphasises the significance of project-based work in teacher training, as it provides prospective teachers with an insight into school life during their studies, facilitating their professional and personal development. The students consistently offer favourable appraisals of the seminars, with particular commendations directed towards the insights afforded into practical work and the preparation for future employment in schools. The article also demonstrates the numerous methods by which project-based work can be incorporated into university seminars. It is imperative to acknowledge that project-based work should be regarded as an ancillary provision, and under no circumstances should it supersede conventional seminars. Nevertheless, it is conceivable that students should also undertake seminars involving project-based work during their training to gain insights into the school system.

The cooperation between universities and schools is necessary for the successful implementation of this initiative. Both parties must adopt an approach that is receptive to synergies, as this collaboration offers numerous benefits to pupils, teachers and students. It is conceivable that the school supervisory authority could assume a role in the guidance and financing of these collaborative endeavours. These collaborations can be used in a variety of ways. For instance, the university derives benefit from the research conducted at the school. This is of significance as it is frequently impracticable or unfeasible for universities to undertake research in schools. Project-based work necessitates lecturers who have a comprehensive understanding of both systems. Applicants should have experience in university teaching and be willing to implement new seminar concepts. Concurrently, they must possess a comprehensive understanding of the intricacies of the educational system to ensure the provision of effective guidance to students.

NOTES

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[4] Jasmin Zielonka, *Der Umgang mit Lese-Rechtschreibschwierigkeiten im Spannungsfeld zwischen Anspruch und Realität - Eine explorative Interviewstudie zur Wahrnehmung der Lese-Rechtschreibschwierigkeiten im Fachunterricht von gymnasialen Deutschlehrkräften* (forthcoming).

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[6] Peter Greutmann et al., "Professionelles Handlungswissen von Lehrerinnen und Lehrern – eine Auslegeordnung," in Professionelles Handlungswissen für Lehrerinnen und Lehrer: Lernen – Lehren – Können, ed. Peter Greutmann et al. (Stuttgart: Kohlhammer, 2021), 14.

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[8] Ilse Schrittesser, Julia Köhler, and Michael Holzmayer, *Lernen verstehen – Unterricht gestalten: Lernen und Lehren in pädagogischer Perspektive* (Bad Heilbrunn: UTB, 2022), 44.

[9] Gabriele Bartsch and Leonore Grottker, "Service Learning – fachlich-konzeptioneller Kontext," in *Service Learning mit Studierenden: Ein kurzer Handlungsleitfaden*, ed. Gabriele Bartsch and Leonore Grottker (Weinheim: Beltz, 2021), 20.

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[12] Bartsch and Grottker, "Service Learning – fachlich-konzeptioneller Kontext," 20.

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A LONGITUDINAL TREND ANALYSIS OF BEGINNING TEACHERS IN ONE CANADIAN PROVINCE: FOUR YEARS STUDYING PROFESSIONAL AND PERSONAL FACTORS AFFECTING RETENTION

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INTRODUCTION

Researching the personal and professional experiences of beginning teachers is an essential endeavour when attempting to retain teachers in their chosen careers. It is a process that matters to students, parents, school administrators and districts, communities, and for those who have chosen to dedicate their lives to the pursuit of learning, the teachers themselves. Multiple factors influence teacher retention including both individual and professional conditions, which are additionally mediated by socio-cultural and governmental influences. Therefore, this discussion will explore and breakdown highlights from the longitudinal trend analysis of beginning teachers in Alberta over four academic school years (2020-2021 to 2023-2024) by examining the personal and professional factors affecting retention. It will conclude with where beginning teacher research in this province currently sees a need for more inquiry and where teachers will need more assistance to remain in the field.

Background

The Alberta Teachers' Association (ATA) is a professional organization of teachers founded in 1917 in response to teachers leaving the profession for better working conditions and pay. It remains their mandate to protect teachers at every stage in their career timeline and to ensure that school and classroom-based conditions are conducive for teaching and learning.

Starting in 2019-2020, the ATA took a more focused approach of investigation regarding early career teachers. Although surveys and research had been previously conducted, it was decided that in-depth data gathering from beginning teachers during the first three years of their career would help the organization plan and create policies for successful career launches. A large-scale survey with focus group interviews was created and has continued each year since.

Due to the time of year (early autumn), the completion rate for the first administration of the survey was rather scant with only 300 teachers completing the survey compared to the subsequent four additional years of administration (i.e., 815, 765, 901, and 968, respectively). However, the timing was rather fortuitous as immediately following, government funding cuts were announced in November 2019, and a world-wide pandemic occurred in March 2020. That meant the data gathered

in October 2019 provided baseline data for the successful launch of the longitudinal trend analysis study.

Context

Being a teacher in Alberta, Canada has historically been a respected and sought after career, but over time there are concerns that the profession is less desirable due to a declining societal respect for education and knowledge-based expertise, shifts in parental support for schools and teachers, decreased government funding for public education, and greater opportunities for females in STEM fields.

Despite these challenges, many continue to enter and graduate from pre-service preparation programs even if not all attendees find teaching positions. And while attrition is typically highest in the first five to seven years, until COVID-19, by national and international standards, the loss of early career teachers in Alberta has been historically low (e.g., with a high of 25% according to the Government of Alberta in 2011 and 2012[1] for beginning teachers, and 17% according to the 2018 OECD proxy measure of prediction of general teacher attrition[2]). Although not officially documented, it is presumed that it continues to remain low despite economic, political, and public health challenges. Like many other locations nationally and internationally, the most speculated reasons include family and personal obligations, guaranteed full-time permanent contracts elsewhere, and career changes.[3] Understanding changes in teaching conditions by way of longitudinal data analysis helps to inform policy and retention plans for stakeholders. It also contributes to national and international literature regarding early career teaching challenges in Alberta.

Research Context

Each year the beginning teacher survey is administered to the volunteer ATA member participants. The first two years of the research design included both a survey and focus group interviews. Unfortunately, focus group interviews were later discontinued due to scheduling difficulties. Participants must be in the first three years of their teaching career, suggesting there are up to three successive opportunities to complete the surveys. Each year participants are asked if they have completed a survey in the past, but only 10% of respondents annually respond affirmatively.

Survey questions are added or removed yearly based on literature searches and trends that have arisen from open-ended responses. Questions are scrutinized yearly with the intention of maintaining longitudinal value and being responsive to contemporary contexts (e.g., COVID-19, provincial government initiatives, and so forth). The intent is to predict where ATA advocacy and negotiations with the government, school districts, post-secondary institutions, and other key stakeholders may need to occur to better support early career teachers.

There are no incentives offered for survey completion. Instead, the beginning teachers are reminded that their participation is voluntary and that their opinions and perceptions are greatly valued. All responses are anonymous and confidential so there is no risk of reprisal. Only the primary investigators have access to the raw data, and any names or locations are redacted.

Theoretical Background

Prior to designing the original survey in 2019, in additional to any subsequent updates, the causal factors for why beginning teachers leave the profession within three to five years are often due to several notable personal and professional factors. Professional factors include the quality of a beginning teacher's preservice education, the presence of induction and mentoring programs in the

field, supportive school leadership, subject-specific demands, school context, and student and parent interactions.

Research has demonstrated the importance of high-quality teacher preparation programs by helping pre-service teachers feel efficacious and prepared for the demands of the field.[4] Programs that help students to feel a sense of preparedness through coursework and practicum experiences that are focused on mastery, vicarious experiences, encouragement, and verbal encouragement[5] build resilience for the field. When this is carried into their early career experiences with induction and mentoring programs that replicate the blend of theory and practice in a safe and integrated fashion, this is enhanced.[6] School leaders at the local and district level can provide support and guidance as well as create a school ethos that is conducive to building collegial and safe communication as well as mediate and build strong student and parent interactions for the beginning teacher.[7] And finally, some subject disciplines find it more difficult to attract teachers as their fields are more financially lucrative such as the sciences, and their subject areas may be more demanding for additional after school hours such as the arts.[8]

Personal factors also significantly impact early career teacher retention. They include demographical characteristics, stress and burnout, and resilience. With respect to demographics, age, gender, and family status are important characteristics with younger female teachers being most susceptible to early leaving.[9] Stress and burnout have become a growing concern world-wide which is amplified by increased workload, emotional demands in the classroom, and poor job satisfaction.[10] While teacher self-efficacy, resilience, and emotional intelligence could mediate these effects, they are not always strong enough and must be cultivated through supportive relationships within and beyond the school environment[11]. Therefore, creating conditions that develop and sustain these personal resources is essential to teacher retention and long-term professional commitment for early career teachers.

METHOD

Each year the survey is modified to reflect current issues and trends in beginning teacher research. On occasion questions are removed as they do not match topics of interest or relevance. This is especially important as the survey lengthens yearly. Ethics are also renewed each year in accordance with the University policy and the Tri-Council Policy Statement.

The instrument has increased in number of questions as follows: 41 Likert and open-ended questions with in-person focus groups in 2019-2020 (N=300); 49 Likert and open-ended questions with on-line focus groups in 2020-2021 (N=815); 54 Likert and open-ended questions in 2021-2022 (N=765); 60 Likert and open-ended questions in 2022-2023 (N=901); and 79 Likert questions and open-ended questions in 2023-2024 (N=968). Outside the scope of this discussion is the 2024-2025 administration that is comprised of 67 Likert questions and open-ended questions (N=702). This data was not collected at the time of the conference in June 2025. Participants are sent a request to participate by the ATA with a link to the survey. They are reminded that their participation is voluntary and that all responses are anonymous and confidential. Data is only seen and analyzed by the primary investigators and files are kept in an encrypted file on a password protected device.

All data has been analyzed both quantitatively and qualitatively using a variety of methods such as descriptive methods (i.e., mean, median, standard deviation), bivariate correlations, regression analysis, ANOVA, Paired Sample t-test, frequency counts, and thematic coding and analysis.

RESULTS

While the beginning teacher survey has been administered six times, the 2019-2020 and 2024-2025 data have not been included. As previously discussed, the first-year data has not been included in this discussion because of its early Fall administration. Although some of the participants may have been in their second or third year of teaching, for those in their first year, they would have limited insight into their experiences and would have difficulty responding to several categories of questions. Additionally, questions are best answered after completing nearly 10 months of teaching (i.e., September to mid-June). With respect to 2024-2025, as indicated the survey was not administered until the end of June due to provincial job action negotiations.

Each year results are analyzed not only for quantitative and qualitative outcomes, but also for noteworthy trends which typically impact professional practice and personal well-being. Some years have more intensive concerns that require Association focus and further investigation on upcoming surveys. These areas of concern are both unique to the province or may be of national or global interest. For example, since the pandemic early career teachers have indicated wanting more Administrative Support and school-based Community Support (2020-2021) in their survey responses. This has become more evident by suggesting a desire for formal Mentorship and a Work-Life Balance (2021-2022). Unsurprisingly, Burnout prevention, improving Job Satisfaction, and more Mental Health support (2022-2023 and 2023-2024) were highlighted for two consecutive years along with Administrative Support and Inclusive Education discussions (2023-2024). A less pressing trend that appeared in the data from 2022 to 2024 was a parallel, but minor decline in teacher self-efficacy. Alongside requests for more administrative support and comments regarding job satisfaction, mental health, and burnout, a new theoretical posit for analysis has emerged for 2025 (Job Demands-Resources Theory)[12] which will now be used to interpret this emerging trend. Therefore, a new question is being presented: Are beginning teachers exhibiting early signs predictive of attrition caused by job dissatisfaction, stress, and burnout? A few interesting findings may be worthy of consideration.

Resilience

Resilience is a personal factor that can prevent early career attrition. To determine if resilience is stable, it is important to observe changes over time. Therefore, resilience questions have been categorized and subtotaled as Professional Resilience (e.g., “I think it is important to regularly set time aside to reflect on my teaching practices”) and Motivational Resilience (e.g., “Positive personal relationships rejuvenate me”) for the years 2021-2022, 2022-2023, and 2023-2024. There are seven questions in each category.

Two subtotals and a Total Score were created. A One-Way ANOVA using *Total Score* was significant $F(2,2631) = 13.55$, $p < 0.001$, while a Bonferroni test for multiple comparisons found the mean value was significantly different with a drop between years 2021-2022 and 2022-2023 ($p = < 0.001$, 95%, C.I. = 1.959, 5.256); and 2022-2023 and 2023-2024 ($p = 0.005$, 95%, C.I. = -3.247, 0.095). A One-Way ANOVA was also significant between the two Subtotals of Motivational Resilience = $F(2,2632) = 15.52$, $p<0.001$ and Professional Resilience = $F(2,2631) = 13.66$, $p<0.001$. Bonferonni tests were conducted for both Motivational Resilience and Professional Resilience with a variety of differences between several of the years, however, the most interesting resulted during the Professional analyses. That is, the mean value was significantly different between years 2021-2022 and 2022-2023 ($p = < 0.001$, 95%, C.I. = 1.035, 2.792); 2021-2022 and 2023-2024 ($p = 0.026$, 95%, C.I. = 0.084, 1.813), and 2022-2023 and 2023-2024 ($p = 0.016$, 95%, C.I. = -1.792, -0.138).

Teacher Self-Efficacy

Teacher self-efficacy is a personal factor that when adaptive, aids in preventing early attrition. It is statistically and theoretically associated with resilience and helps buttress teacher confidence and job satisfaction. To ascertain possible fluctuations in efficacy, the *Teachers' Sense of Efficacy Scale* (Short Form) (TSE)[13] was first added in 2021-2022. Three Factor Scores (Instructional Strategies, Student Engagement, Classroom Management) and a Total Score were calculated for three years of administrations. A One-Way ANOVA using *Total Score* was significant $F(2,2208) = 12.79$, $p < 0.001$, while the Tukey test for multiple comparisons found the mean value was significantly different with drops between years 2021-2022 and 2022-2023 ($p = < 0.001$, 95%, C.I. = 0.511, 2.047); 2021-2022 and 2023-2024 ($p = 0.005$, 95%, C.I. = 0.792, 2.3240).

Burnout

Nine questions have been added since 2022-2023. A One-Way ANOVA on the Burnout Total Score, has revealed a significant difference between 2022-2023 and 2023-2024, $F(1,1867) = 16.395$, $p < 0.001$, indicating signs of emerging stress and dissatisfaction. Based on mean scores, the most commonly selected responses to questions such as "I feel emotionally drained by teaching", "The stress and disappointment of teaching are not worth it", and "I would leave teaching for a higher paying job", were *Infrequently* or *Sometimes*.

DISCUSSION

Based on the categories of significant responses, the Job Demands-Resources (JD-R) Theory became a suitable framework when planning for and designing the 2024-2025 survey. The emerging data from 2021-2022 until 2023-2024 indicated that some beginning teachers *could be* potentially at-risk for early career burnout or attrition. Although not alarming, burnout scores indicated a shift toward more negative perceptions, warranting closer attention moving forward. It is also important to emphasize that resilience scores, despite dropping statistically, remained reasonably strong with mean scores indicating participant selections closer to *Agree* as opposed to *Not Sure*. Additionally, the drops in mean scores have not been dramatic or consistent. The same can be said for Teacher Self-Efficacy. While there has been a slight drop in mean scores, causing a significant drop from the original 2021-2022 administration, efficacy scores remain adaptive despite showing signs of decline. This has been especially in the case of Student Engagement, followed by Classroom Management, but not Instructional Strategies. Therefore, while it is evident that early career teachers feel confident with their instructional skill set, contemporary classroom challenges may be more difficult to manage given the addition of Inclusive learning, larger classrooms, and less Administrative Support.

These additional considerations are evidenced throughout additional survey forced-choice and open-ended outcomes. Two survey responses indicate the potential for increasing discontent amongst beginning teachers. When asked if they can see themselves "being a teacher in 10 years", in 2020-2021, 71% (N = 751) of the respondents selected *Agree* and *Strongly Agree* combined, but by 2023-2024 the positive response rate had dropped to 52% (N = 917). In only four years there was a drop of approximately 17% by beginning teachers in the province. This suggests that for a variety of reasons, remaining in the classroom is no longer as desirable as it had once been.

As previously discussed, a feeling of preparedness[14] is important for beginning teachers to feel capable, efficacious, and resilient when facing challenges. When asked if they felt their "Post-Secondary Teacher Preparation program adequately prepared them to meet the realities of the current classroom", 51% (N = 709) of the 2022-2023 respondents selected *Disagree* and *Strongly Disagree* combined, and in 2023-2024 the negativity increased to 54% (N = 771). Without a clear

understanding of contemporary issues and challenges in the field, beginning teachers often start their careers feeling uncertain and ineffective. Unsurprisingly, the most common responses to the open-ended survey questions reflected struggles with work-life balance, dissatisfaction with larger class sizes, salary freezes, challenging working conditions, government funding cuts, curriculum changes, the increasing presence of AI in the classroom, and declining public respect for the profession. As a result, additional survey question categories such as *Job Satisfaction* and *Coping Strategies* are being added to the 2024-2025 survey to best track the potential for burnout.

Meanwhile, there is still much to be positive about. Since 2020-2021, several survey categories consistently indicate that the majority of beginning teachers in Alberta consider themselves "excellent teachers", they feel supported by their school colleagues, and report having positive interactions with parents.

CONCLUSION

While some negative issues are affecting beginning teacher retention in Alberta, the majority continue to report enjoying their time with students and exhibit adaptive resilience, teacher self-efficacy, and few signs of burnout. However, there are emerging signs that a shift is occurring due to provincial stressors such as government funding cuts, increasing class sizes, reduced classroom supports, and limited recognition for work-life balance and teacher mental health.

Tracking these changes is crucial to understanding how they might be addressed by the ATA. After all, the early career teacher participants appear to want to remain in the field as they enjoy their students and teaching. Trend data supports this continued commitment. The challenge appears to lie in the continually shifting landscape of external demands and limited job resources that are affecting how beginning teachers navigate early career challenges and sustain their desire to remain in their chosen career.

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WÂHKÔHTOWIN: DECOLONIZING TEACHER EDUCATION FOR ALL OUR RELATIONS

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INTRODUCTION

This paper discusses findings of a research project funded by the Social Sciences and Humanities Council of Canada that studied an Indigenous teacher education model in Saskatchewan, Canada. The Truth and Reconciliation Commission of Canada[1] found that Canada's education system attempted to "kill the Indian in the child" in order to assimilate Indigenous peoples into society. Today, teacher preparation in Canada continues to be critiqued for reifying whiteness and colonial assumptions that perpetuate inequitable experiences for Indigenous peoples.[2] To counteract this critique, the Indian Teacher Education Program at the University of Saskatchewan co-created with educational partners and Indigenous knowledge keepers the wâhkôhtowin teacher education model premised upon relationality, ceremony, language, and child-centredness.

Our research offers a number of lessons for decolonizing teacher education, including: privileging field experiences premised in Indigenous epistemologies; establishing comfort with Indigeneity; fostering the value of language and culture, and; incorporating anti-racist education within cultural learning models. Findings have the potential to mitigate intergenerational effects of colonial policies; increase educational and employment outcomes for Indigenous peoples; provide direction for successful partnerships, and; offer strategies for decolonizing teacher education.

Decolonizing Canadian Teacher Education

Canada has a tragic history of colonial education designed to assimilate Indigenous peoples.[3] Schools for First Nations children in Canada were initially designed to propagate English or French languages, western/Christian religious values, and settlement on reserves. Federally run residential schools intentionally separated Indigenous children from their families to "kill the Indian in the child" in the interests of acculturation and western settlement. The findings of the Truth and Reconciliation Commission of Canada and the increasing number of unmarked grave sites at these schools attest that thousands of Indigenous children lost their lives in these "educational" sites of disease, servitude, and violence.[4]

As provinces became the legislative authority for education in Canada, there was a shift in governance from federal to provincial schools in the 1950s and 1960s (although the last residential school in Lebret, SK did not close until 1996[5]). This shift moved most Indigenous education services outside of First Nations communities and into school districts run by settlers whose value systems were entirely

different, and who had never been educated (or had been mis-educated) about the history of colonial contact with Indigenous peoples. Racism and white privilege abounded in these schools, and First Nations peoples had little autonomy to evade discriminatory treatment and poor educational service provision. Not surprisingly, the educational outcome gap between First Nations and non-First Nations in Canada was, and remains, significant, with researchers acknowledging the following influences: (a) narrow definitions of what constitutes achievement;[6] (b) a lack of cultural responsivity in curricula;[7] (c) a lack of Indigenous teacher role models;[8] (d) lowered expectations for Indigenous children;[9] (e) a lack of linguistic sensitivity to Indigenous languages or language speakers;[10] (f) a lack of student engagement and self-confidence as lived experience and worldview go unacknowledged;[11] (g) institutionalized racism and white privilege within the school system,[12] and; (h) the effects of intergenerational trauma on families that have experienced the residential school system[13] or the Sixties Scoop[14] during which thousands of Indigenous children were scooped from their families and placed into non-Indigenous foster care. To offer one measure of the effects of these influences, a 2022 report written for the Assembly of First Nations suggested that the estimated economic benefits to Canada by closing this gap over the period of 2021-2041 would lead to a cumulative increase of $265 billion in additional GDP and leverage 1.03 million job-years for First Nations people.[15]

In 1972, the National Indian Brotherhood submitted an education policy statement to the Federal Government entitled, *Indian Control of Indian Education.*[16] The document outlined a philosophy of education advocating for parental rights, local control of education, and curriculum premised in Indigenous language and culture. It specifically addressed the need for Indigenous teacher education programs to be developed in collaboration with Indigenous communities responsive to the needs of Indigenous learners. This document was a precursor for a massive devolution of federal control of Indigenous education to First Nations communities and led to the development of Indigenous teacher education programs across Canada. It is at this juncture in Canada's history when the momentum for decolonizing teacher education in partnership with First Nations peoples became a reality.

Indian Teacher Education Program

The Indian Teacher Education Program at the University of Saskatchewan was the first Indigenous teacher education program to be created in 1972-73.[17] The program is fully accredited, leading to a Bachelor of Education degree that qualifies candidates for teacher certification in Saskatchewan. Over its 50-year history, ITEP has graduated over 3000 Indigenous teachers in on-campus and community-based programs, with Indigenous language, culture, and knowledge at the heart of teacher preparation. The program incorporates Medicine Wheel teachings that care for the spiritual, physical, emotional and intellectual needs of teacher candidates.[18] Graduates are in high demand in Saskatchewan schools as a growing Indigenous student population requires more representative and culturally affirming learning environments.

As part of these efforts, ITEP established a partnership with Greater Saskatoon Catholic Schools and the Saskatoon Tribal Council to better serve local needs. In ceremony with Elders and knowledge keepers, the partnership was named sītoskātowin which translates in the Cree language as the bindings at the top of a teepee that support the teepee poles as they create a solid foundation. While more poles (partners) can be added to the structure, they are all grounded on Mother Earth and the teachings of the territories on which they reside. These teachings created the foundation for additional partnerships with Saskatoon Public Schools and Kahkewistahaw First Nation as the model for preparing and recruiting Indigenous teachers took hold.

As "all our relations" worked together, it became apparent that decolonizing school-based field experiences needed to be prioritized so that teacher candidates, instructors, collaborating teachers and

students in classrooms could collectively learn how to decolonize thinking, teaching practice and relationships in a culturally affirming manner. The model that was developed in ceremony with Indigenous elders and knowledge keepers, led by elder Delvin Kanewiyakiho, is based on Cree thought and philosophy. It was named wâhkôhtowin, which translates as "all our relations".[19]

WÂHKÔHTOWIN: ALL OUR RELATIONS

In Cree natural law, each pole of a teepee offers sacred teachings. The three structural poles (representing our original partners) represent love, respect and humility, and set the conditions for how all those involved in teacher education efforts engage with each other. As illustrated in Figure 1, the wâhkôhtowin model is designed as a teepee grounded in the territories on which it resides; it is therefore respectful of local protocols, teachings about place and land-based education. The aerial view of the model accentuates the teachings of the circle that reflect the need for equity, and continuity. At the outside (bottom) of the teepee, the model stresses that teacher education is premised in relationality, child-centredness, ceremony, and language. Relationality includes the passing of knowledge through intergenerational relationships of learning that are reciprocal between teachers and learners who each bring gifts to the learning circle.[20] Child-centredness reifies Indigenous understandings of kinship whereby teachers accept the sacred responsibility to love and respect children considered to be spirit beings who represent the continuity of creation.[21] The inclusion of the Cree language helps teacher candidates re-think their worlds from an Indigenous perspective which aids in decolonizing practice as they re-imagine new ways of seeing the world.[22] Finally, the inclusion of ceremony helps Indigenous teacher candidates understand who they are and their relationships to the spirit beings with whom they will work. Engaging in ceremony is an act of decolonization that reclaims teachings and practices that were once suppressed.[23]

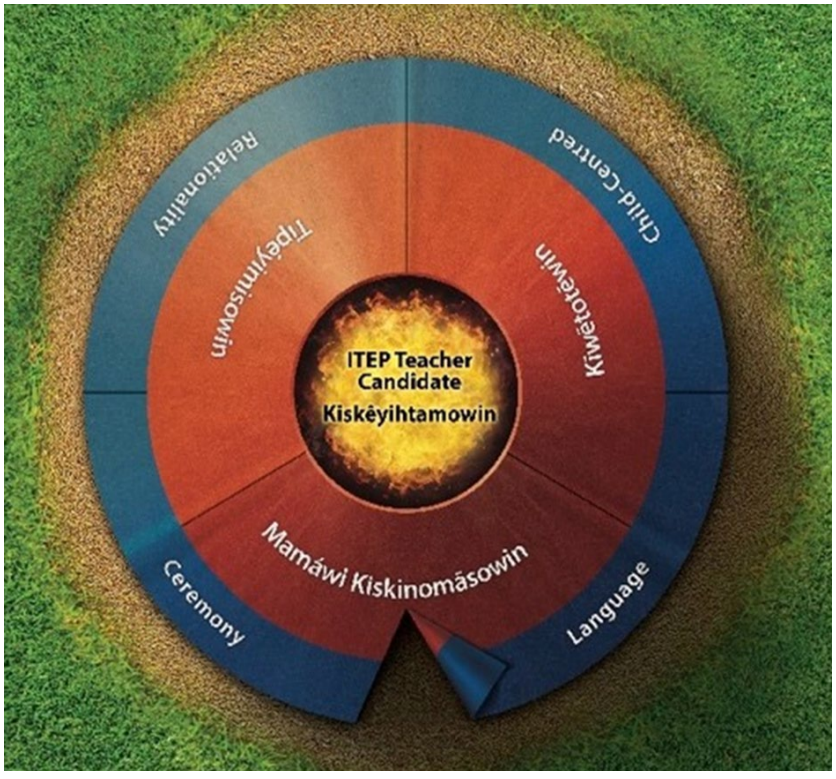

Figure 1. wāhkōhtowin: All our relations.
Reprinted with permission (Wallin and Scribe, p. 64)

tipéyimisowin: Being Free to Be Ourselves

The word, tipéyimisowin translates into being in charge of one's self, or being free to be one's self as a sovereign person. In the wāhkōhtowin teacher education model, this necessitates that schools create safe conditions for Indigenous teacher candidates to be who they are as Indigenous people, rather than having to legitimate their representation in systems that were not initially designed for them.[24] Partners work with collaborating teachers to ensure that teacher candidates are welcomed into school settings as self-determining individuals whose culture and individual gifts are appreciated in the teaching and learning environment. The kinship-oriented program (inclusive of the teacher candidates and their families) creates an environment whereby teacher candidates learn to trust that they are free to be learners as they embrace who they are as Indigenous peoples. As their identities are nurtured in the circle of care created by university and school partners, their self-efficacy and assurance as Indigenous teachers grow.

kīwētotewin: The State of "Going Home"

During their time in the program, Indigenous teacher candidates engage in programming that calls them home to Indigenous teachings, language and culture.[25] They participate in culture camps, engage in land-based experiential learning, and regularly engage with elders and knowledge keepers. Key moments in the program are acknowledged with ceremony, and teacher candidates are encouraged to share their own teachings and cultural protocols with each other, the wākōhtowin partners, and the students in classrooms where they are placed. Teacher candidates are placed in school settings that conscientiously and creatively weave Indigeneity throughout curricula, pedagogy, wellness and extracurricular activities. For many Indigenous teacher candidates whose cultures were disrupted by the intergenerational trauma caused by colonial violence,[26] this intentional call to come home strengthens their identities and confidence as Indigenous teachers.

mamáwi kiskinomāsowin: Reciprocal Learning and Teaching in Ceremony

In Cree thought and philosophy, learning is a reciprocal activity. Knowledge is not "owned" by individuals; rather, ancestral knowledge is transmitted intergenerationally between those who hold different knowledge bundles. This knowledge is shared upon the offering of appropriate protocol when the time is right or necessary.[27] As each person is equal in the circle, young ones teach old ones and vice-versa. Learning becomes a social activity where individuals learn by observing, experiencing, and doing in respectful relations to each other, the land, and other beings. This way of learning takes a cosmic view of "all our relations"—wâhkôhtowin—encouraging individuals to recognize their responsibilities to each other and to the world as they share and nurture the gifts that all bring to the circle of learning.

LESSONS LEARNED

Our team has learned many lessons along the way as the teachings of the wâhkôhtowin model lead us towards a more hopeful and agentic decolonized understanding of teacher education. However, our team and our partners remain embedded in colonial institutions of learning (post-secondary and preK-12) that often cause what Leroy Littlebear terms to be "jagged worlds colliding".[28] To that end, we continually circle back to the teepee teachings of love, respect and humility as we work to dismantle the white privilege, racism and institutional/structural impediments that inevitably arise on our journey. The following sections discuss some of the lessons learned in our decolonizing efforts.

Field experiences premised in Indigenous epistemologies

Privileging field experiences in the wāhkõhtowin model is key to fostering an Indigenous epistemology centred on experiential embodied learning. Cree thought offers a social, intergenerational epistemological stance on knowledge, premised in a language that is highly descriptive and verb-oriented.[29] Learning occurs through observation, doing, and redoing, which is core to teacher education field experiences. However, unlike western apprenticeship models, an Indigenous stance acknowledges the reciprocal opportunities for learning that develop when the teacher becomes the learner and vice versa. This continual cycle of reciprocal learning while engaged in culturally affirming reflective practice supports not only the teacher candidates but also ensures those leading the program refine their own practice and program structure.

For example, during the regular field experience courses, it is intended that students be engaged in cultural activities at the school as supportive learners to foster their development as culturally competent teachers. However, during a recent field experience course, some of the teacher candidates requested to lead a school cultural event, sharing their own teachings and organizing the attendance of elders and knowledge keepers with school staff taking the support roles. This shift in the teacher-learner role helped program leaders recognize that program leadership opportunities tended to be driven by program personnel, when in fact, teacher candidates who held knowledge bundles could, and should, be given leadership opportunities to uplift the learning of the entire group. This example led to a change in program design to be more intentional about minimizing hierarchical relationships and opening up opportunities for teacher candidates to lead learning. It also recognized that cultural knowledge is not bounded within the confines of a university program, but by building authentic relationships where program leaders and teacher candidates come to know each other in meaningful ways. As a consequence, teacher candidates are more prepared to take risks and to be proud of the knowledge they carry into the program as Indigenous people.

Comfort with Indigeneity

Canada's colonial history has caused much upheaval in Indigenous communities, leading to intergenerational trauma and dislocation from land and culture.[30] As a result, not all students who enter the ITEP program are grounded in Indigenous knowledge, traditions or protocols. Further, students hail from many Indigenous nations across Canada (and beyond), bringing with them traditions and languages different from what is common in the local Treaty 6 territory. To that end, ITEP works to create space for students who represent multiple Indigenous groups, languages, and cultural traditions, all the while knowing that student knowledge of those traditions varies significantly. It can become challenging to ensure students feel that their knowledge systems and traditions are respected and represented. Fortunately, the wâhkôhtowin model, grounded in local territorial knowledge, helps program leaders and students recognize that visitors to a territory are able to learn from and respect the cultural traditions of their hosts. However, as guests to the territory, they are encouraged to share the beauty of their own teachings and knowledge bundles so that all can benefit from collective learning without falling into the traps of pan-Indigenism or cultural appropriation.[31]

It is also the case that partners are at various levels of understanding and/or reclamation of Indigenous knowledge and identities, and not all schools are equally accomplished at implementing Indigenous programming. As an example, program leaders have had to learn to be responsive to the difficulties that arise when creating field experiences that reflect an Indigenous experiential epistemology. Concerns around system budgets and liabilities emerge whenever land-based education, ceremonial or material needs, appropriate remuneration for Indigenous elders and knowledge keepers, and moving

children beyond institutional space are advocated. All are aware that the learning is relevant, meaningful, and highly engaging—but it is also expensive, time-consuming, and needs care and attention to safety and cultural authenticity. There is a continual need for leaders to advocate for the value and quality of this kind of learning in colonial systems that are faced with austerity budgets, misunderstanding and/or resistance to change.

Valuing Language and Culture

As the policy of *Indian Control of Indian Education* stated in 1972, "unless a child learns about the forces which shape him: the history of his people, their values and customs, their languages, he will never really know himself or his potential as a human being".[32] The wâhkôhtowin philosophy is premised in a relational pedagogy that promotes language and culture. However, it takes considerable effort to access this knowledge, particularly as time wears on. Elders who hold ancestral knowledge are passing on, and language loss is prevalent.[33] Although language programs are becoming more popular as generations recognize the significance of its loss, native language speakers are becoming rare.

It is also the case that there remain tensions in how Indigenous knowledge is valued in school systems. Teachers hold credentials as professional employees that privilege them with remuneration for their expertise. However, these same systems that rely on elders and knowledge keepers to support decolonizing work undervalue Indigenous knowledge with low levels of remuneration because the knowledge holders are not certified teachers. Program leaders continually must advocate for "whose knowledge counts" without commodifying Indigenous knowledge or the people who agree to share it.

Anti-racist Education

Indigenous education is not the same as anti-racist education, even as the two must walk parallel paths. Unfortunately, the colonial history of Canada is also a racist one, stemming from the Doctrine of Discovery that was utilized to strip Indigenous peoples of property rights because they were not Christian.[34] Canadian institutions, including education, were founded on the white supremacy that underpins this Doctrine, and the Indigenous experience that resulted from it is one of intergenerational trauma, dislocation from land and culture, and racialized poverty.[35] It is therefore necessary that in addition to teaching about, and through, culturally affirming relational pedagogies, there must also include discussions about racism, privilege, and discrimination. Indigenous teacher candidates must understand not only their cultural identities, but how racism has framed their experiences in relation to the original colonizers who designed the education systems in which they are going to teach. This has been particularly important in the Saskatchewan context that maintains constitutionally sanctioned publicly funded Catholic schools. Given the residential school experience, ITEP students are often a complex blend of those whose families were converted to Christianity, those whose families have rejected Christianity, and those who are trying to balance Christian doctrine and Indigenous spirituality with a common belief in a Creator or Great Spirit. Anti-racist education provides a frame for understanding the complexities that exist in these cultural milieus so that future Indigenous teachers can recognize, reduce and redress the racism that continues to exist in classrooms.

As an example, there still remain classrooms where it is likely that Indigenous teacher candidates have difficulty completing successful field placements *because they are Indigenous.* There have been cases where the justifications for stopping a field placement are questionable, and/or there is evidence to suggest that a placement was not a safe place for the Indigenous candidate. Racism is alive and well in our society and in our classrooms,[36] and much work needs to be done with communities, educators and leaders before wâhkôhtowin will thrive in all schools. It is also a reality that Indigenous peoples

in Saskatchewan are proportionately more highly represented in communities of racialized poverty[37], and the schools these children attend often have the highest staff retention concerns, attendance issues, and lower educational attainment levels.[38] Anti-racist education matters because Indigenous teachers must be able to articulate and combat these systemic injustices while also affirming and advocating for the culture and agency of the individuals who have been shortchanged within those systems.

CONCLUSION

In conclusion, the wâhkôhtowin teacher education model is intended to address the educational gaps present in the Canadian education system by focusing on decolonizing teacher education so that Indigenous and non-Indigenous children can be taught by teachers who create safe/brave spaces for students to trouble Canada's colonial history and uplift the knowledge and value of Indigenous perspectives and contributions to our past, present and future. The model is steeped in the traditions of the territory and history of the land in which it was created and is premised in a kinship understanding of learning that sits at the heart of decolonizing efforts. It ensures that Indigenous teacher candidates are first and foremost situated in safe spaces for learning where they do not have to prove their legitimacy as learners, teachers, and Indigenous peoples. All are welcome in the circle, and all bring gifts to share in the learning. Inclusion and openness to critical questions around identity, race, and colonialism are couched within parameters of love, respect and humility to create safe spaces for learning and risk-taking. The emphasis on kinship bounded within cultural teachings and language serve to foster the confidence of teacher candidates as Indigenous peoples armed with a strong sense of identity in who they are and where they come from. With the context set for safe learning and identity development amidst a circle of care that includes instructors, ITEP mentors, school partners and Indigenous elders and knowledge keepers, the development of teaching competencies that support relational pedagogies, inclusive curriculum, and anti-racist education can be fostered. Within this framework, decolonizing practices that include land-based education, treaty teachings, and Indigenous ways of knowing, being, and doing thrive. A comment offered by one of the recent ITEP graduates exemplifies the spirit and intent of our wāhkōhtowin philosophy:

My heart has transformed, and I've come to appreciate so much about the world around me. I've realized a change within myself in the last two to four years…a change from the way I think…talk…and the way I respond to the world around me. I know it is because of the community at ITEP. It's the relationships, the teachings and the culture that has helped me find my purpose, my passion, and who I am.

It is for this reason that ITEP and its partners diligently work through the barriers that arise, the conflicts that inevitably develop, and the colonial thinking that we continually disrupt. If authentic reconciliation is to be realized between Indigenous and non-Indigenous peoples in Canada, it will be, as the late Senator Murray Sinclair noted, "education that got us into this mess, and it will be education that will get us out of it."[39]

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ATTITUDES OF LECTURERS AND STUDENTS TOWARDS DISABILITY AND INCLUSION OF DISABLED HIGHER EDUCATION STUDENTS AND THE IMPACT ON DISABLED STUDENTS' LIVED EXPERIENCES

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INTRODUCTION

This paper provides a summary of my Doctoral Research conducted in a small UK university. Adopting a critical realist framework, I investigated the attitudes of Higher Education (HE) lecturers and students towards disability inclusion and examined how these attitudes impact disabled students. Phase One employed Q-Methodology with lecturers and students to identify attitudinal patterns revealing varying levels of commitment, self-efficacy and ableism awareness. Phase Two applied Interpretive Phenomenological Analysis of interviews with disabled students, uncovering how lecturers and students contribute to a continuum of experiences ranging from 'muddling through' to 'flourishing'. The study offers recommendations for universities and broader societal change aimed at enhancing the experiences and outcomes of disabled students. The findings have international significance given that disability inclusion is the responsibility of all stakeholders in HE.

Research questions and aims

1. What are the attitudes/perceptions of lecturers and students towards disability and the inclusion of disabled students in HE?
2. How do the attitudes and behaviours of lecturers and students impact disabled students' willingness to disclose a disability, sense of belonging and success at university?
3. What are the barriers/challenges facing disabled HE students?
4. What can lecturers and students do to facilitate inclusion of disabled HE students?

Phase 1 Aim

To use Q-methodology to investigate lecturers and students' attitudes towards disability and inclusion of disabled HE students. Q methodology was chosen because it reveals people's views, beliefs and opinions.[1]

Phase 2 Aim

To apply Interpretative Phenomenological Analysis (IPA) of semi-structured interviews with disabled HE students to explore the impact of lecturers and students' attitudes on their lived experience. IPA was chosen because it involves detailed examination of personal lived experience. [2]

Reasons for research focus

As a 'disability ally' with a background as a teacher and special educational needs coordinator in mainstream primary schools, investigating inclusion of disabled students within the HE sector was an obvious focus my doctoral research. Through my review of the literature, I soon found that, despite government commitments to inclusive practices, disabled HE students continue to face barriers, particularly relating to stigma, rooted in historical misrepresentations of disability remaining intact in contemporary society. These findings are explored in my article, *Inclusion of Disabled Higher Education Students: Why Are We Not There Yet?* [3] Literature concludes disabled students are reluctant to disclose a disability due to the associated stigma.[4] Studies involving disabled HE students unearth inclusion barriers including lecturer expertise and lecturer and student attitudes.[5] Studies highlight school teachers' attitudes and self-efficacy in implementing inclusive practice as an area for improvement.[6] There are fewer such studies involving HE lecturers but they reach similar conclusions.[7]

To summarise, lecturers and students' attitudes warrants further investigation because they impact the experience and success of disabled students.[8] In addition, further research which listens to disabled students' voices is required.[9] Because there are limited studies relating to attitudes of HE lecturers and students and the impact on disabled students, my research will prove valuable in informing university policy and practice and subsequently improving the satisfaction, retention, and outcomes of disabled students.

METHODOLOGY AND FINDINGS

This study adopts Critical Realism (CR) as the philosophical and methodological framework which emerged through the work of Bhaskar out of the positivist/constructivist 'paradigm wars' of the 1980s. It uses components of both paradigms in searching for explanation and causation of social phenomena and making recommendations to address social problems.[10] CR is compatible with disability research because only by taking different levels, mechanisms and contexts into account, can disability as a phenomenon be analytically approached.[11] Uncovering the barriers faced by disabled HE students aligns with CR's focus on 'what to do' to improve people's human rights situation.[12]

Phase 1: Q-methodology investigation of lecturers and students' attitudes

5 Typical Stages of Q-methodology

The following 5 typical stages of Q-methodology were followed:

Stage 1. Development of 'concourse' (the spectrum of attitudes about the topic): informed by literature and focus group interviews with lecturers and students.

Stage 2. Identification of Q-set (statements about disability inclusion): after trialling this was refined to 45 statements for lecturers and 39 statements for students.

Stage 3. Undertaking of Q-sort: using Qmethod software[13] 31 lecturers and 52 students from a range of schools within the university ranked statements relative to one another from 'most agree' to 'most disagree' on a Q-sort grid (Figure 1).

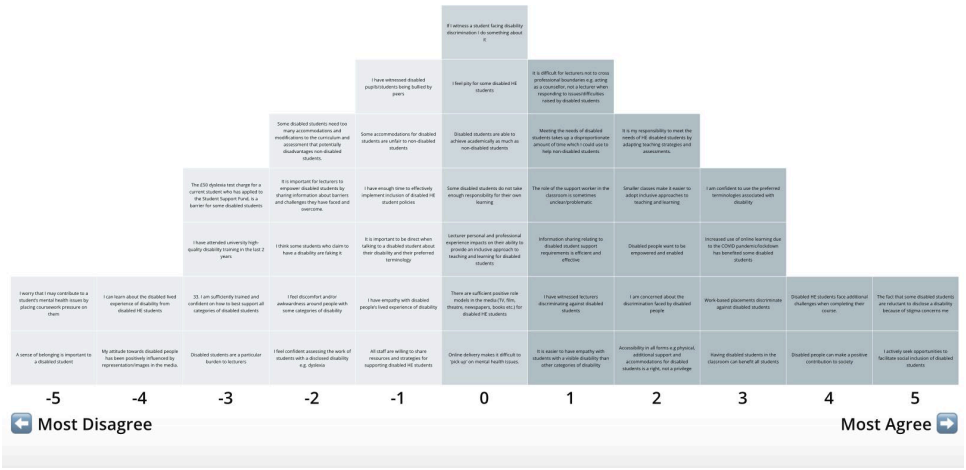

Figure 1. Q-sort distribution grid
https://qmethodsoftware.com

Participants then provided optional post Q-sort survey and interview data which involved them answering the following questions:

◦ Explain why you most strongly agree with the statements you placed at +5 on the Q-Sort grid.
◦ Explain why you most strongly disagree with the statements you placed at -5 on the Q-Sort grid.
◦ Explain your placement of statements in the middle at 0 on the Q-Sort grid.
◦ Were there any statements you did not understand?
◦ Were any statements missing from the grid and where you would place it/them?
◦ What are your views on the Q-Sort process you experienced?

This post Q-sort data enabled a comparison of individual participant prioritization and meaning. Figure 2 includes a snapshot of Phase 1 post Q-sort participant quotes.

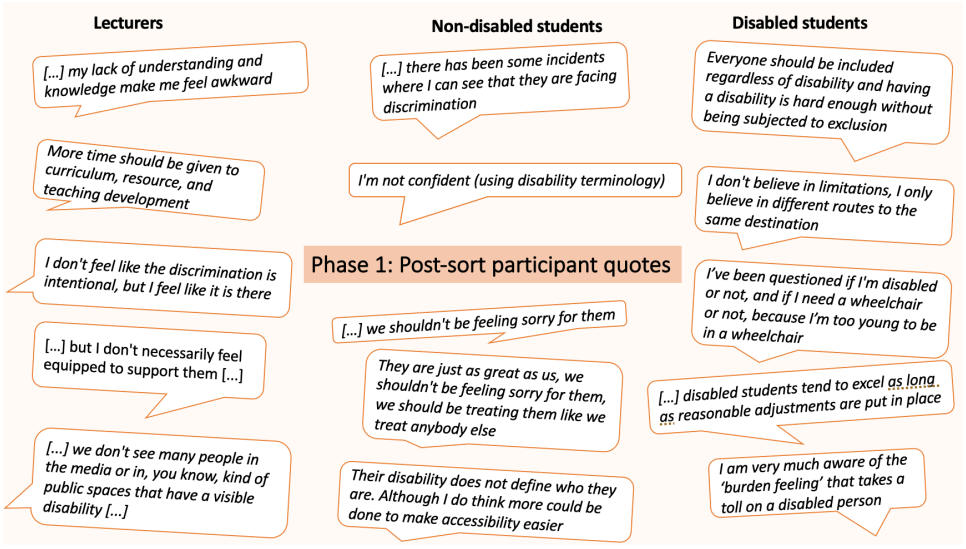

Figure 2. A snapshot of Phase 1 post Q-sort participant quotes

Stage 4. Factor analysis: software statistically analysed the data using centroid analysis followed by varimax rotation.
Stage 5. Interpretation of factors: supported by post Q-sort survey and interview data.

Phase 1 Q-sort findings

Lecturers' attitudes

Factor analysis and interpretation revealed two stances relating to disability inclusion:

- *Cautiously committed (to inclusion) with concerns* (20 lecturers): more cautious around some categories of disability and concerned about their lack of expertise
- *Confidently committed (to inclusion) with concerns* (11 lecturers): more ableism aware and confident about implementing inclusion and challenging discrimination but share concerns with group one relating to a need for training

A comprehensive account of the Q-methodology process and the above findings relating to lectures attitudes can be found in my published article, *Inclusion of higher education disabled students: a Q methodology study of lecturers' attitudes*.[14]

Non-disabled students' attitudes

Factor analysis and interpretation revealed two stances relating to disability inclusion:

- *Pro-inclusion and confidently proactive* (22 students): more understanding of ableism and confidence to challenge discrimination
- *Pro-inclusion but cautious* (11 students): more reservations relating to disability and inclusion

Disabled students' attitudes

Factor analysis and interpretation revealed only one stance relating to disability inclusion:

- *Pro-inclusion but concerned about the barriers created by ableism* (19 students)

Limitations of Q-methodology

Selection bias is a limitation levelled against Q-methodology: Q-methodology reveals the viewpoints of people who think similarly; therefore, variation in views depends on participant sampling.[15] Indeed, the lecturers and students who completed the Q-sort study are potentially interested in disability inclusion. That said, in addition to highlighting allegiance to inclusive practice, the findings illuminated viewpoints relating to concerns about disability awareness, expertise, self-efficacy and time constraints which have implications for HE policy and practice. Q-findings are not generalisable in the typical sense concerning statistical inference about a population. Instead, Q-methodology involves substantive inference, connecting generalizations about phenomenon to a population,[16] i.e. it attempts to identify what views exist on a given topic.

Phase 2: Interpretative phenomenological analysis of interviews with disabled students

Eight disabled students with a range of disabilities from a range of schools within the university were asked questions relating to disability disclosure, impact of lecturers and students' attitudes, experience of a sense of belonging and challenges, views on media representation and experience of inclusion in HE compared to earlier stages of education.

Each interview transcript was analysed in full, sequentially, and involved detailed and close engagement with each participant's account before developing themes across cases as indicated in the 7 steps in IPA analysis.[17]

7 steps in IPA analysis

Step 1 involved *Reading and re-reading* the transcript.

Step 2, Exploratory noting involved indicating in plain text 'descriptive' notes that related to objects, events, locations, processes etc., underlining 'linguistic' notes relating to pauses, laughter, tone and

hesitations and using italic text to indicate '*conceptual' notes* relating to the participants and my understanding of what was being said.
Step 3, Constructing experiential statements (ETs), involved shifting from working with the transcript to working with the exploratory notes.
Step 4, Searching for connections across experiential themes involved searching for reoccurring words, ideas, metaphors or emotions, i.e., developing emergent themes.
Step 5, Naming PETS and consolidating and organising them in a table: I gave each cluster a name, a personal experiential theme (PET) which best described its characteristics.
Step 6, *Continuing the individual analysis of other cases* involved repeating steps 1 to 5 for the other participants.
Step 7, working with PETs to develop group experiential themes (GETs) across cases: I was mindful that the aim is not to present a 'group norm' but instead to understand and explore the points of convergence and divergence among the cases. Searching for convergence and divergence across the PETs led to the identification of the four GETs in Figure 3. Figure 4 includes examples of participant quotes relating to each GET.

Phase 2 IPA findings

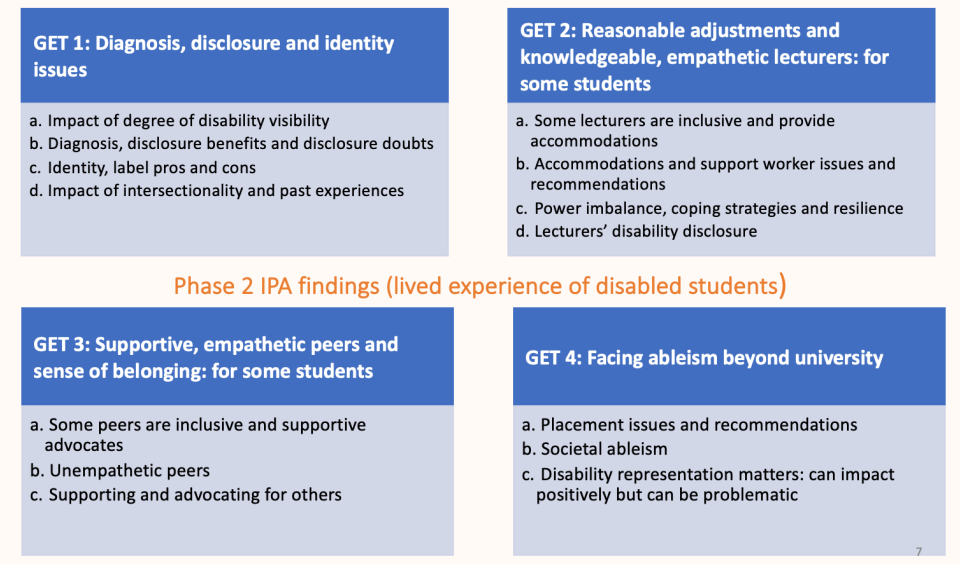

Figure 3. Phase 2 group experiential themes (GETs) and sub-themes

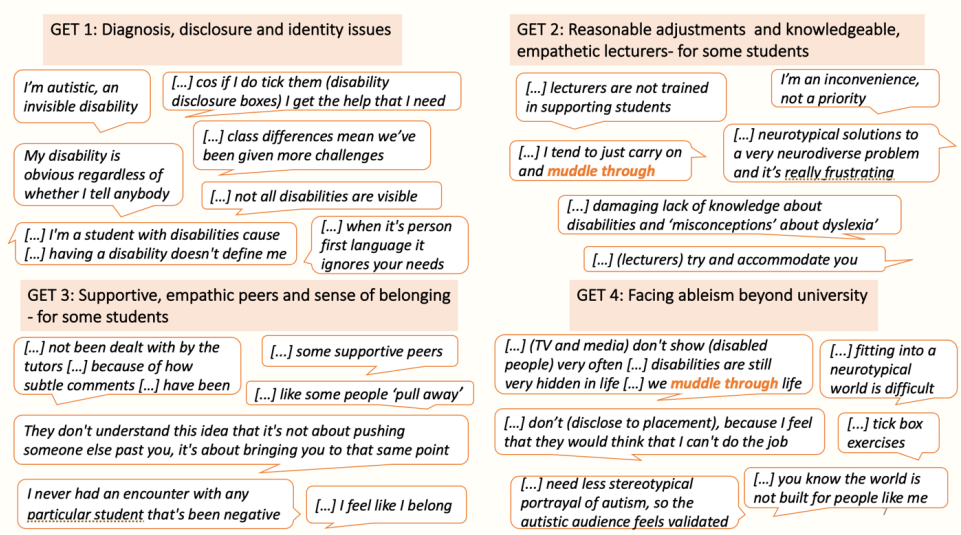

Figure 4. A snapshot of participant quotes relating to each Phase 2 GET

Limitations of IPA

Smaller sample sizes inevitably raise questions concerning representativeness and transferability of findings. However, because the research is a case of a wider phenomenon the reader may evaluate the transferability of conclusions, drawn in the context of this study, to other HE Institutions (HEIs). IPA relies on the participant being able to explain their understanding of their experience through language thus relying upon the representational validity of language.[18] To mitigate this, prompts and probes were used differently according to the linguistic responses of the participants. IPA relies on the researcher's interpretation of the interview data. Transparency was demonstrated by identifying my positionality and by outlining clearly the procedures followed for gathering data and interpreting findings in the thesis. In Reflective Boxes I logged reflections on my thoughts, feelings, interests, beliefs and values to bring these to my conscious awareness and to consider the possible impact on the research.

DISCUSSION

What follows is a reflective summary of the answers to the research questions:

1.What are the attitudes/perceptions of lecturers and students towards disability and inclusion of disabled students in HE?

Regarding the lecturers, two stances about inclusion emerged from factor analysis and interpretation of thirty-one lecturers' data: cautiously committed with concerns (20 lecturers) and confidently committed with concerns (11 lecturers). Both groups are committed to inclusion of disabled students. However, the majority group is more cautious and concerned about their expertise. The second group is more ableism aware and confident about implementing inclusion but shares group one's concerns about training needs. In answering question 1 the study has highlighted that whilst lecturers are committed to the inclusion of disabled HE students there is a degree of variation in ableism awareness, expertise and confidence in meeting the needs of disabled HE students.

Regarding the non-disabled students, analysis of thirty-three non-disabled students' data revealed two views: pro-inclusion and confidently proactive (22 students), and pro-inclusion but cautious. Both groups share concerns relating to discrimination faced by disabled students. However, the minority group (11 students) are more cautious about disability inclusion. The second group are more

empathetic, ableism aware and confident to challenge discrimination. As with the lecturers, the study has highlighted that whilst students are committed to the inclusion of disabled HE students there is a degree of variation in ableism awareness which potentially impacts the social inclusion and sense of belonging for disabled students.

Regarding the nineteen disabled students, analysis of the data uncovered one perspective: pro-inclusion but concerned about ableist barriers. This highlights disabled students' experience of ableist barriers which potentially impact their university experience.

2.How do the attitudes and behaviours of lecturers and students impact disabled students' willingness to disclose a disability, sense of belonging and success at university?

In answering question 2 the study has highlighted a variation in disabled students' experiences at university with some students reporting positive experiences but the majority reporting negative experiences. In Phase 2 IPA analysis of interviews (questions informed by Phase 1 findings) with 8 disabled students revealed lecturers' and students' attitudes firstly contribute to diagnosis, disclosure and identity issues for disabled students. For some students, lecturers and students' attitudes facilitate disclosure and positive identity while the opposite is true for others. Secondly whilst some disabled students experience reasonable adjustments and knowledgeable, empathetic lecturers which impact positively on their sense of belonging and achievement at university, some do not. This creates challenges and results in disabled students 'coping' and struggling instead of thriving at university.

Similarly, whilst some disabled students experience supportive, empathetic peers which impacts positively on their sense of belonging, some do not. Fourthly disabled students highlighted concerns relating to facing ableism beyond university including worrying about university placement attitudes and approaches to inclusion and future employment. The Phase 2 findings revealed a wide variation in disabled students' satisfaction levels. A surprise finding was that lecturer disability disclosure is not always perceived by disabled students as helpful with some students stating that it can actually be unhelpful. It must be acknowledged that there are a number of variables also impacting the experience of disabled students in terms of sense of belonging and success at university including type of disability together with intersectionality variables including personality, family composition, gender, race, sexuality etc.

3.What are the barriers/challenges facing disabled HE students?

In answering question 3 the study has highlighted that a major barrier facing disabled students is a variation in lecturers' expertise particularly relating to different disability profiles and confidence in meeting the needs of disabled students. A paucity of ableism awareness on behalf of lecturers and students is another barrier faced by disabled students. The mature disabled students in this study all reported 'muddling through' without a diagnosis for their ADHD, autism or dyslexia in the earlier stages of their education because it was a common experience not to receive early diagnosis a few decades ago. Spending early education without reasonable adjustments leaves a lasting impact on self-esteem and self-identity which in turn can impact academic achievement. Phase 2 of the study also uncovered challenges some disabled students face relating to a lack of communication between lecturers and Disability Service and not having reasonable adjustments provided. Phase 2 of the research also revealed that some disabled students experience unemphatic lecturers resistant to providing reasonable adjustments lecturers and students. Furthermore, some students experience anxiety relating to the placement component of their course. Some students also expressed concerns relating to life beyond university relating to employment. Insufficient positive disability representations and media representations which perpetuate stereotyping which in turn impacts attitudes are also a barrier to HE disabled students' sense of belonging.

4. What can lecturers and students do to facilitate inclusion of disabled HE students

The answer to question 3 highlights the barriers created by lecturers and students which need to be dismantled and as such goes part way to answering question 4, What can lecturers and students do to facilitate inclusion of disabled HE students? In answering question 4 the study has highlighted some positive examples of 'what works' in terms of contributing to a sense of belonging and success at university for disabled students. Some students reported experiencing empathetic, ableism aware lecturers and students in terms of facilitating inclusion of disabled HE students. Becoming ableism aware for lecturers and students including awareness of the impact of disability representation may not relate directly to teaching in HE but can indirectly impact lecturers' and students' approach to inclusion. This disability awareness is an important feature for all educators across all stages of education starting from Early Years through to Primary to Secondary to Further Education and Higher Education. The benefits of having their right to reasonable adjustments in terms of curriculum and assessment accommodations met by trained lecturers were reported by some students as facilitators of inclusion. Relating to 'what works' for disabled students studying courses with a placement component, effective communication processes between the university and placement alleviated anxiety for some students. Students indicated implications to address issues relating to graduate employment for disabled students.

CONCLUSION AND RECOMMENDATIONS

This original study makes a useful contribution to research and the understanding of the inclusion of disabled HE students. It will be of international interest because disability rights and the inclusion of disabled students are global themes. The investigation contributes key insights into HE lecturers' and students' attitudes and commitment towards disability inclusion, revealing varied levels of empathy, expertise and understanding of disability issues. It exposes the ways in which lecturers and students contribute to the spectrum of experiences reported by disabled HE students ranging from 'muddling through' to 'flourishing'. The study's recommendations aimed at dismantling 'ableist context, culture and system of HE' [19] echoed by the Disabled Students UK 2023 *Access Insights Report*[20] and Evans et al's *Review of what works to reduce equality gaps for disabled students in higher education*[21] include:

- Mandatory training informed by disabled students who should be paid for their expertise:
- disability awareness and unconscious bias training for staff and students
- training for staff on anti-ableist pedagogy including universal design for learning (UDL)
- Allocation of time and resources to implement inclusive approaches
- Staff sharing expertise and resources
- Smaller classes
- Greater communication between academic staff, Disability Services and Placement providers
- Positive disability representation and the use of inclusive language on university material
- Further research aligned with HE disabled students' lived experiences relating to 'what works' and how the media can do more to promote positive attitudes towards disability.

To conclude, this study demonstrates strategies for universities which reject ableism and positively impact disabled students' university experiences and outcomes. Crucially, this unique study's novel and rigorous methodology contributes valid evidence-based recommendations for HEIs and for societal changes which enable disabled students to flourish at university and feel a sense of societal belonging.

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MOVING DIALOGUES: ACCESSIBILITY AS A FORCE FOR CREATIVE PRACTICE AND RESEARCH IN ART AND DESIGN EDUCATION

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INTRODUCTION

"...how can thought shake off its model, make its grass grow- even locally, even at the margins, imperceptibly. Thoughts: which would not be closed on recognition, but which would open to encounters and would always be defined as a function of an Outside, which would be defined in the movement of learning and not in the result of knowledge, and which would not leave it to anyone, to any Power, to 'pose' questions or to set problems." (Deleuze and Claire Parnet, 1977:18)

The Transformative Access Project in Art and Design Education is an ongoing collaboration led by Maria Belén Ordóñez a queer ethnographer and faculty member and Laura Thrasher an Educational Developer at the Centre for Learning and Teaching at Ontario College of Art and Design University (OCADU) in Toronto.[1] Working together with an emerging network of faculty members, students, and staff, the project seeks to develop creative practices and pedagogy dedicated to transformative access in art and design education in Canada.

Transformative Access

Transformative access, as theorized by Brewer, Selfe & Yergeau,[2] is a counterpoint to prevailing understandings of access as accommodation within post-secondary education contexts. Whereas accommodation is a temporary and individual change or "retro-fit,[3] "transformative access is a change "radical enough to rewrite the rules supporting a particular arrangement of culture".[4] In our shared context, as faculty and staff of an art and design university, we are familiar with the prevailing arrangements of accessibility as accommodation but are not satisfied by these arrangements. We sensed that art and design pedagogy might offer affordances for more experimental approaches to accessibility. The Transformative Access Project sought to surface the undercurrents of accessibility at work in art and design pedagogy and create new configurations of access. What else might accessibility become in art and design education? How can emergent propositions of knowledge creation that decenter neurotypical ways of knowing be mobilized? To activate these questions, we invited a group of five faculty members to join us in a 7- month exploration of transformative access. Each participant was invited and supported to create an activation or intervention that would bring together accessibility, art, and alter-pedagogies, with specific attention given to how neurodivergence and disability multiplies what counts as knowledge in an art and design context. Our work together

culminated in a two-day in-person unconference called the Transformative Access Unconference (TAU), held in May 2025 at OCAD U. On the first day of the unconference, participants activated their projects. We invited a small group of students and community members to partake in the unconference.[5]

This paper animates reflections that came out of this event. Together we speculated to offer a creative provocation for decentering neurotypicality and spatial ways of knowing, and to underscore the generative value of experiencing the classroom as an event-site. The aim of the unconference was to lay the groundwork for the creation and dissemination of resources and materials designed for accessible pedagogy in creative atmospheres. On the second day of the unconference, we gathered as a smaller group and spent time watching, listening, and discussing the documentation.

On the surface, we moved our observations between unconference, conference, and this paper.[6] It is unsurprising to share different spaces of knowledge in the context of academia: presenting and receiving ideas, asking and responding to questions – highlighting the value of the exchange or, at minimum, acknowledging the questions that prompts us to further articulate why our work matters. These are familiar and generative forms of research dissemination in academia; however, in the context of the Transformative Access Project and given our interest in decentering neurotypical ways of knowing, we wanted to explore terms and spaces of dissemination as documenting and of building a research-creation site for thinking and sensing together differently.[7] The open lives here.

Drawing on Gilles Deleuze and Claire Parnet's notion of the Outside as "*defined in the movement of learning and not in the result of knowledge,"* our approach to this project is untethered from institutional checklists that determine what falls within or outside the bounds of neurotypicality and ability. Instead, we sought to underscore the value of accessibility, not as a solution to corporeal and intellectual exclusion, but as valued and necessary tendencies for other ways of thinking and being in the world. [8]

In her 8-minute 2007 video essay, *In my Language,* Amelia Baggs highlights the neurotypical limitations of communication that privilege what is recognizable as "language".[9] In the "explanation" part of the video essay after moving through her apartment and interacting with objects, touching, tasting, humming and moving, she says, "I can sing along with what is around me...my language is not about designing words or even visual symbols for people to interpret. It is about being in a constant conversation with every aspect of my environment". Baggs was a non-speaking autistic writer and activist who passed away in 2020 and used a communication device to describe their experiences in institutional care settings. Through their participation in disability justice movements, Baggs insisted that advocacy and knowledge creation need to include all autistics, and not only the ones who can speak with words. It is with this expansiveness of knowledge creation and pedagogy that we developed the framework for the unconference, inviting participants to follow a line of thought to see where care and sensory perceptions might go.

Bodies reach in concert with a world that envelops me at once, where sensing blurs the categories by which thought comes to exist as thought. What thought rests in a droplet of water when you ask me if I hear the rain? Do you hear the rapid and fluid swooshes of such thoughts, the wayward droplets that plunk and then pitter-patter from a distance? Do you sense me dancing between words and rivers, while dodging the order-words that have come to dominate academia? Adam Wolfond writes, "the rain is the atmospheres of using ideas that really fall quickly, and I am the person who rains on the words managing to sprout the seeds of meaning.[10]"

Figure 1. Ribbons of Life

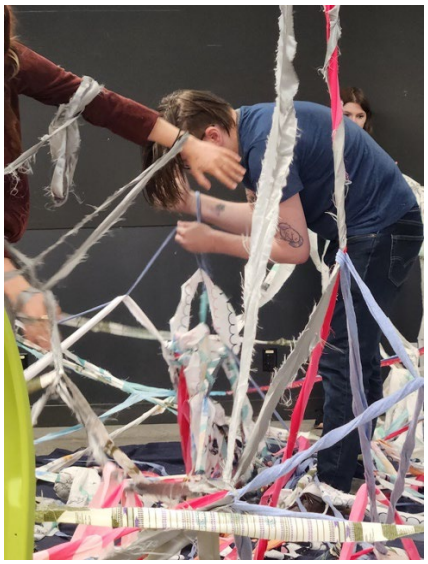

Figure 2. Ribbons of Life (undone)

In "Ribbons of Life: Embodying Ecological Awareness through Movement and Sound", led by multimedia artist Teresa Ascencao, students, artists, and faculty gathered in a circle, sheltered from the rain yet attuned to its language. They began to read aloud from the works of writer-academic Billie-Ray Belcourt from Driftpile Cree Nation and artist-teacher Tyler Pennock from Sturgeon Lake Cree Nation. This was followed by a collective creation exercise, where participants worked with tactile bundles of long fabric strips, intentionally designed for undoing. As they worked, Belcourt's poem "What do we mean by the language of rain?" lingered in the quiet moments between gestures, setting a tone for collective exploration that echoed the fleeting quality of rain and sound, Belcourt writes "the language of rain is the language of ephemerality."[11] As participants worked with the fabric, their own words and movements became companions in a shared cadence, tuning them to the recorded sounds, and rhythms of rain and trees. Through collective movement, they stretched the fabric strips across part of the room, forming a web-like shelter – a string figure, a cat's cradle.

The first day of the unconference led us into sessions that were dedicated to co-creating knowledge with those who showed up, and with emergent modes of thinking and sensing. To sense in these instances was to hold thought-becomings in an undercommons.[12] This is the undercommons of senses becoming-thought, of a pedagogy without dominant perceptions that one sense encompasses universal understanding, experience, and interpretation. What senses come to configure a knowing of the world does not necessarily fall into a compartmentalization of sense making because there are as many configurations of sensing life as there are compositions of matter. For example, colour may be akin to a sound frequency, identifiable as a specific sound note. Color, after all, is a frequency of visible light, ranging from 430 trillion Hertz (which is red) to 750 trillion Hertz (which is violet).[13] Yet, many people don't read musical notes when identifying colour, nor is perfect pitch expected or required in this context.

Paradoxically, students are still assessed by separating senses based on dominant modes of literacy, communication, and interpretation. These classificatory ways of being in the world- sight and light attached to eyes, but not sound-eyes-light, dominate education systems where knowledge is forced to sense neurotypically, what Brian Massumi aptly describes as "gridlock".[14] These dominant designations also inform research that veers towards the normalization of needing to know. There is the potential to undo this mode of thinking when sound for example leads the senses without promises

of utility, instead, leaving sounds suspended as wonderment. Sounds become a language of theory, as unattended rhythms that we focused on and that attached themselves to other thoughts- like the role of desire in research, for example, and what it might mean to collect sounds as desire lines for thinking together. At the unconference, community activist, designer, and researcher Michelle Gay activated the project "Experiencing and Annotating the City Sonically" with sound gatherers and former OCAD graduate students Casper Sutton-Fosman and Juliana Gagne.

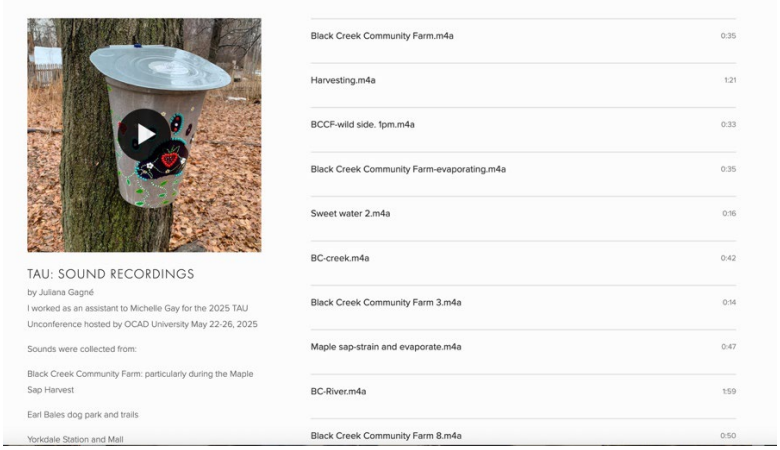

Figure 3. Screenshot of collected sounds on Juliana Gagne's blog [15]

Together, they tuned into marginal sounds- the gentle gurgle of water in the sewer grates, the resonant hum of a maple sap harvest- shifting focus from sound as a carrier of information to an awareness of sonic textures that often go unheard in our visually dominant forms of environmental attunement. This sonic exploration revealed new ways of "thinking differently/critically about urban and built forms and the impact on humans and more-than-humans," as Michelle noted at the unconference. The sound gatherers narrated their experiences of capturing the soundscapes of their neighbourhoods, without editing out the indecipherable audible textures that came, for example, from a phone in a pocket, or the sound of wind against the stride of a moving body. Sounds aesthetically rub up against the world.

Figure 4. Outdoor School, led by Amish Morrell and Diane Borsato

Educator, curator and writer Amish Morrell along with artist and performance studies scholar Diane Borsato, led the Outdoor School[16] near the Don River in Toronto on the second day of our unconference, which stretches 38 km and flows into Lake Ontario. Walking 5 km along its paths with a group of students, they used these routes as points of access, or in Morrell's terms as "points of encounter in ways of thinking of relationships to the land." By conceptualizing access in this way, sites are not solely defined by their separation from the urban; instead, they become openings for encounters that world and sense terrains in the process of walking, reading, conversing, observing, pausing, noticing, tasting and sharing food.

Both these projects feature an attunement to taken-for-granted aspects of our environment as forms of relationality. In Michelle Gay's project, the sound gatherers attune to marginal sounds, practicing fugitive listening as a form of collective study. Meaning emerges not from clarity but from the relational practice of being together. The gathering of sounds does not follow an extractive logic but a generative, relational one. In the Outdoor School session, participants likewise engaged in a relational attunement where access was not framed as an entry into projected space, but as encounter—a way of sensing and worlding that blurred the boundaries between urban and natural, human and more-than-human. Here, the milieu is a meeting place for *listening* not to classify sounds and their meaning but to augment the emergence of thought. Jack Halberstam in the introduction to *The Undercommons: Fugitive Planning & Black Study* asserts that Fred Moten and Stefano Harney's book is not "a prescription for repair."[17] Similarly, listening otherwise is not an expression that requires explaining and categorizing, but is instead, a spark among other sparks of thought.

The undercommons of an unconference about accessibility and neurodivergence challenges the notion of what Erin Manning describes as "creating a space where difference sequesters itself,[18]" instead highlighting "undercommon currents of creative dissonance and asymmetrical experience always already at work in, across and beyond the institution."[19] The process leading up to the two days of practicing a pedagogy undid identitarian conceptualizations of what a body is, in favour of making space for creating from many perspectives: spatial, visual, sonic, and sensory, through gestures of reaching and listening, of movements and expression. A two-day unconference was an undercommons of attentive encounters akin to what Erin Manning describes as a reaching and listening to unfamiliar sounds, citing and giving credit to the caws of a little bird, that tells (us) something: "Me Lo Dijo un Pajarito"- a little bird told me. (Story)telling the world is knowing that the earth has many stories. This openness is designed with a desire for alternative modalities of thinking and creating that refuse Cartesian dualisms and preconceived ideas of what a body can do, or what a thought can create. Instead, lines of thought without origins that go everywhere and that spill outside the classroom like Amish Morrell's Outdoor School, moves to encounter humans and more than humans alike, or Loree Erickson's co-creation of a podcast, that documented conversation about practices in Collective Care for thinking and living otherwise. There was an active listening together and attuning to the caws of a little bird, by asking "What cannot be heard? What cannot be listened to? "[20]

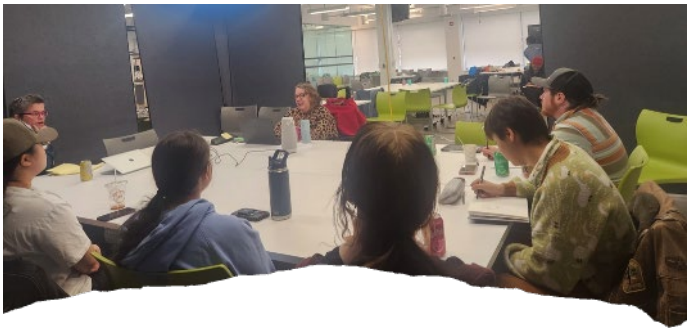

Figure 5. Collective Care as Pedagogy podcast, led by Loree Erickson

The Collective Care as Pedagogy podcast session was led by scholar, community organizer, and porn star Loree Erickson. This session was a listening party for the podcast episode she produced as her project for the Transformative Access Unconference. For the episode, "Take Care of Each Other — Pedagogies from the Bathroom," Erickson drew on her experience with her vital and necessary care collective, which has been active for 22-years in Toronto.[21] Born out of a radical response to "inadequate state support and systemic oppression", the collective thrives through a diverse and loosely connected community of people working interdependently. For the podcast, Erickson invited current and former care shifters who also work in academia or education, as she herself does; to reflect on how the lessons learned being part of a care collective might travel into academia and teaching. In the conversation between several generations of care shifters, what emerges is a radical version of care grounded in interdependency. Many of the former care shifters also spoke of the challenges that come with activating these commitments in educational institutions that prioritize independence and individualized accommodations. In the discussion, current students highlighted their desire to practice collective care and a language for expressing their access needs.

Figure 6. Erin Finley and Errol Ricard, A Limb is a Line

Visual artist and educator Erin Finley and undergraduate student and painter Errol Ricard led the session "A Limb is a Line", featuring real-time drawing over clips from Alvin Ailey's Revelations 2–Take Me to the Water, projected onto the wall.[22] His gestures traced not the contours of the dancers' bodies but the rhythms and resonances of their movement. Rather than reproducing the dance, his

lines composed a new embodied relationship to the movement, producing a drawing that was itself a form of dancing.

Participants were invited to join Errol and Erin in experimenting with different forms of mark making. The act of making marks was not a reproduction but a response: emphasis was placed on gesture and embodied listening and movement. This approach embodied a form of citationality that carried and created something new. The relationship between their drawing and the projection of Ailey's dancers, and between the participants drawing together in the room, was characterized by a desire to be alongside, to dance with, and to move with, rather than to reproduce or explain.

What are the undercurrents of access that already exist in educational institutions and how can we surface them to undo the dominant modality of thinking that has organized accessibility and has sequestered difference? Are these undercurrents like sunken rivers, that run beneath Toronto—like Garrison Creek, once a significant river now buried under the urban landscape, existent but hidden? Perhaps, but the unconference revealed that surfacing access isn't only an operation of uncovering; rather, it's something that happens relationally, in the in-between. This aligns with Tanya Titchkosky's idea of disability as a "space of interpretive encounter," where access is an embodied and perceptive relation—a way of being, and of being with others, that invites interpretation, exchange, and care. [23]

The unconference format fostered a tone of contemplation and openness in our explorations of transformative access, shedding the competitive pressure to rush production. Instead, it allowed for a more organic, improvisational exchange – a "pick-up game" of connections that emerged within the shared sensory experience of the sessions, through listening and collaborative making. This contemplative atmosphere, often elusive in institutional settings, is precisely what's needed to tap into alternative pedagogies. Each session followed a structure of offering and relay, where designers tested and processed ideas collectively that they'd been pondering for months. The pedagogy was rooted in forming relations that unfolded through shared explorations that activated accessibility as an emergent force for knowledge creation.

NOTES

[1] This collaboration brings together intersecting areas of study, primarily in ethnographic writing, alter-pedagogies, disability studies, queer and feminist theories and practices, and visual studies. The aim of this research is to widen the possibility for non-hierarchical knowledge production. The Centre for Learning and Teaching at OCAD University has had an integral role in merging pedagogical practices with faculty expertise and this has facilitated interdisciplinary spaces to experiment with alternative classroom and learning configurations.

[2] Elizabeth Brewer, Cynthia L. Selfe, and Melanie Yergeau, "Creating a Culture of Access in Composition Studies," *Composition Studies* 42, no. 2 (2014): 151–54, http://www.jstor.org/stable/43501861.

[3] Jay Timothy Dolmage, *Academic Ableism: Disability and Higher Education* (Ann Arbor: University of Michigan Press, 2018).

[4] Kristie S. Fleckenstein, "Bodysigns: A Biorhetoric for Change," *JAC* 21, no. 4 (2001): 761–90, http://www.jstor.org/stable/20866445.

[5] The participation of students was informally coordinated with approximately 5-10 partaking in each session. We intentionally did not provide a feedback form to allow students maximum freedom of the experience.

[6] Together we presented a version of this paper at the AMPS conference on June 12, 2025

[7] Natalie Loveless and Erin Manning discuss the Canadian context of research creation as a process that is activated in an observable life of thinking and making. In the chapter of their conversation, "Research Creation as Interdisciplinary Praxis" Manning describes how philosophy, art, and politics come together, she states: "When I return to philosophy, it is often from the perspective of the processes encountered in the studio and less with a focus on the artwork as such" (213). The duration of our unconference led into two days of making but it was in the time leading up to the rendering of the idea that transformed terms by which knowledge was produced in the university. In the "Ribbons of Life" session for example, Teresa Ascencao did not design the shape of the final installation without the movement and perspectives of participants.

[8] See for example, Adam Wolfond *Open Ways of Water* Toronto: Punctum Books, 2023.

[9] Mel Baggs. *In My Language*. YouTube video, 8:35. Posted January 14, 2007.

[10] Wolfond, *Open Ways of Water*, 29

[11] Billy-Ray Belcourt. "An Original Essay by 2025 PNBA Book Award Winner Billy-Ray Belcourt." *NW Book Lovers*. January 31, 2025. https://nwbooklovers.org/2025/01/31/an-original-essay-by-2025- pnba-book-award-winner-billy-ray-belcourt/

[12] Evoking the undercommons as the descriptor of these encounters unbuilds spaces of commonality that don't risk unfamiliarity. Contrary to wanting to smooth things over in the name of unity, the undercommons has no gate keepers.

[13] In HowStuffWorks.com Contributors "How are frequency and wavelength of light related?" 1 January 1970. HowStuffWorks.com.<https://science.howstuffworks.com/dictionary/physics-terms/frequency-wavelength-light.htm> 12 August 2025

[14] Brian Massumi *Movement, Affect, Sensation: Parables for the Virtual, 2002.* 3

[15] See Juliana Gagne's blog: https://juliana-gagne.com/tausounds

[16] Outdoor School is an ongoing collaborative initiative led by Borsato and Morrell, focusing on integrating contemporary art with outdoor education practices. See Diane Borsato and Amish Morrell, eds., *Outdoor School: Contemporary Environmental Art* (Vancouver: Douglas & McIntyre, 2021).

[17] Fred Moten and Stefano Harney, *The Undercommons: Fugitive Planning & Black Study* (New York: Minor Compositions, 2013), https://www.minorcompositions.info/wp-content/uploads/2013/04/undercommons-web.pdf.

[18] Erin Manning, "Me Lo Dijo un Pajarito: Neurodiversity, Black Life, and the University as We Know It," *Social Text* 36, no. 3 (136) (September 2018): 1–24, https://doi.org/10.1215/01642472-6917742.

[19] Manning, "Me Lo Dijo un Pajarito," 2.

[20] Manning, "Me Lo Dijo un Pajarito," 2.

[21] Loree Erickson, "Take Care of Each Other—Pedagogies from the Bathroom," May 2025, *Collective Care as Pedagogy* podcast, produced by Loree Erickson, MP3 audio. This podcast is not yet published, but visit Loree's blog to learn more about the project and for future updates: https://www.cultivatingcollectivecare.com/blog

[22] *Revelations 2– Take Me to the Water*. Praise Academy of Dance Jamaica, 2015. https://www.youtube.com/watch?v=O5AFmj1SAA0.
[23] Tanya Titchkosky, *The Question of Access: Disability, Space, Meaning* (Toronto: University of Toronto Press, 2011), 56.

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ENHANCING SECOND LANGUAGE WRITING PROFICIENCY: INTEGRATING EYE-TRACKING TECHNOLOGY IN ADVANCED CORRECTIVE FEEDBACK

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INTRODUCTION

Writing in a second language (L2) presents unique challenges for learners, requiring proficiency in grammar, vocabulary, and coherent language use. One key support for learners is Written Corrective Feedback (WCF), which highlights discrepancies in their output and promotes error correction. This feedback supports the internalization of linguistic rules bridging explicit instruction and real-world usage, which aligns with Schmidt's Noticing Hypothesis[1] and Sweller's Cognitive Load Theory.[2] These theories emphasize the importance of conscious attention and the management of cognitive resources in learning.

This study explores the impact of three types of WCF—indirect, direct, and metalinguistic—on the acquisition of the English simple past tense among adult A2-level learners in a Chilean university. A quasi-experimental design was used with pretests, immediate post-tests, and delayed post-tests. Three classroom groups (N=61) received different types of WCF, while a control group (N=19) received general comments. In a second phase, researchers used eye-tracking technology with 80 students to examine how learners allocate visual attention to different types of feedback.

Results demonstrated that WCF significantly improves short and long-term grammatical accuracy, particularly when using metalinguistic feedback. Eye-tracking provided deeper insights into how learners engage with feedback, highlighting differences in attention based on feedback type. The combination of form-oriented feedback and eye-movement recording represents a holistic method to teach L2 writing.

The study is further framed by sociocultural theory, especially Vygotsky's Zone of Proximal Development,[3] and interactionist theories like Long's Interaction Hypothesis[4] and Swain's Output Hypothesis.[5] These perspectives position WCF as both scaffold and negotiation tool, helping learners reach beyond their current language abilities.

Overall, this research contributes to understanding the role of WCF in fostering sustained language development and demonstrates the value of eye-tracking in refining feedback practices. The findings aim to support educators in enhancing their instructional strategies and promoting long-term linguistic competence.

CONCEPTUAL FOUNDATIONS

This section outlines the theoretical frameworks that underpin the study, integrating both cognitive and sociocultural perspectives on language learning. It explores how written corrective feedback (WCF) facilitates acquisition through attention, processing, and interaction. Additionally, it highlights the role of eye-tracking technology in revealing the cognitive mechanisms that support feedback engagement.

Cognitive Perspectives

WCF is supported by various cognitive theories that explain how feedback facilitates language acquisition. Schmidt's Noticing Hypothesis[6] posits that learners must consciously notice discrepancies between their output and target language forms. WCF highlights these discrepancies, prompting learners to focus on their errors and correct them.[7] found that implicit feedback significantly enhances learners' ability to detect and correct errors. Sweller's Cognitive Load Theory[8] advises that feedback should be designed to manage learners' mental effort effectively. For beginners, clear and direct corrections reduce extraneous cognitive load, while more implicit cues challenge advanced learners to infer rules, thereby fostering deeper processing.

Anderson's ACT model[9] outlines a progression from declarative knowledge (awareness of rules) to procedural knowledge (application) and eventually to automaticity (fluent use). WCF supports this progression by providing repeated practice and feedback, facilitating the transition from conscious effort to automatic language use. Evans' Dual-Process Theory[10] further elucidates this mechanism, suggesting that learners initially rely on deliberate, analytical processing (System 2) but, with practice, shift to intuitive, automatic responses (System 1).

Sociocultural and Interactionist Perspectives

From a sociocultural standpoint, Vygotsky's Zone of Proximal Development (ZPD)[11] frames WCF as a scaffold that provides the necessary support for learners to perform tasks beyond their current capabilities. Effective feedback enables learners to correct errors with guidance, gradually fostering independence. Learning is a socially co-constructed process, and feedback facilitates meaningful interaction where learners reflect, negotiate, and internalize corrections.[12] Scaffolded interaction significantly improves grammatical accuracy.[13]

Interactionist theories further reinforce WCF's role in language development. Long's Interaction Hypothesis[14] suggests that feedback helps learners identify gaps in their interlanguage, prompting them to negotiate meaning and revise their output. Swain's Output Hypothesis[15] posits that producing language and receiving feedback encourages learners to process language more deeply, enhancing their linguistic competence. Swain's concept of "languaging"[16] highlights the importance of verbalizing and reflecting on language use, which WCF supports by providing opportunities for hypothesis testing and self-reflection.

Eye-Tracking and Written Corrective Feedback

Eye-tracking technology has emerged as a powerful tool for studying how learners engage with WCF. By tracking eye movements, researchers can gain insights into how learners notice, process, and apply feedback. Studies such as Godfroid et al.[17] have shown that learners who spend more time fixating on corrective elements are more likely to make successful revisions. Heatmaps generated by eye-tracking data illustrate areas of concentrated visual attention, helping educators refine feedback strategies.

Explicit feedback tends to attract immediate visual focus, making it effective for addressing surface-level errors. In contrast, implicit feedback encourages broader attention across the text,

fostering deeper cognitive engagement.[18] Eye-tracking also reveals individual differences in how learners interact with feedback. El Ebyary and Windeatt[19] found significant variation in learners' attention to different feedback categories, such as grammar, style, and organization, underscoring the need for personalized feedback strategies.

Recent studies have further highlighted the potential of eye-tracking in instructional contexts. For instance, it was demonstrated a strong link between visual attention to automated WCF and successful revision.[20] Pattemore and Gilabert,[21] using a digital literacy game with young L2 learners, found that participants who devoted more visual attention to informational feedback, through increased fixations and longer gaze durations, were significantly more likely to recover from errors, whereas no comparable pattern emerged for metalinguistic feedback, suggesting that informational feedback was more accessible and actionable for this age group. Another research employed eye-tracking to examine the attention of L2 Spanish learners to both instructional input delivered through a YouTube video and individualized feedback provided through a silent video, finding that learners who paid greater attention to these materials made more accurate revisions, particularly for verb and vocabulary-related errors.[22] Smith[23] examined visual attention to recasts during computer-mediated writing conferences, showing that longer fixation times on corrective input were associated with greater improvement in subsequent tasks. Collectively, these studies underscore how eye-tracking provides nuanced insights into the relationship between visual engagement, feedback processing, and revision outcomes in L2 writing.

REFLEXIVE INQUIRY AND RESEARCH PROCESS

This study forms part of a broader investigation into the role of Written Corrective Feedback (WCF) in second language (L2) acquisition, specifically focusing on the use of the English simple past tense. Its main objective was to assess the effectiveness of three WCF types—indirect (ICF), direct (DCF), and metalinguistic (MCF)—in improving grammatical accuracy among Spanish-speaking university students. A quasi-experimental design was employed, featuring a pretest, immediate post-test, and two delayed post-tests, along with a control group, to examine whether feedback led to measurable gains in learners' implicit knowledge.

Eighty-two B1-level undergraduate students from a Chilean university participated. All were native Spanish speakers who had completed three English courses (354 hours) and were enrolled in a fourth. Due to institutional constraints, random assignment was not feasible; instead, four intact classes were assigned to experimental conditions: 19 received ICF, 23 DCF, 19 MCF, and 21 formed the control group.

Over twelve weeks, all groups followed the same instructional plan, completing four narrative writing tasks eliciting the use of the simple past tense—covering regular, irregular, and copula verb forms—based on illustrated story sequences. To support performance, key vocabulary was introduced before each task. The same instructor provided feedback to ensure consistency. The control group received only general comments on content and organization, without grammatical correction.

Each feedback type was delivered according to its definition. ICF involved error codes at the end of texts without correct forms. DCF directly highlighted errors and inserted corrections. MCF combined correct forms with brief grammatical explanations. All feedback targeted the same structures to ensure comparability.

Instructional activities were sequenced across the twelve-week period. Week 1 involved the pretest; Week 2, feedback on the first task; Week 3, a revision session; Week 4, the immediate post-test; and Weeks 8 and 12, the delayed post-tests. Tasks were designed around visual prompts to encourage contextualized past tense use and were validated by language experts and faculty. Student

performance was assessed using Brown's Obligatory Occasion Analysis,[24] identifying instances requiring the simple past tense and calculating correct usage. Numerical scores allowed for statistical comparison and evaluation of each feedback type's effectiveness.

In addition to the quasi-experimental writing tasks, this study incorporated an eye-tracking component designed to investigate how learners cognitively process various types of WCF during reading activities. This phase involved eighty B1-level students who participated in a within-subjects experiment, allowing the researchers to analyze attention allocation and cognitive load in response to different feedback conditions. Each participant was exposed to five short narrative stories, each segmented into four parts: a contextual introduction, a filler sentence, a critical stimulus containing the grammatical target, and a final filler sentence. The critical stimuli featured either correct or incorrect uses of the simple past tense, focusing on both regular and irregular verb forms. To prevent repetition effects and ensure a balanced exposure to conditions, a counterbalanced design was implemented, ensuring that participants encountered only one critical stimulus per condition across the five stories.

The five experimental conditions for written input included: correct sentences that accurately employed the simple past tense, incorrect sentences containing verb form errors, direct corrective feedback where the error was corrected within the text, indirect corrective feedback where the error was identified but left uncorrected, and metalinguistic corrective feedback that provided both error identification and a brief grammatical explanation. These feedback types were embedded within narrative contexts to simulate authentic reading experiences.

To facilitate a detailed analysis of participants' engagement with feedback, each sentence was divided into predefined Areas of Interest (AOIs), including the full sentence, the initial phrase, the subject-verb agreement section, the complement, and the location of the error or correction (which varied depending on the feedback condition). For instance, in the DCF condition, an incorrect verb such as "overtake" was corrected to "overtook" and highlighted within the sentence. In the MCF condition, a footnote was provided explaining the relevant grammatical rule, such as "Irregular verbs do not follow a fixed pattern and do not end in –ED."

Eye-tracking technology was employed to measure both the location and duration of participants' gaze within these AOIs. This enabled researchers to analyze fixation patterns, gaze durations, and cognitive load distribution, offering a comprehensive view of how different types of feedback were processed. These measures provided valuable insights into the attentional and cognitive mechanisms underlying WCF engagement, thereby contributing to a deeper understanding of how feedback supports second language acquisition at both the behavioral and cognitive levels.

RESULTS

The analysis began by confirming that all four groups started with comparable levels of grammatical accuracy. A one-way ANOVA performed on pretest scores revealed no significant differences among the groups ($F(3,78) = 0.132$, $p = 0.951$), ensuring that any observed improvements could be attributed to the feedback treatments rather than pre-existing proficiency differences. Table 1 presents the descriptive statistics (means and standard deviations) for each group across the pretest, immediate post-test, and two delayed post-tests.

Group	Pretest Mean (SD)	Post-Test Mean (SD)	Delayed Post-Test 1 Mean (SD)	Delayed Post-Test 2 Mean (SD)
CG	32.14 (30.94)	37.76 (12.03)	37.52 (32.32)	40.85 (33.62)
MCF	35.68 (25.97)	68.25 (24.02)	72.50 (29.58)	70.43 (24.50)
DCF	34.50 (29.34)	57.65 (10.81)	69.11 (27.17)	68.80 (30.55)
ICF	30.31 (26.90)	53.52 (22.51)	47.31 (35.38)	49.57 (39.66)

Table 1. Descriptive Statistics for Pretest, Post-Test, and Delayed Post-Tests

All groups improved their grammatical accuracy over time, but the groups that received metalinguistic (MCF) and direct corrective feedback (DCF) showed the greatest gains. The indirect feedback (ICF) group improved less, and the control group showed only minimal changes. A repeated measures ANOVA confirmed these patterns, revealing significant effects for feedback type, time, and their interaction. This means that the effectiveness of feedback varied over time depending on the type provided.

Eye-tracking data provided complementary insights into learners' cognitive engagement with the different feedback types. Fixation maps (Figure 1) revealed denser central fixations for correct sentences and DCF, suggesting more fluent and focused reading. In contrast, MCF elicited broader spatial dispersion of gaze points, potentially reflecting exploratory processing and deeper engagement with rule-based explanations.

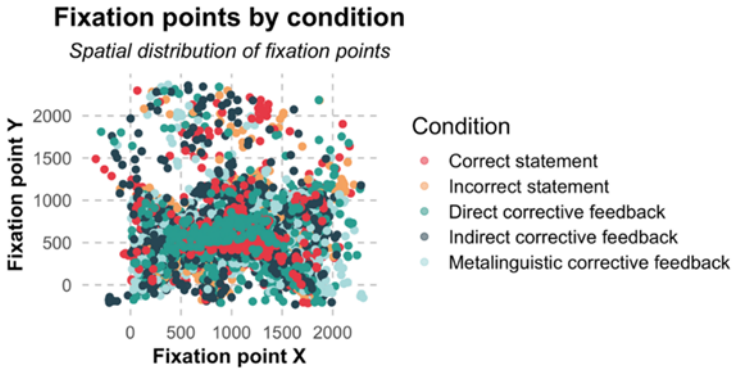

Figure 1. Fixation Maps by Condition

Pupil diameter data (Figure 2) showed that mean pupil size was largest during correct sentences (approximately 3.8 mm), indicating minimal cognitive strain, and smallest during metalinguistic feedback (approximately 3.4 mm), suggesting reduced extraneous load due to the explicit nature of the input.

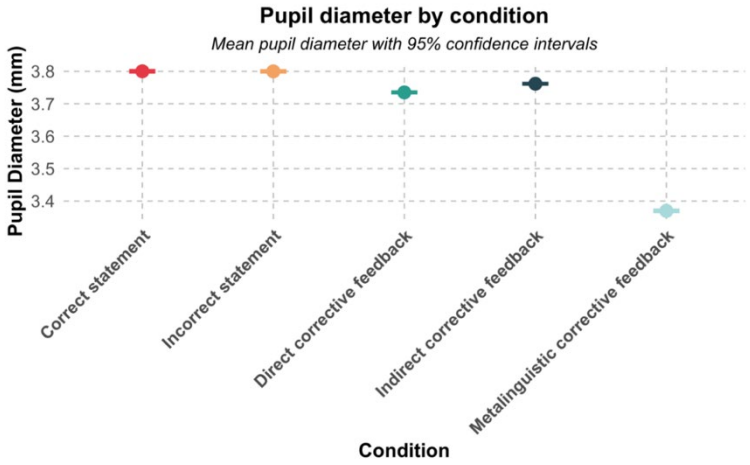

Figure 2. Pupil Diameter by Condition

Fixation durations (Figure 3) were longest for MCF (approximately 950 ms), consistent with sustained attention and deeper linguistic reflection, and shortest for incorrect statements (approximately 750 ms), indicating more superficial or disengaged processing.

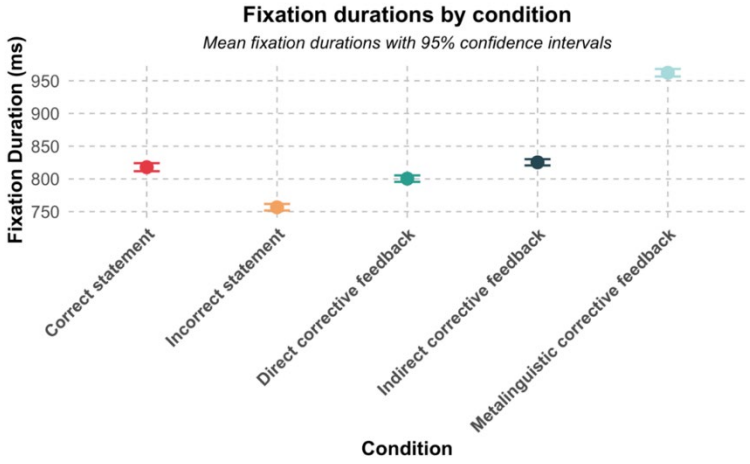

Figure 3. Fixation Durations by Condition

Figure 4 illustrates the mean total reading times, measured in milliseconds, across five experimental conditions: correct statement, incorrect statement, direct corrective feedback, indirect corrective feedback, and metalinguistic corrective feedback. As shown, the shortest reading time was observed in the correct statement condition, suggesting that participants processed grammatically accurate sentences with relative ease. In contrast, the incorrect statement condition elicited the longest reading time, indicating that uncorrected grammatical errors required greater cognitive effort and likely disrupted processing.

Among the feedback conditions, direct and indirect corrective feedback produced intermediate reading times, suggesting that these forms of feedback prompted learners to engage with the text more deeply than with correct sentences, but not as extensively as when encountering uncorrected errors. Notably, metalinguistic corrective feedback resulted in a comparatively shorter reading time than the other feedback types. This pattern implies that when learners received an explicit explanation of the error, they were able to process and understand the correction more efficiently.

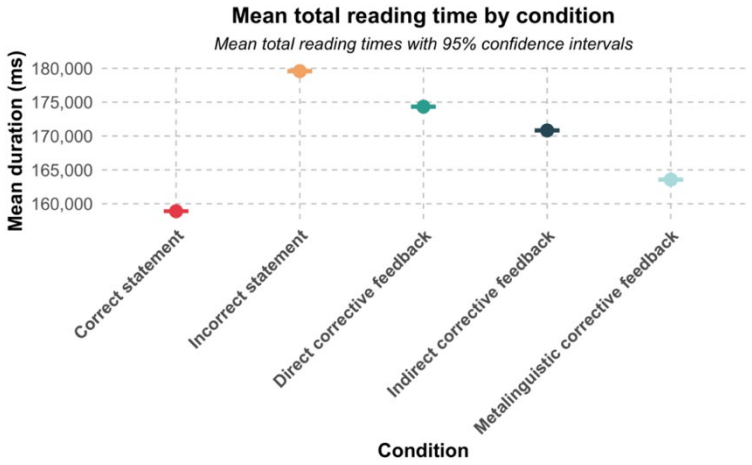

Figure 4. Mean Total Reading Time by Condition

Taken together, these findings highlight a clear distinction between the cognitive demands associated with each feedback condition. They also suggest that metalinguistic feedback may be particularly effective in guiding learners' attention to linguistic form while minimizing processing difficulty, possibly due to the clarity and instructional value of the explanation it provides.

Four statistical models were fitted to examine the effects of feedback condition on different reading and eye-tracking measures. The first model analyzed mean reading time and showed increased durations across all conditions compared to correct statements, with the strongest effect for Incorrect statements ($\beta = 1.20$), followed by Direct ($\beta = 1.15$), Indirect ($\beta = 0.91$), and Metalinguistic feedback ($\beta = 0.70$). The second model focused on fixation duration, revealing longer fixations under Metalinguistic feedback ($\beta = 0.18$) and shorter ones under Incorrect statements ($\beta = –0.08$). The third model examined pupil diameter, where Metalinguistic feedback led to a reduction ($\beta = –0.12$), while the other conditions had negligible effects. Finally, the fourth model analyzed fixation location (X and Y coordinates), showing spatial displacements depending on condition: Direct feedback produced the largest shift ($\beta = –17.93$), and Metalinguistic feedback a smaller positive shift ($\beta = 9.70$). These results highlight consistent differences in cognitive and attentional processing as a function of feedback type.

CONCLUSION

This study provides robust evidence for the significant role of Written Corrective Feedback (WCF) in fostering grammatical accuracy among L2 learners, with metalinguistic feedback (MCF) emerging as the most effective form of intervention. The combination of quantitative grammatical accuracy measures and qualitative eye-tracking data allowed for a comprehensive analysis of both linguistic outcomes and underlying cognitive mechanisms.

The findings confirm that MCF not only promotes short-term improvements in grammatical accuracy but also supports long-term retention and application of grammatical rules. The superior performance of MCF over both direct corrective feedback (DCF) and indirect corrective feedback (ICF) aligns with cognitive theories, such as Schmidt's Noticing Hypothesis[25] and Sweller's Cognitive Load Theory,[26] suggesting that explicit explanations facilitate deeper processing and rule internalization. The eye-tracking results further corroborate these conclusions, as learners receiving MCF demonstrated broader gaze dispersion and longer fixation durations, indicative of more sustained and exploratory cognitive engagement. This highlights the dual benefit of MCF: reducing cognitive strain through explicit instruction while encouraging metalinguistic reflection that promotes lasting learning gains.

Pedagogically, these findings suggest that incorporating metalinguistic feedback into instructional practices can significantly enhance language learning outcomes, especially for grammatical structures that pose persistent challenges, such as the English simple past tense. Educators can leverage these insights by integrating MCF systematically within classroom writing tasks, ensuring that learners not only recognize their errors but also understand the underlying rules governing their corrections. Additionally, the evidence supporting DCF as a moderately effective approach suggests that a tiered feedback strategy—where more explicit feedback like MCF is reserved for complex errors, while DCF is applied to simpler issues—could optimize instructional efficiency and learner engagement.

The integration of eye-tracking technology into this study provided valuable insights into the attentional patterns and cognitive load associated with different feedback types. The findings demonstrate that attention allocation varies according to feedback modality, with MCF fostering deeper engagement without imposing excessive cognitive demands. This underscores the potential of eye-tracking as a diagnostic and evaluative tool in language education, capable of informing more adaptive and personalized feedback mechanisms.

Theoretically, the results contribute to the ongoing dialogue between cognitive and sociocultural perspectives on second language acquisition. While cognitive theories explain the mental processes underpinning feedback engagement, sociocultural frameworks, such as Vygotsky's Zone of Proximal Development[27] and Swain's Output Hypothesis,[28] contextualize these processes within interactive and socially mediated learning environments. The effectiveness of MCF, as observed in this study, supports the view that feedback serves both as a scaffold for learner development and a trigger for reflective language processing, bridging the gap between cognitive mechanisms and social interaction.

Future studies could examine how factors like learners' proficiency, learning styles, and motivation influence the effectiveness of different feedback types. Research over longer periods could also reveal how lasting these effects are. Combining eye-tracking with tools like EEG or fMRI may help better understand how attention and learning interact.

In summary, this study highlights the value of written corrective feedback, especially metalinguistic feedback, in improving second language writing. Using eye-tracking provided new insights into how learners process feedback, offering a path toward more personalized and effective teaching strategies.

NOTES

[1] Richard Schmidt, "The Role of Consciousness in Second Language Learning," *Applied Linguistics* 11 (1990): 149.
[2] John Sweller, "Cognitive Load during Problem Solving: Effects on Learning," *Cognitive Science 12,* no 2 (1988): 277.
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INTEGRATING SDGS INTO CURRICULUM: ENHANCING THE AFFECTIVE DOMAIN THROUGH EDUCATION

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INTRODUCTION

Since its introduction in 2015, the Sustainable Development Goals (SDGs) have gained increasing traction across higher education institutions (HEI). Serafini et al. and Filho et al. point out that many universities are actively engaging in the embedding and aligning of SDGs to governance, curriculum, research and outreach.[1] However, it can be argued that while SDGs continue to be a topic of interest in HEI, the key focus continues to be drawing on SDGs at a macro level, where SDGs inform HEI strategic management.[2] Thus, the attention given to embedding SDGs in curriculum, research, and outreach has relatively less emphasis.

This study focuses on the micro-level integration of SDGs within postgraduate business and management education, with particular emphasis on developing the affective domain in learners. While scholars such as Wu et al. and Casey and Fernandez-Rio have explored affective learning across various disciplines, there remains limited research on how affective development can be fostered through SDG-aligned curriculum design in business and management education.[3]

A central focus of this study is to examine how the affective domain can be cultivated in postgraduate education by aligning intended learning outcomes with the United Nations Sustainable Development Goals. This alignment is explored as a means of facilitating reflective practice and supporting the development of learners' affective capacities.

To better understand the potential of the SDGs in developing the affective domain, the following sections within the introduction will first illustrate how scholars have integrated SDGs into curriculum design. Secondly, the study will lay out an overview of scholarship surrounding the affective domain in higher education and finally examine how reflective practice can enable educators to observe and support students' development of the affective domain.

Embedding Sustainable Development Goals (SDGs) into the curriculum

Education for Sustainable Development (ESD) has been a growing area of interest across education sectors; however, the introduction of SDGs has significantly amplified this interest, encouraging deeper integration of sustainability into curricula. In this regard, SDGs act as a useful benchmark, guiding the practical ways in which sustainability can be embedded into the curriculum. In their work, Lertpratchya et al. argue that the higher education sector is uniquely positioned to communicate sustainability effectively to make positive social change.[4] The authors further explain that universities

and colleges form the last point of formative education before individuals enter the workforce. Thus, the experiences within the university setting have a significant role in increasing sustainability literacy and shaping perceptions and attitudes of professionals who eventually have the power and authority to make impactful decisions in the workforce. Angelaki et al. further echo the significant role of HEI in addressing societal issues and highlight that the SDGs have created increasing demand for sustainability education.[5]

Thus, the question arises as to how HEI may embed SDGs into the university experience. In this regard, curriculum mapping has been viewed by practitioners as a means of embedding SDGs into the learning process.[6] A delve into scholarship surrounding curriculum mapping as a mechanism for embedding SDGs at a university level reveals several best practices that can assist academics in the process of embedding SDGs. For instance, the review of curriculum through focus groups with input from subject matter experts and benchmarking through keyword mapping have been highlighted as useful approaches in this endeavour.[7] A particular interest of the present study is the work by Fröhlich et al., who propose a detailed teaching map of how SDGs may be embedded into business school curricula. This model emphasises the value of reviewing the extant curriculum with expert feedback as a way of distinguishing how SDGs may fit in with current learning outcomes.[8] A benefit of this approach is that it helps avoid the superficial integration of SDGs into the curriculum and facilitates the embedding of SDGs such that it is intertwined with the programme and module level learning outcomes.

The affective domain in higher education

In their work, Birbeck and Andre argue that the relatively low attention given to the affective domain in the university curriculum is often explained by the increased focus given to the cognitive domain.[9] As the cognitive domain, unlike the affective domain, can be assessed with ease and is often seen as an intuitive process that can be embedded into the curriculum.[10] The result is that, often, universities overemphasise the learner's cognitive development journey with little insight into how these graduates develop their affective skills that may have a profound impact on their positioning as organisational citizens in the workforce.

In their work, Krathwohl et al. define the affective domain as objectives that emphasise emotion, qualities of character, and emotional responses such as interest, attitudes, values and appreciations.[11] These attributes are often tacit and complex, further contributing to the challenge faced by educators in addressing the affective domain in the learning process. Within the learning environment in which the teacher and the learner are embedded, Birbeck and Andre identify that the affective domain can relate to three aspects of teaching and learning.[12] Namely, the teacher's approach to teaching, the deliberate appeal to the learner's affective responses as a means of engaging with emotionally complex subject matter, and the use of this engagement to encourage learners to reflect on their motivations and behaviours. Thus, while not as seemingly straightforward as the cognitive domain; which examines remembering, understanding, applying, analysing, evaluating and creating; Krathwohl, Birbeck and Andre argue that the application of the characterisation proposed by Krathowl et al. enables the teacher to judge the outcome of the learning process by aligning the learners behavioural responses to expected behaviour (of a profession) rather than judging the learner's attitudes and values and feelings in isolation.[13] Thus, the teacher carries a responsibility to present learning opportunities to allow the learner to gradually develop the affective domain.

To further unravel how the affective domain can be assessed, I turn to Krathwohl et al., who posit that we can measure the affective domain by considering the receiving, responding, valuing, organisation and characterisation by value attributes of the learner.[14] It is important to note that this is a staged

process through which the learner progresses in a sequence. Thus, in their work, Krathwohl et al. highlight that assessing affective characteristics can itself be complex and problematic.[15] To Krathwohl et al., the challenge lies firstly in the ineffectiveness of assessment techniques, which are often geared towards assessing cognitive factors and secondly in navigating the challenges of the learner's awareness that there may be an expected outcome they can exploit to be rewarded, and in doing so, will disqualify the effectiveness of the assessment.[16]

In addition to considering the role of the SDGs in developing the learner's affective domain, this study recognises the value of reflective practice as a method for supporting the learner's progression through each phase of affective development. The following section, therefore, outlines the rationale for selecting reflective practice.

Reflective practice and curriculum design

At this juncture, I turn to reflective practice as a method of examining the effective development of the learner. A challenge highlighted across educational research is the difficulty in capturing the learner's affective development progress.[17] While Goodyear and Dudley identify that a focus on what learners 'do' can be a way of capturing the affective domain, it can be argued that while this may be effective in certain disciplines where psychomotor skills are prevalent, in more theoretically inclined disciplines, the teacher must consider more creative approaches to capturing 'doing' as an outcome of behavioural or emotional shifts.[18] Furthermore, Stephens and Ormandy highlight that reflection allows for a deeper examination of the affective domain beyond just identification, allowing the learner to express their internalisation of the behaviour.[19] In this light, reflective practice allows for a way of examining the emotional process through which learners experience, confront and examine the affective domain.

The use of reflection as a means of examining the affective domain can be observed across disciplines such as medicine, agriculture, and law.[20] In these cases, the self-reporting of experience provides a measure of developmental progress. However, the reflective process itself requires guidance through a structured approach, allowing the learner the ability to make sense of experience. In this regard, well-established frameworks such as Schön's reflective practitioner and Biggs's Constructive Alignment provide pedagogical scaffolding to guide the learner through the reflective process, while Gibbs's reflective cycle provides a structured model through which learners can interpret the emotional and ethical dimensions of their experiences, supporting deeper engagement with the affective domain.[21]

In this study, reflective practice serves a dual purpose. It provides a basis for observing the learner's progression through the affective domain, while also informing the research methodology through my own reflective process as the researcher. The rationale for adopting this methodological approach is outlined in the study's methodology.

METHODOLOGY

This study adopts a reflective practitioner research approach, positioning the educator as both facilitator and critical inquirer. The aim of this study is to explore how the affective domain of learning can be developed through pedagogical design in postgraduate business and management education. The learning activities were constructed using the principles of constructive alignment, ensuring that the intended learning outcomes were explicitly aligned with the SDGs, and that teaching strategies and formative assessments supported values-based, affective learning. Drawing on the work by Fröhlich et al., the process of curriculum mapping was initiated with a review of the existing curriculum through a series of institutional-level module review sprints.[22] A broader institutional level initiative by the University of Sunderland in London, where this study was conducted, facilitated the

review of module learning outcomes, assessment and content against SDGs. Formative feedback was collected from colleagues who acted as subject matter experts, and the mapping of SDGs was made to specific module content in line with the module and programme learning outcomes.

For this study, two postgraduate modules focusing on sustainable marketing were selected (Table 1). While students were introduced to concepts through reading, lectures and pre-recorded lecture videos as part of the learning design, students also participated in an excursion to the Museum of Brands, which served as an experiential learning opportunity to explore real-world marketing practices. Following this, students engaged in class activities that critically examined cases of greenwashing and ethical washing. The cases were selected from brands prevalent in the students' home countries, ensuring cultural relevance and fostering emotional engagement. In these activities, students reflected on how these cases aligned or did not align with the SDGs, and suggested alternative, ethically sound strategies.

To scaffold reflection, group reflections were conducted at two key points: after the excursion to the Museum of Brands and following the in-class activities. These group reflections provided opportunities for learners to share their insights and deepen their understanding through peer dialogue. Formative feedback was integrated throughout the activities to guide students in their reflection and development.

	Module 1	**Module 2**
Subject matter	• The ILOs are incorporated as a mini lecture video and pre-lecture reading covering topics such as greenwashing, ethical washing, the need to build a brand ethos, feminism and marketing. • The focus is on the responsibility of brands and firms in shifting consumer perceptions to address the SGDs.	• An in-class lecture is delivered focusing on Sustainable Marketing (an emerging new branch of marketing). • The lesson compares Sustainable marketing with ethical marketing and green marketing to draw a contrast between these two branches and how they affect the SDGs
Activities	• A visit to the museum of brands, where learners follow an activity to assess how the brands have evolved over time, with a focus on the SDGs. • Personal reflective journal • Group reflection.	• A visit to the museum of brands, where learners follow an activity to assess how the brands have evolved over time, with a focus on the SDGs. • Personal reflective journal • Group reflection.
Assessment (formative)	• Learners are assessed via a class activity. • Learners analyse a collection of campaigns by brands. The sample of campaigns reviewed intentionally included those that engage in greenwashing or ethical washing. The learners then critically assessed how these campaigns align with the SDGs and how these campaigns might be improved to overcome their limitations. • Learners provided formative feedback to peers during the activity.	• Learners are assessed via a class activity. • Learners analyse a collection of campaigns by brands. The sample of campaigns reviewed intentionally included those that engage in greenwashing or ethical washing. The learners then critically assessed how these campaigns align with the SDGs and how these campaigns might be improved to overcome their limitations. • Learners provided formative feedback to peers during the activity.

Table 1. Overview of modules

Primary data was not collected from students in the form of formal interviews or written reflections as part of this study. Instead, the methodology is grounded in the author's reflections, based on observations of student engagement during the activity, formative feedback interactions, and a post-activity focus group discussion. These discussions provided a structured space for students to reflect critically on their assumptions, values, and experiences. While student reflections were not documented in journal format, the group reflections facilitated dialogic reflection, offering insight into their affective engagement with the content.

Gibbs' Reflective Cycle was used as a model to support my own reflection-on-action, guiding the analysis of how learners appeared to progress through Krathwohl's taxonomy of the affective domain.[23] This cyclical model enabled a structured review of the learning activity, from description and feelings through to evaluation and action planning. Through this methodological lens, the study identifies how learners engaged in a process of learning, unlearning, and relearning, with particular emphasis on the development of values, attitudes, and ethical reasoning.

DISCUSSION AND CONCLUSION

A significant finding that emerged from this reflective inquiry is the observation that students participating in this sustainability-themed activity appeared to undergo a process of learning, unlearning, and relearning during the activity. While initial engagement with the SDGs often involved instrumental or surface-level responses, subsequent classroom interactions, reflective prompts, and group discussions revealed a deeper interrogation of assumptions, personal values, and ethical considerations. This shift suggests movement through the levels of Krathwohl's affective taxonomy from receiving and responding, toward valuing and, in some cases, internalising complex perspectives (Figure 1).

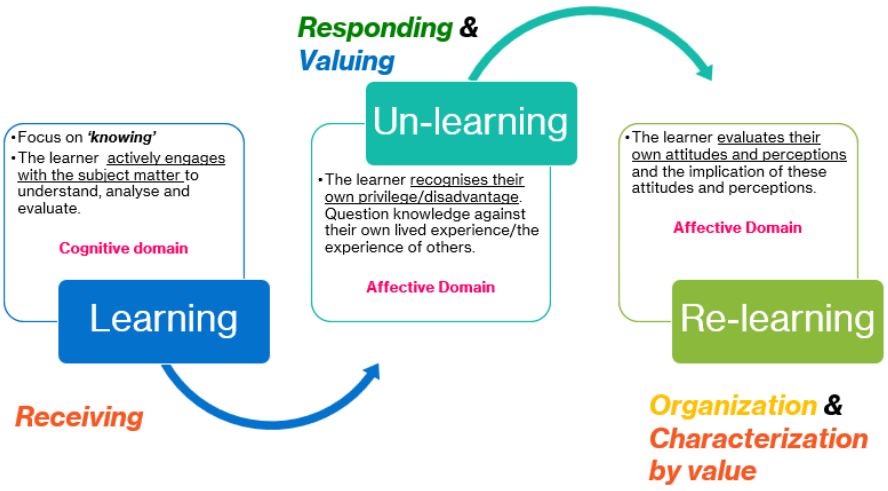

Figure 1. Mapping of the learning process to the affective domain

As represented in Figure 1, an intriguing observation was that during the initial learning phase, students placed greater emphasis on cognitive factors as they engaged with new knowledge about sustainability challenges and malpractices. At this stage, students also began to articulate their initial values and attitudes, suggesting an emerging interplay between the cognitive and affective domains. However, as they transitioned into the unlearning phase, the affective domain became more prominent, particularly as students engaged in self-reflection to acknowledge their own positions of

privilege or disadvantage. In the re-learning stage, students critically evaluated their prior beliefs and reflected on the potential impact of those beliefs, further demonstrating affective engagement.

It must be noted that this progression was not linear; rather, it reflected a cyclical pattern in which students re-evaluated previously held beliefs in light of new knowledge and peer insights. Such a pattern aligns with the theory of transformative learning proposed by Mezirow, which suggests that disorienting dilemmas, such as confronting global challenges through the SDGs, can trigger critical reflection and epistemic change.[24] In this case, the curriculum structure, which focused on affective learning outcomes alongside cognitive learning outcomes, appears to have created conditions for students to reconsider their role as future professionals within a global, ethically charged landscape.

Furthermore, creating an environment that facilitates the sharing of learners' stories and experiences also contributes to a collaborative reflective process in which learners acknowledge their own positioning through reflexivity. This, in turn, scaffolds the process of unlearning and relearning, drawing on affective characteristics such as empathy.

This insight has implications for curriculum design in postgraduate education. By intentionally aligning learning activities with both SDGs and affective domain development, educators can facilitate more holistic learning experiences. Furthermore, the process of unlearning and relearning may be particularly relevant in management education, where students are often required to critically reflect on practice, leadership, and organisational values. As this study suggests, integrating reflective practice into such learning environments not only supports affective development but also contributes to cultivating responsible, values-driven professionals.

This study identifies several areas for future research that could enhance our understanding of how the affective domain can be developed in postgraduate education. Firstly, future research could explore how reflective methodologies might be adapted across disciplines to deepen engagement with both the affective domain and the Sustainable Development Goals (SDGs). Secondly, examining how learners develop the affective domain at different levels of study, such as undergraduate versus postgraduate education, could offer valuable insights into the interplay between cognitive and affective learning. Finally, while this study focused on a subject that explicitly engaged with the SDGs, it may be fruitful to investigate how the SDGs can serve as a vehicle for affective development in more complex subject areas, where their presence is embedded in more nuanced or implicit ways.

NOTES

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MINDFUL EDUCATION SPACES: INTEGRATING HEALTHCARE-INSPIRED WELLNESS DESIGN IN EDUCATIONAL ENVIRONMENTS

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INTRODUCTION

Recently, the wellbeing of students across all levels of education has drawn considerable attention prompting a critical re-evaluation of the learning environment's impact on mental health and wellbeing. Data shows that high levels of stress, anxiety, and mental health issues have become common, particularly among university students, many of whom report feeling overwhelmed and burnt out.[1] While educational institutions typically offer counselling and support services on a need-basis, wellbeing does not take center stage for all occupants within these built environments; making these interventions reactive rather than proactive. Although research from the healthcare sector suggests that mindful spaces can significantly improve wellbeing by reducing stress and promoting emotional balance,[2] the potential for transferring these healthcare design principles, including wellness, into educational settings remains largely underexplored. This research explores the intersection of healthcare and education as a means to unify learning with wellbeing, ultimately improving academic outcomes and enhancing the learning experience. It proposes to create a framework that integrates sensory design and mindfulness within educational settings. By offering spaces that go beyond the traditional learning environment, it aims to address the emotional and psychological needs of students and foster a learning environment where both mental health and academic performance are prioritized.

A notable gap is recorded in the research on how sensory stimuli and mindfulness can be transferred to educational settings to support student wellbeing and their impact on stress levels, wellbeing, and academic outcomes. This study aims to address this gap by examining the integration of these elements within the built environments of schools and universities, to create a future-forward model that merges elements of healthcare design into educational settings.

LITERATURE REVIEW

Wellbeing in Educational Settings

Wellbeing is a complex, multi-faceted construct understood differently across various disciplines and contexts.[3] Broadly, it can be defined as feeling good and functioning well both intra personally and socially.[4] With a persistent increase in the number of students who are experiencing mental and emotional disorders,[5] student wellbeing has become a vocalized concern within educational settings.[6]

Education providers globally face a responsibility to provide teaching and learning experiences that facilitate student wellbeing.[7] It must be noted however, that more often than not, the focus is on traditional, reactive services like counseling, which are proving to be insufficient to meet the growing needs, thus highlighting the need for education providers to adopt more preventive and accessible measures instead. Mindfulness, or awareness that arises through paying attention in a particular way, on purpose, in the present moment, non-judgmentally[8] has been widely used as an evidence-based practice for approaching the improvement of mental health and well-being [9] Particularly within higher education settings, there have been efforts to incorporate mindfulness[10] as a tool for improving student wellbeing and promoting positive mental health outcomes.[11]
Psychological and emotional wellbeing is crucial to students' quality of life, happiness, personal growth, self-esteem, self-acceptance, positive relationships, and autonomy.[12]

Healthcare Design: Sensory and Mindfulness Insights

Sensory design activates touch, sound, smell, taste, and the wisdom of the body.[13] Rooted in evidence-based design, sensory design enhances health and well-being[14] creating environments that are therapeutic and restorative. This approach has been of particular interest to patients, visitors, and staff of healthcare settings[15] as it favors the stimulation of primary senses and self-regulated emotions to generate positive feelings, reduce stress, and promote relaxation, physical activity, and recovery.[16]
On the other hand, through its positive impact on emotion regulation, mindfulness helps to develop sustained and focused attention, concentration, and reflection[17] - skills key to successful learning, and foster open awareness and creativity.[18]
According to Pearse et al. serene environments characterized by natural sounds foster restoration, reduce stress, and enhance mental states, supporting the idea that mindful spaces promote relaxation and a connection with the present moment.[19] Studies also show that the integration of multisensory experiences, including sensory stimulation, enriches mindfulness practices, promoting relaxation and emotional well-being.[20] Thampanichwat et al. [21] studies revealed that the architectural atmosphere is the most significant component. Architectural atmospheres characterized by natural forms, spaces that evoke a sense of enclosure, natural light and uniformity, and the biophilic design concept have shown the strongest tendency to promote attention and mindfulness. This design approach supports the stimulation of primary senses and self-regulated emotions to generate positive feelings, reduce stress, and promote relaxation, physical activity, and recovery,[22] as seen in healthcare settings. The possibility to draw from these healthcare design principles in educational settings to create mindful learning environments represents a major opportunity to support student wellbeing, reduce stress, and promote emotional balance.

Translating Design for Wellbeing Across Sectors

The integration of design principles across sectors, especially from healthcare to education, offers an opportunity to create environments that are innovative and supportive in catering to needs holistically. Within healthcare settings, the fundamental change in how health professionals conceptualize health and evaluate healthcare facilities is aiding the healing process.[23]
Architects are now focused on designing, creating, and improving spaces and measuring the recovery and healing effects of spaces by analyzing data related to the progress of patients' physical recovery, and they have found that spaces evoke cohesion between body and mind and have developed the design concept of healing spaces.[24]
Evidence-based studies have shown that spatial considerations in design - including color, privacy,

and connection to nature - particularly in healthcare settings, are vital assets in a healing environment.[25] Integrating these principles into educational environments can create a positive spatial atmosphere that enhances the emotional experience, thus significantly improving student wellbeing.

METHODOLOGY

Research Design and Participants

This study employed a mixed methods approach to investigate how design elements can be transferred from healthcare settings into learning space design to support student wellbeing. The emphasis was on understanding students' experiences of stress and anxiety within their learning spaces as well as their perceptions and use of spaces oriented towards wellbeing. A literature review was conducted to ground the research in prior studies on student mental health,[26] healthcare design,[27] mindfulness,[28] sensory and neurodivergent design,[29] and restorative environments.[30] Insights from this review informed the structure of the questionnaire and offered a theoretical foundation to interpret the results.

Participants were recruited via institutional course enrollment lists and instant messaging platforms aimed mostly at university and college students; although a small number of faculty responses were also recorded. The final dataset included 50 responses across a diverse group of participants, including 44 tertiary education students across both, various areas of study and multiple regions. Age, gender identity and neurodivergent condition identification data was captured through demographic questions. By including neurodivergent participants, the survey aims to also address the needs of populations otherwise underserved.

Survey Instruments and Data Analysis

Data were collected through a single online survey instrument comprising of 75 questions developed in line with the literature. The survey combined multiple-choice questions, Likert-scale, checkbox and open-ended formats to gather information across several areas including frequency and sources of academic stress, emotional regulation habits, usage of wellbeing spaces, as well as sensory and design preferences. The survey also studies attitudes and preferences towards commonly found therapeutic and healthcare environment features such as layout, lighting, acoustics, nature integration and privacy. Dominant trends were summarized through descriptive statistical analysis while open-ended responses were categorized based on recurring themes, narratives and values. The findings were used to identify spatial design elements that could potentially address gaps surrounding emotional and sensory regulation, inclusivity and emotional comfort in current learning environments.

RESULTS

Descriptive statistical analysis was employed to quantify the survey data in terms of frequencies, proportions, means or correlations between sensory design elements, mindfulness practices, and student wellbeing and academic outcomes.[31]

Patterns of Students Stress and Spatial Use

Prevalence and frequency of stress

According to the data, nearly two-thirds of participants' report feeling stressed often (27 %) or constantly (17 %) in their educational environments; only 8 % report rarely or never experiencing stress. The primary response, sometimes (48 %), indicates that stress is a regularly encountered state for most students.

Primary stressors

Emotional pressure/academic overload is found to be the single biggest stressor as indicated by 56 % or the participants. Other top stressors include noise or sound levels (18 %), unpredictability/lack of routine (8 %), and lack of privacy (6 %).

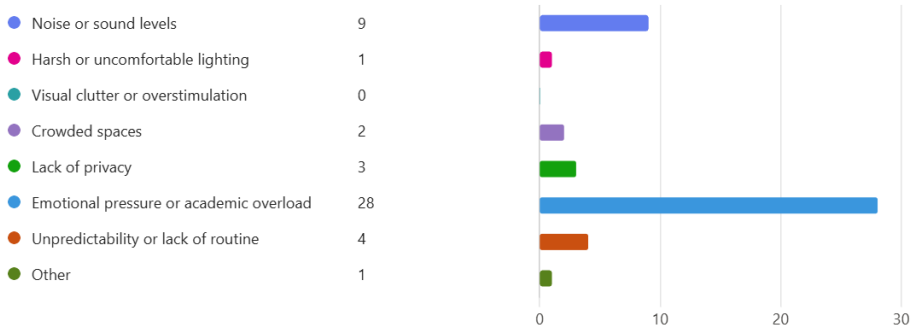

Figure 1. Biggest stressors in the learning environment

Use of spaces to manage stress

While almost half (48 %) occasionally use spaces to decompress, with 25 % using them regularly and 21 % rarely; most participants (67%) have never used a dedicated wellbeing space such as a quiet room or sensory pod. More than half of these participants (53%) didn't know such spaces could exist. Only 6 % never seek out a space for emotional regulation. Of the 25% who have tried wellbeing spaces, the most commonly used are quiet rooms or calm zones and outdoor gardens/wellness spaces, while the use of sensory rooms or pods was almost negligible (6%).

Barriers to use

Common barriers cited by those who haven't used a wellbeing space include lack of awareness of the space, crowding, and worry about being judged by peers.

Preferences for Sensory/Mindful Design Features

Overall importance ratings

When asked to rate specific design statements on a 1–5 scale (Strongly disagree = 1… Strongly agree = 5), privacy was found to be the most important factor for relaxation as cited by nearly half of the participants (49%) with a mean score of 4.27. Nature integrated spaces (32%), minimal visual clutter (24%) and healthcare-like designs (e.g., therapy rooms, clinics) (4%) were ranked decreasingly lesser in their overall importance with mean scores of 3.94, 3.84 and 3.04 respectively.

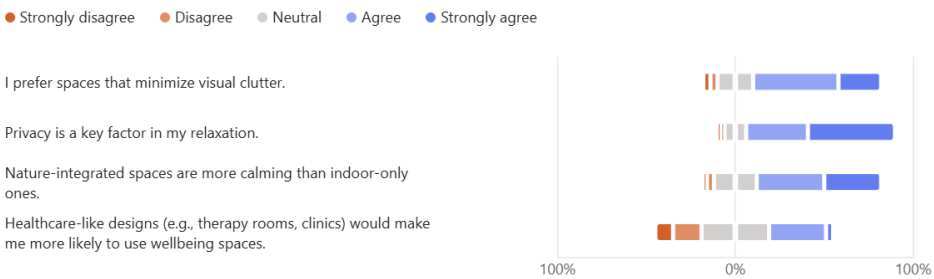

Figure 2. Values and preferences regarding wellbeing spaces

Top sensory elements

The two most critical features that stand out as top sensory elements through the survey are privacy and biophilic elements. While minimal visual clutter is also valued, reinforcing the idea of a calm aesthetic, more overtly clinical or healthcare style décor is the least popular of the four tested statements.

Mindfulness supports

A little more than one-third of participants (38%) indicate that they would use guided mindfulness technology (e.g., prompts, apps) if available in the space; while an additional 52% were still open to the idea. Most prefer short, frequent breaks (5–10 mins) rather than longer retreats.

Cultural and digital flexibility

Over 50% agree that the space should accommodate cultural/religious practices (e.g., prayer, meditation). Over half of the participants (68%) are also in favor of the use of digital devices for apps/music while the remaining prefer the idea of device free zones.

Links Between Design Features and Emotional and Academic Outcomes

Academic impact expectations

When asked 'How much could a wellbeing space improve your academic performance?', responses span from No impact (2%) up to Significant impact (25%), with the majority expecting a Medium impact (52%).

Preparedness after use

After using a wellbeing space, 56% report feeling often or always better prepared to return to academic tasks; less than 10% say rarely or never.

Links between sensory features and student benefits

A strong positive relationship between students' biophilic-preference scores and their anticipated academic gains was observed - those who most wanted nature-integrated spaces also expected greater performance improvements. On the other hand, privacy preference and overall preparedness showed moderate links with academic impact, indicating that those who feel more ready to resume study also expect stronger performance gains. It was noted that preference for healthcare-style décor has a weaker link to both academic impact and preparedness, suggesting clinical aesthetics alone won't drive outcomes.

DISCUSSION

Speculative Prototypes: Designing the Neuro-Sensory Campus

Physiological responses can be used to inform design intervention in current learning spaces to reimagine them as "stress labs". For instance, unobtrusive bio-feedback sensors can be integrated into student workstations, allowing real-time monitoring of heart-rate variability. Elevated stress-markers as indicated by the questionnaire, once detected, can be linked to algorithmically trigger green walls, nature sounds and views and other biophilic elements to create restorative environments[32] for respite through immersive technologies.

Furthermore, while clinical healthcare aesthetics received low preference ratings in the questionnaire, the findings offer a collaborative approach - blending clinical clarity with playful tactility to enhance wellbeing. For instance, writable walls integrated with olfactory cues like lavender scents, or

thermochrormic panels that change color with touch could encourage stress release through sensory elements. When writable cork walls become fragrant message boards combining natural textures with the opportunity to express freedom through graffiti, the sterility of healthcare can be replaced by a blank canvas for playful, olfactory, haptic interaction.[33] These *sensory hybrids* play an essential role in conquering overstimulation. This hybrid design fuses expressive textures with calming palettes to create spaces that invite engagement rather than simply suppress overstimulation.

Figure 3. Stress labs and cognitive sanctuaries; conceptual only (created with Midjourney)

With a mean score of 4.27/5, students' privacy was another important need that came across in the survey's results. Multiple studies have consistently pointed out the link between privacy and reduced anxiety and greater autonomy in adolescent-focused environments.[34] This idea offers the opportunity to reframe private spaces as *cognitive sanctuaries* - micro-habitats within the learning space that do more than just isolate. Designed as booths or alcoves of biodegradable felt, embedded with faint natural auditory tones, these spaces can also integrate lights that slightly dim upon a student's entry, signaling to those outside that the user has now shifted into a state of cognitive restoration. For the users themselves, these booths will act as neuro-reactive cocoons, offering momentary relief from overstimulating social ecologies.[35]

Finally, integrating these standalone sensory hybrids and cognitive sanctuaries in unexpected spaces - such as under staircases or atop mezzanines - will ensure access for both neurotypical and neurodivergent students, encouraging chance encounters with restorative environments through daily transit.[36]

Toward a Next Generation Wellness Campus: Design Implications and Limitations

Designing a next generation campus involves a zoning strategy that spans across the whole spectrum of cognitive and emotional users offering spatial choices from open, collaborative studios to semi-enclosed spaces and fully private, isolated pods to better align with specific task requirements.

Simultaneously, tactile systems such as textured floor inlays - rubberized nodes for quiet zones, for instance - can replace conventional signage and wayfinding to further enhance wellness in learning environments through intuitive, multi-sensory navigation.

Finally, experimentation with emerging technologies - bio-adaptive seating that dynamically responds to pressure metrics, for instance - in combination with healing and therapeutic design (HTD)[37] shifts focus from the layout and function of physical spaces to also consider emotional needs and

psychological states as well as environmental factors[38] to create an ecosystem where wellness design reinforces a culture of self-care.

It must be noted, however, that these proposals remain hypothetical at this time; their effectiveness and impact remain to be validated through longitudinal research. The implementation of these interventions into measureable outcomes, thus presents both, a limitation and future direction for applied research.

CONCLUSION

Summary, Recommendations, and Future Directions

This study explored the integration of healthcare design principles into learning environments to support student wellbeing. It focused on stress reduction, balance and sensory regulation through spatial and environmental factors. The survey's findings revealed students' strong preference for privacy with a mean score of 4.27/5, resistance to sterile clinical aesthetics, and a craving for sensory-rich, flexible spaces for cognitive restoration. These outcomes support the integration of biophilia, sensory modulating interventions and privacy within the educational environment for wellbeing and emotional self-regulation.[39]

Design recommendations drawn from the research include the incorporation of emerging technologies including bio-feedback sensors, immersive technologies, tactile and olfactory cues, neuro-reactive cocoons, layered zoning strategies as well as tactile wayfinding systems that support and enhance cognitive restoration while also aligning with specific task requirements. In combination, the proposed speculative interventions reimagine the future leaning space as an ecosystem of wellness rather than a learning space alone.

Although grounded in evidence-based design and environmental psychology, the speculative nature of these proposals remain invalidated at this stage. This represents a key limitation; though future research can implement and monitor their outcomes across varied configurations and demographics once operational. Collaboration with environmental and spatial psychologists, sensor developers and educational researchers are recommended.[40]

This next generation wellness campus offers a promising framework for transferring sensory stimuli and mindfulness to educational settings with the aim to support student wellbeing and their impact on stress levels, wellbeing, and academic outcomes.

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STUDENT PERCEPTION OF LEARNINGAPPS.ORG IN FOREIGN LANGUAGE COURSES

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INTRODUCTION

Engaging and sustaining students' attention is a common challenge for educators. The decline in attention span among students is a well-documented issue that calls for practical and innovative solutions. One response has been the integration of technology into classrooms to create dynamic learning environments that capture interest and encourage collaboration.[1] As a result, game-based learning platforms like LearningApps.org are increasingly being adopted in both schools and higher education.

LearningApps.org has gained popularity across educational settings worldwide. While a growing body of research explores its classroom use, there remains limited investigation into how different language courses influence university students' perceptions and experiences of the platform. To address this gap, our study examines how students responded to and perceived the use of LearningApps.org in two language courses, French and German, offered at two universities in the United Arab Emirates.

LEARNING.APPS IN EDUCATION: A LITERATURE REVIEW

LearningApps.org is a free online platform designed to support teachers in creating interactive, media-rich learning activities. Launched in 2012 by a joint academic research team from PHBern (Switzerland), Mainz University (Germany), and Zittau/Görlitz University of Applied Sciences (Germany), the platform offers more than 20 activity types including matching exercises, ordering tasks, fill-in-the-blanks, word searches, crosswords, mapping tasks, and voting modules.[2] Its intuitive design enables educators to create and modify educational content without technical expertise, while also allowing the integration of multimedia elements such as images, audio, and video to increase engagement.

One of the platform's key strengths is its accessibility. Teachers can share activities through direct links or QR codes, eliminating the need for student registration and streamlining classroom integration. Additionally, LearningApps.org encourages collaboration by allowing users to browse, reuse, and adapt applications created by others, building a shared ecosystem of digital learning resources.

Several studies have explored how LearningApps.org impacts engagement, learning outcomes, and classroom dynamics across different languages and disciplines. Susanti et al. studied the perceptions

of 37 senior high school students in Indonesia using LearningApps.org for English language learning. Students found the platform user-friendly and helpful for independent learning.[3] They highlighted features such as a variety of task types, suitable difficulty levels, and instant feedback as particularly beneficial. However, challenges like poor internet connectivity and low motivation were noted as barriers during self-study. Expanding on its impact in language education, Shruthi and Aravind assessed the effect of these tools on ESL students' engagement and learning outcomes.[4] Their study found that integrating LearningApps.org into lessons significantly boosted student engagement and improved both understanding and retention of ESL concepts. Students also demonstrated more effective self-study habits when the platform was used consistently. Handayani et al. explored the platform's effectiveness in an Arabic language course at Jambi University, Indonesia.[5] A significant majority of students agreed that LearningApps.org improved their mastery of course materials and increased their motivation and enthusiasm for learning Arabic. The interactive nature of the activities was cited as a key factor in maintaining student interest. Beyond language instruction, Horbatiuk et al. investigated in university-level economics courses in Ukraine.[6] Their findings showed enhanced student engagement and better comprehension and retention of economic concepts. Both students and instructors expressed satisfaction with the interactive learning experience, noting that it supported deeper understanding and made lessons more dynamic.

Together, these studies underline the value of LearningApps.org as a flexible, engaging tool across multiple disciplines. While certain limitations, such as infrastructure or learner motivation, can affect its implementation, the overall evidence supports its effectiveness in enhancing both learning outcomes and student participation.

As important as the studies above have been in giving insight into the role of LearningApp.org, they are still limited in number. Furthermore, there is a noticeable dearth of research on how students perceive the use of this platform in foreign language classes in the UAE. To address these gaps, this study aims to investigate the following research questions:

Q1: How do students perceive the ease of use of LearningApps.org in foreign language learning?

Q2: What are students' perceptions of the effectiveness of LearningApps.org in improving their language proficiency?

Q3: Are there any notable differences in perceptions between students at the two universities in the UAE?

METHODOLOGY AND DATA COLLECTION

To address the research questions, both quantitative and qualitative data were collected during the Spring 2025 semester from two distinct foreign language courses at universities in the UAE: a French as a Foreign Language (FFL) course at the University of Sharjah, and a German as a Foreign Language (GFL) course at the United Arab Emirates University. Both courses were delivered face-to-face and offered as university electives. Throughout the 15-week term, activities from LearningApp.org were prepared by each faculty and offered to the students. In the FFL course, activities were posted after each topic was taught, and students were free to use them at their own discretion and as often as they wished.[7] In the GFL course, by contrast, students were required to complete a set of 3-4 sequenced tasks as part of regular classroom instruction. In both courses, the activities were varied and included matching tasks, crosswords, multiple-choice quizzes, grouping exercises, "Who wants to be a millionaire?", hangman, and more.

At the end of the term, students in both courses completed an anonymous learning experience questionnaire to provide feedback, following approval from the ethics committees of both universities. The questionnaire was shared via a Microsoft Forms link through Blackboard, the

universities' LMS. While participation was not mandatory, students were strongly encouraged to respond. The questionnaire consisted of 25 questions, including four demographic questions,[8] 17 scaled questions based on a 5-point scale drawing on Susanti at al..[9] Additionally, there were four open-ended questions (OEQ) that allowed respondents to freely express their opinions about their learning experience. The data was recorded in an Excel file then analyzed by calculating means, frequencies, and standard deviation (SD).

RESULTS AND DISCUSSION

The first two questions of the questionnaires provide an idea about the demographic of the participants (Table1). The data indicates that most respondents in both groups were female and Freshman.

		GFL	FFL
Number		58	180
Respondent number		27	27
Gender	Male	0	7
	Female	27	27
Age	18-20	20	17
	21-26	7	9
	More than 26	0	1
Year	Freshman	50%	52%
	Sophomore	12%	19%
	Junior	12%	22%
	Senior	27%	7%

Table 1. Respondents' demographic

	GFL			**FFL**		
	Frequency	**%**	**Score**	**Frequency**	**%**	**Score**
Q1: Learningapps.org is easy to use.						
Strongly agree	19	70	5	19	70	5
Agree	4	15	4	7	26	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	4	15	3	1	4	3
		Mean	**SD**		**Mean**	**SD**
		4.56	**0.74**		**4.67**	**0.54**
Q2: Learning activities in Learningapps.org are interactive.						
Strongly agree	20	74	5	19	70	5
Agree	4	15	4	6	22	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	3	11	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.63	**0.67**		**4.63**	**0.62**
Q 3: Learningapps.org is an interesting application.						
Strongly agree	16	59	5	18	67	5
Agree	7	26	4	7	26	4
Disagree	1	4	2	0	0	2

Strongly disagree	1	4	1	0	0	1
Neutral	2	7	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.33	**1.02**		**4.59**	**0.62**
Q 4: Learning activities in Learningapps.org are easily understood.						
Strongly agree	18	67	5	20	74	5
Agree	7	7	4	5	19	4
Disagree	0	0	2	0	0	2
Strongly disagree	1	1	1	0	0	1
Neutral	1	1	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.52	**0.88**		**4.67**	**0.61**
Q 5: Learning activities in Learningapps.org are fun.						
Strongly agree	21	78	5	18	67	5
Agree	4	15	4	7	26	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	2	7	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.70	**0.60**		**4.59**	**0.62**
	Frequency	**%**	**Score**	**Frequency**	**%**	**Score**
Q6: The language used in Learningapps.org is clear and easy to understand.						
Strongly agree	17	63	5	18	67	5
Agree	7	26	4	8	30	4
Disagree	0	0	2	0	0	2
Strongly disagree	1	4	1	0	0	1
Neutral	2	7	3	1	4	3
		Mean	**SD**		**Mean**	**SD**
		4.44	**0.92**		**4.63**	**0.55**
Q7: Learningapps.org helps in improving French / German language proficiency						
Strongly agree	19	70	5	18	67	5
Agree	5	19	4	7	26	4
Disagree	0	0	2	0	0	2
Strongly disagree	1	4	1	0	0	1
Neutral	2	7	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.52	**0.92**		**4.59**	**0.62**
Q8: Learningapps.org is useful for French / German language learning.						
Strongly agree	18	67	5	20	74	5
Agree	7	26	4	6	22	4
Disagree	0	0	2	0	0	2
Strongly disagree	1	4	1	0	0	1
Neutral	1	4	3	1	4	3
		Mean	**SD**		**Mean**	**SD**
		4.52	**0.88**		**4.70**	**0.53**
Q9: Learningapps.org provides useful activities to improve listening skills.						

Strongly agree	16	59	5	16	59	5
Agree	6	22	4	7	26	4
Disagree	1	4	2	0	0	2
Strongly disagree	1	4	1	0	0	1
Neutral	3	11	3	4	15	3
		Mean	**SD**		**Mean**	**SD**
		4.30	**1.05**		**4.44**	**0.74**
Q10: Learningapps.org provides useful activities to improve reading skills.						
Strongly agree	19	70	5	17	63	5
Agree	5	19	4	8	30	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	3	11	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.59	**0.68**		**4.56**	**0.63**
Q11: Learningapps.org provides useful activities to improve speaking skills.						
Strongly agree	15	56	5	11	41	5
Agree	4	15	4	9	33	4
Disagree	2	7	2	1	4	2
Strongly disagree	0	0	1	0	0	1
Neutral	6	22	3	6	22	3
		Mean	**SD**		**Mean**	**SD**
		4.19	**1.02**		**4.11**	**0.87**
Q12: Learningapps.org provides useful activities to improve writing skills.						
Strongly agree	18	67	5	13	48	5
Agree	5	19	4	10	37	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	4	15	3	4	15	3
		Mean	**SD**		**Mean**	**SD**
		4.52	**0.74**		**4.33**	**0.72**
Q13: Learningapps.org provides useful activities for learning grammar.						
Strongly agree	17	65	5	18	67	5
Agree	7	7	4	7	26	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	2	8	3	2	7	3
		Mean	**SD**		**Mean**	**SD**
		4.58	**0.63**		**4.59**	**0.62**
Q14: Learningapps.org provides useful activities for vocabulary enrichment.						
Strongly agree	17	63	5	17	63	5
Agree	8	30	4	9	33	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	2	7	3	1	4	3
		Mean	**SD**		**Mean**	**SD**
		4.56	**0.63**		**4.59**	**0.56**
Q15: I prefer using LearningApps.org activities over traditional textbook-based activities.						

Strongly agree	18	67	5	19	70	5
Agree	7	26	4	7	26	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	2	7	3	1	4	3
		Mean	**SD**		**Mean**	**SD**
		4.59	**0.62**		**4.67**	**0.54**
Q16: Activities helps me retain information better compared to traditional textbook based activities.						
Strongly agree	17	63	5	16	59	5
Agree	7	26	4	10	37	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	3	3	3	1	4	3
		Mean	**SD**		**Mean**	**SD**
		4.52	**0.69**		**4.56**	**0.57**
Q17: I am more likely to complete exercises when they are provided through LearningApps.org.						
Strongly agree	18	67	5	17	63	5
Agree	6	22	4	7	26	4
Disagree	0	0	2	0	0	2
Strongly disagree	0	0	1	0	0	1
Neutral	3	11	3	3	11	3
		Mean	**SD**		**Mean**	**SD**
		4.56	**0.68**		**4.52**	**0.69**

Table 2. Students' perception regarding LearningApp.com

The results show that both students groups hold highly positive perceptions of LearningApps.org (Table 2). Students find it easy to use (85% agreed in GFL and 96% in FFL), interactive (89% agreed in GFL and 92% in FFL), and more engaging than traditional textbook-based activities (93% agreed in GFL and 96% in FFL). Both groups (strongly) agreed that the platform effectively supports language learning (89% agreed in GFL and 93% in FFL), particularly in reading, grammar, and vocabulary, while showing moderate usefulness for listening and writing, and relatively weaker support for speaking. Although the overall responses were similar, FFL students rated the experience slightly higher in terms of interest and overall usefulness. These findings suggest that while the platform is a valuable tool for language learning across both groups, enhancements in speaking and listening activities could further strengthen its effectiveness.

However, there is a difference in the SD between the two groups. The GFL students have a relatively larger SD ranging from 60 to 1.02, indicating greater variability in their responses. By contrast, the FFL students have lower SD ranging from 0.46 to 0.65, suggesting less variability in their data.

In OEQ1 (Table 3), where learners openly described the advantages of the platform, respondents highlighted its ease of use, the enjoyable nature of the activities, and its contribution to memorization. In OEQ2 (Table 4), most respondents in both groups reported no perceived disadvantages with the platform. However, one student regretted that not all language skills can be practiced through the platform, and another expressed a preference for paper-based activities, explaining a dislike for screen-based learning. In OEQ3 (Table 5), learners described occasions when the platform helped them to understand a language concept more effectively than traditional methods, emphasizing its role

in supporting memorization. Finally, in OEQ4 (Table 6), where students could freely share their overall experience, many emphasized that the platform is useful, efficient, and supportive of language learning.

These findings align with the existing literature, which suggests that incorporating learningApp.com into classroom activities enhances student engagement.[10] However, it is worth noting that the higher SD value observed in the GFL course suggests that student experience with the platform and their perceptions of its usefulness are less consistent among students enrolled in this course. This may be related to how the platform is used: students are either required to use it (GFL) or are free to access it as often as they wish, at any time they choose (FFL).

GFL	FFL
Easy *"It helps to make the foreign language easy to learn"* **Fun** *"So fun to use"* **Understanding** "*It helps understand language in many easy ways"* **Learn** *"It is good to learn fast"* **Motivating** *"Motivates to learn more"* **Memorize** **"***Helps me memorize the words easily"*	**Easy** *"It is easy and fun to use"* **Fun** *"It makes learning fun and interactive"* **Learn** *"Makes you want to learn more"* **Memorize** *"Helps with memory retention"* **Simple** *"It's simple and has helped me get good grades in French"* **Practice** *"It helps me review and master what's been thought"* **Testing** *"Through it you might know your weak points and improve it in an entertaining way"*

Table 3. OEQ1: In your opinion, what are the advantages of using LearningApps.org in a foreign language class?

GFL	FFL
"No disadvantages" **Difficult to understand** "*Sometimes might need more explanation".* **The screen** "*Give me a headache since it's on the screen + I prefer paper-based activities*". **Add game elements** '*I think they need to be more engaging with sounds prizes like between teams' games so it's more engaging".*	"No disadvantages" **Lost in gamification patterns** "*It is easy to get lost in the gamification of the website so sometimes rather than completely focusing on understanding the exercise, you just aim to get everything right*". **Internet** "*Sometimes the internet is slow*". **Not all skills** "*I believe that it is the best for memorizing but it doesn't work on the listening or writing skills*". **Too easy** "*Some activities can be too simple*".

Table 4. OEQ2: In your opinion, what are the disadvantages of using LearningApps.org in a foreign language class?

GFL	**FFL**
"*When I was connecting the photos with the words it made me connect it in my head because I have a visualize mind in studying"* "*When we write down the words, example the meine and mein in sentences, the die das and der and etc"* *"All the time, every time I use it, I learn something new".* *""In matching pictures with name as I did it thousand times"*	"*When learning the dates of the French celebrations, the memory game provided by the learning apps made it easy to memorize".* *"I remember I struggled with memorizing the events with dates and the learningApps was GREAT!!"* *"One time, I used a matching game on LearningApps.org to learn new vocabulary in French. "Seeing the pictures with the words helped me remember them faster than just reading from a book. The interactive part made it fun […] It was much easier than just memorizing a list!"*

Table 5. OEQ3: Can you describe a time when LearningApps.org helped you understand a language concept better than traditional methods?

GFL	**FFL**
"*I love LearningApps.org :)"* *"I believe LearningApps.org is an outstanding way to teach students a language*."	"*It's a really good studying tool!"* "*No, it is a useful application!"* "*They helped me a lot!"* "*LearningApps.org is a great way to make language learning more fun, active, and student-friendly*." "*It is great, and I think it should be used more often in other lessons*".

Table 6. OEQ4: Please state any comment you wish to make about this experience with LearningApp.org activities.

CONCLUSION

The findings of this study indicate that students consider LearningApps.org easy to use (RQ1) and hold highly positive perceptions of the platform (RQ2). This aligns with existing literature that highlights the positive impact of LearningApps.org on student engagement. Moreover, the differences between the two groups were minimal (RQ3). Further comparative research is needed to better understand these differences, particularly in relation to whether the compulsory or voluntary use of LearningApps.org influences students' perceptions and outcomes.

NOTES

[1] Heningtyas Pratiwi, Raden Dewo Atmaja, and Bambang Prasetya. “Multiple E-Learning Technologies on Practicing TOEFL Structure and Written Expression.” *Journal of English Educators Society* 6, no. 1 (2021): 105–15. https://doi.org/10.21070/jees.v6i1.1194 ; Dwi Ika Pratiwi, and Bambang Waluyo. “Autonomous Learning and the Use of Digital Technologies in Online English Classrooms in Higher Education.” *Contemporary Educational Technology* 15, no. 2 (2023): ep423.

[2] Yerzhanova and Maketova. “Efficient Ways of Using Information and Communication Technology Service LearningApps.org at Geography Lessons.” Fundamental and Experimental Biology 89, no. 1 (March 2018): 82–88. https://doi.org/10.31489/2018bmg1/82-88 ; Maritza Calle Wilchis, Lupita del Carmen Cárdenas Matute, Hendy Maier Pérez Barrera, and Teresa Santamaria López, “Technological Platform of Learning Apps to Strengthen Academic Performance and Interactive Learning in Language and Literature,” Revista Minerva 6, no. 11 (2025): 304–32; Nina Indriyani and Khairunnisa Dwinalida, “Using LearningApps.org to Teach Descriptive Text Writing to Seventh Graders,” JEPAL: Journal of English Pedagogy and Applied Linguistics 6, no. 1 (2025): 107–125. https://doi.org/10.32627/jepal.v6i1.1461

[3] Eka Susanti, Nur Suryati, and Umi Astuti, “Students’ Perception on the Utilization of LearningApps.org for Self-Study Materials,” in *Proceedings of the International Seminar on Language, Education, and Culture (ISoLEC 2021)* (Atlantis Press, 2021), 86–90, https://doi.org/10.2991/assehr.k.211212.016

[4] Shruthi S. and Aravind BR**.**, “Open-Source Tools in ESL Learning: A Quantitative Study,” *International Research Journal of Multidisciplinary Scope* 5, no. 2 (2024): 762–777, https://doi.org/10.47857/irjms.2024.v05i02.0636

[5] Rina Handayani, Achmad Mustofa, Riza Huda, Fikri Pratama, and Wahyu Amalina, “Arabic Learning Media: The Use of LearningApps.org in Supporting Arabic Language Learning in Higher Education,” *ALSUNIYAT: Jurnal Penelitian Bahasa, Sastra, dan Budaya Arab* 7, no. 2 (2024): 250–65,

[6] Roman Horbatiuk, Uliana Dudka, Vitalii Kabak, and Liliia Rebukha, “Interactive Learning in Economic Education: Integrating LearningApps.org Tasks into Moodle,” *CTE Workshop Proceedings* 11 (2024): 340–55, https://doi.org/10.55056/cte.691.

[7] More than thirty activities were developed and made freely available to students, who were also afforded the opportunity to request additional activities if they considered them necessary. Some of them did ask.

[8] A demographic question related to the students’ major was included in the study but is not presented in this paper.

[9] Susanti et al., “Students’ Perception on LearningApps.org.”

[10] Eka Susanti, Nur Suryati, and Umu Astuti. “Students’ Perception on the Utilization of LearningApps.org for Self-Study Materials.” In *Proceedings of the International Seminar on Language, Education, and Culture (ISoLEC 2021)*, 86–90. Atlantis Press, 2021. https://doi.org/10.2991/assehr.k.211212.016 ; Elly Rosalina Susanti, Nunung Suryati, Utari Praba Astuti. “Students' Perception on the Utilization of Learningapps.org for Self-Study Materials.” Advances in Social Science, Education and Humanities Research 612 (2021): 86–90; Handayani et al., “Arabic Learning Media.”; Horbatiuk et al., “Interactive Learning in Economic Education.”

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A DEMOCRATIC CLASSROOM IN ACTION

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INTRODUCTION

Schools are major educational institutions where students are socialised to participate in society, in Australia in a democratic society, as outlined in the 2008 *Melbourne Declaration on Educational Goals for Young Australians,*[1] and further developed in the 2019 *Alice Springs Education Declaration*.[2] The first author, a classroom teacher/researcher, wanted to address some social challenges in her year 4/5 classroom using a democratic approach. From her teaching experience, reading and further study she decided to implement social practices to support student participation and decision making in the classroom. Her masters research pointed to the importance of friendships and leadership opportunities in building an inclusive democratic classroom.[3] In collaboration with the second author, a university researcher, they conducted a year-long ethnographic study in the teacher's year 3 classroom to document and examine how a further iteration of social practices supported students' participation and learning.[4] Vygotsky's cultural-historical theory (CHT) underpinned the development of the classroom as CHT asserts that cognitive development occurs through social interactions which implies that learning is innately collaborative.[5]

This paper explores the way research and teaching are intertwined. It focuses on the social practices used in the year 3 classroom and how research informed the development of these practices, analysis of the findings and search for further theory to explain them more fully. The social practices included a daily social circle where students identified and expressed their emotions, a weekly class meeting where identified issues were discussed, solutions suggested and then tested, and collaborative groups formed using sociometric surveys and with a leader and vice leader selected by group members.

Initial theoretical and practical perspectives

The theoretical starting point was Vygotsky's CHT developmental theory that examines the process of mental development referred to as higher mental functions (HMF).[6] Each child has a unique social and cultural history which influences their personality, learning and development trajectory. Vygotsky asserts that the cultural and social processes are critical for children's development of HMF and the qualitative transformation of the child's mental development. Vygotsky's theory emphasizes individuals' active role in their cognitive development, based on innate abilities, social interaction, and cultural tools.[7]

Vygotsky's key concepts

The zone of proximal development (ZPD) is a Vygotskian concept about development and relates to what is about to develop through social interaction with others. It explains how the "social" becomes the "individual".[8] Thus, the ZPD and the formation of HMF are initially social, created in social interactions and may result in new learning. HMF are the complete transformation within the individual sourced in the social. It is different for each child due to their personality and personal history which is dynamic and complex.

The social situation of development (SSD) is not about the physical environment but a system of relations between the child and their social reality that potentially will develop immature functions into HMF.[9] Thus SSD calibrates the child's changing relationship with the environment. The *ideal form* also needs to be present for development of HMF.[10]

Implications for the Classroom

Thus students are not passive recipients of knowledge but actively interact with their environment and the people around them to learn and develop. Collaborative pedagogies are based on a set of assumptions about the importance of communicative processes, interpersonal skills and community formation. Students use cultural tools such as books and media but also psychological tools such as language and writing to mediate higher order thinking skills, learning to reason and problem solve. Teachers need to provide opportunities for students to be active learners, learning how to collaborate with each other to support this process.

The ideal forms in the classroom were displayed in the classroom on charts to which students contributed and agreed as the ideal from, for example what a good leader looks like (behaviour), sounds like (language used) and feels like (emotions experienced when the ideal form is enacted). Ideal forms may also be evident in more knowledgeable peers who display mature behaviour that their peers are learning about, e.g., social attributes for making friendships and sustaining friendships such as sharing, listening and caring for others.

ENACTING THEORY AND PRACTICAL STRATEGIES IN THE CLASSROOM

The social practices, the daily social circle and the weekly classroom meetings developed collaborative skills. Sociograms supported student leadership and friendship aspirations. The five classroom agreements were the foundation for developing democratic values that were enacted during small group and partner work.

Classroom Agreements

There were five agreements (1. mutual respect, 2. appreciating others, 3. attentive listening, 4. right to pass, and 5. personal best) and each was discussed fully with students to negotiate the core values of a democratic classroom which were written in the students' language onto charts and displayed for future reference by the students and teacher. These charts represented the shared understandings of the students and were models of the ideal form which Vygotsky states is integral for students' development of HMF. Negotiating the five classroom agreements not only established the parameters for behaviour but an expectation that students take responsibility for behaviour to develop positive peer relationships and establish a safe space to encourage maximum student participation. The first four of *five classroom agreements* were adapted from Gibbs' *Tribes*,[11] and Bernard's *Keys to Success*,[12] and the fifth from Dweck's *Growth Mindset.*[13]

Mutual Respect

Every student has a unique history and social background which influences how they interact with their peers. Building mutual respect by working with different peers widens their perception and strengthens their ability to collaborate.

Appreciating others and no put downs

Students need to pay attention to the words they use and focus on kindness and genuine empathy for others. This skill is developed with practice by highlighting the positive aspects of peers' personalities and abilities.

Attentive Listening

Building social connections needs students to truly listen to other peoples' points of view to first understand before expressing your views. Students learnt to give full attention to their peers when they were speaking and respond appropriately to pertinent questions.

Participation/right to pass

Seeking connection with others is part of being human so the classroom is an ideal context to focus on building positive relationships and friendships. This class agreement is central to building trust and optimal learning and was practiced throughout the day in the Daily Social Circle, Weekly Classroom Meetings and small group work.

Personal best and growth mindset

This agreement focuses on how your attitude towards challenges and setbacks creates a growth or fixed mindset.[14] A growth mindset is the belief that abilities and intelligence can be developed over time with effort and persistence. Challenges and setbacks are viewed as learning opportunities, rather than failures, that strengthen the neural networks in the brain when learning new ideas. Facing challenges is an integral part of the learning process and students experience a sense of achievement when they do their personal best and are motivated to face new challenges and not give up.

Five agreements

The interpersonal and communication skills (1, 2 & 3) were foundational to establish positive relationships. However, to further reinforce psychological safety and inclusion students had the choice of contributing when they were ready or passing (4). This was important in the context addressing bullying where students needed a choice to participate until they established trust with their peers. Doing your personal best and developing a growth mindset (5) encouraged student collaboration and shared responsibility when working in pairs or groups. This agreement applied to social and emotional learning when dealing with conflict or friendship issues as well as academic learning.

The Daily Social Circle

The daily social circle was used to transfer students from home to the classroom. Students stated their name and expressed how they felt at the start of each day while passing around a talking stick. This social practice gave students an oopportunity to have a voice. They shared their feelings and social knowledge with peers. This enhanced opportunities for students to build wider peer friendship groups and facilitated student collaboration.

The Weekly Class Meetings

The teacher and students wrote the agenda during the week on a whiteboard and prioritised the items for the discussion before each meeting, so the most prominent issues were discussed to keep within a time limit of 20-30 minutes which included students completing self-reflection logs. At the beginning of the year students' items were usually about social issues and keeping friendships going. Later in the year there was more focus on group and leadership issues and the physical layout of the classroom. These meetings gave students a voice to present their issues and ideas in a supportive context and appreciate peers' contributions too. Students developed skills to engage in collective participative decision making, reach a consensus and action ideas for the following week which is indicative of the democratic process.

Sociograms

Sociograms were conducted each term where students nominated four peers for each round of social groups based on two criteria and voted for their peer leader once in their new group.

1. Make a new friend and build deeper relationships.
2. Practise being a leader with the support of peers.

The teacher/researcher was strategic to place students in groups where their aspirations for friendships and leadership roles could be realised but also wanted students to engage with a variety of peers to learn how to work collaboratively. Every student had at least one nomination in their new group but were not told who nominated them. This built a classroom community where there was a sense of belonging to promote social cohesion.

THE RESEARCH AND TEACHING INTERTWINED

There were 24 students in the year 3 classroom for the year-long ethnographic research. Student and teacher reflections and interviews with students and parents were used throughout the year to strategically support student learning. These data and video recordings of class activities were also used to document changes in participation and learning of students. In addition, students completed an individual self-reflection log after each class meeting which was very insightful for the researchers to identify the progress and future direction of the research. Likewise, the student interviews conducted during and at the conclusion of the research with parent surveys and interviews conducted each term added to the qualitative data that could be cross referenced for authenticity of interpretation of the data. The researchers introduced the research and presented the findings at the start and conclusion to parents. These meetings contributed building the researchers' background knowledge about the students and their families to collect rich activities that addressed the whole child, socially, emotionally and academically.

The data provided clues for the classroom teacher to scaffold and facilitate students' learning and development. Scaffolding refers to what the teacher does to support student learning which is not to be confused with the ZPD which refers to the student's cognitive development.[15] The group of peers was the source of development and how the ZPD was created. During the weekly classroom meetings students listed what their concerns were and offered solutions which gave the researchers clues as to how to create opportunities for the ZPD to occur and new learning with discussions with peers that challenged their perceptions and enhanced their development. The teacher's role is to create the social conditions for this concept to occur where students are the subjects of their learning and actively create their ZPD with their peers during the social practices and small group work. The outcomes can be observed in students' changes in behaviour and attitude towards their peers, their learning dispositions and transformation of their personalities.

THE FINDINGS

For all students perceptions of group work and being a leader changed and was reflected in a shift in self-confidence and awareness of the benefits of collaboration. The SSD was dynamic when groups changed and provided new opportunities for personal growth and awareness and appreciation of individual differences. When each new social group formed with diverse personalities, students had to deal with the day-to-day issues of getting along with students who were not their friends or could be "antisocial" or "naughty" (students' words). Problem solving and decision making were rehearsed at a whole class and small group level.

Changes in participation and learning were documented for each student. Examples are provided below for Mary, Gemma, Trent, Martin and Tina. While the changes were different for each student in the class, these five case studies are indicative of the range of findings.

MARY

Mary had intellectual disabilities, limited verbal communication, attended a special centre in the morning and joined mainstream classroom in the afternoon. Initially she socialised with another student who also had intellectual disabilities and was mute. Her mother stated that she was anxious in the mainstream classroom because she knew she couldn't keep up. By the end of the year Mary had increased in self-confidence and happiness in the mainstream classroom as confirmed by Mary's mother. She understood the concept of collaboration and that you need to "behave well." Peers chose Mary for partner activities and learnt to be more compassionate. Mary was able to list the names of students who had been in the different groups through the year.

GEMMA

Gemma was at educational risk, previously traumatised by her father's death when young, lacked self-confidence and often "gave up" when there were learning challenges. She had a small circle of friends. She improved academically, realised her ability to be a good listener, offer ideas and support group cohesion. Being a leader herself developed her self-confidence.

TRENT

Trent valued an individualistic and competitive approach to learning. He gravitated towards academically able and well-behaved students. He had a small friendship group. He preferred working alone or in pairs and did not enjoy group work. Over the year Trent learnt to deal with frustrations of working with different students and appreciate the value of sharing ideas with peers.

MARTIN

Martin had exceptional academic ability. He had experienced the trauma of his family home burning down, parents separating, moving to the other side of Australia and adjusting to living in two different homes. He enjoyed working alone and problem solving. He found working with peers frustrating because he had to explain ideas that he already understood. After working with a variety of peers he learnt that group work offered social benefits and could be fun.

TINA

Tina appreciated the social aspect of school but struggled academically in literacy. She had a small circle of friends, aspired to be a group leader and make more friends. She could be "bossy" and not listen to others. By the end of the year she had developed many deep understandings about her peers that helped her to have a happier educational experience. She learnt to listen to others and understand

how this supported friendships and her aspirations to become a leader and make good academic progress.

BACK TO THE THEORY

As the research progressed it was evident further concepts were required to better understand how the social practices supported student learning and development. Vygotskian concepts of *drama,*[16] and *perezhivanie* were used.[17] The social practices provided dramatic events and opportunities for collision to challenge students' current thinking.[18] Not all social interactions will develop HMF.[19]

Perezhivanie encapsulates how students refract their experiences from the social environment that foster their personal growth based on their historical and social experiences.[20] The development and transformation of their personality is evidenced in their behaviour and reflects how the social becomes the individual. These experiences are often intense, as a result of drama or collisions that challenge the status quo and further develop personalities as they interact with peers, share ideas and reflect on their experiences. Through reflection they transform their SSD.[21]

DISCUSSION

The benefits of developing a democratic and collaborative classroom are evident in the case studies. The social practices developed wider social circles and friendships, catering for diverse social, emotional and academic needs. Peers learnt to support each other as they worked together, developed empathy and enjoyed different personalities. They learnt how to adapt to their peers' different learning styles and dispositions and experience the benefits of leadership and collaboration. Being "listened to," but also listening to others, with mutual respect, developed their skills to collaborate in a democratic classroom. Positive peer regard and developing deep friendships was highly motivational for students to persist and work through their differences particularly in a leadership role. Negotiating goals and developing shared responsibility and decision-making retained agency for students and the teacher.

Students learnt about themselves that they could change with a growth mindset and applying effort to learn and believe in themselves which built self-confidence to participate and contribute to the social practices. Each student came to the classroom with their personal histories and preferences but the collaborative classroom allowed them to find common ground. The experiences from the social practices created the social conditions that one could argue fostered their social and emotional growth. The culmination of group experiences for each student was evident in the final outcomes after a year of focus on their personal growth, how they felt and refracting their experiences from the social environment. The intense discussions to resolve the dramas they prioritised as needing to be dealt with made students realise that they are in control of their thoughts, feelings and actions which they can change.

CONCLUSION

Vygotsky's CHT theory asserts that cognitive development occurs as a result of social interactions which implies that learning is innately collaborative.[22] Students are the subjects of their learning and actively construct their learning. The classroom teacher is in a position to create social relationships that facilitate this process. The social practices created rich data for the researchers to observe and reflect and understand the students and their needs. But the students also had freedom to communicate their issues and offer their solutions during weekly classroom meetings where there were differing opinions and understanding that created dramas and collisions which facilitated learning. Students learnt to collaborate many times over when groups were changed each school term, creating new

opportunities and SSD. This process created multiple ZPDs that enhanced the dynamic process of development for students to learn from each other and develop HMF. Students had opportunities for social negotiation which was critical for them to build their knowledge and understanding of concepts such as leadership and friendship with different peers. The classroom atmosphere was energetic and positive, creating a sense of community and working together as partners in learning.

After we better understood some of the intense emotional reactions and transformations in participation, it was clear that perezhivanie had been evident through the year. When feeling under threat the body naturally goes into fight/flight mode which can be averted by teaching students to learn how to change their perception to face challenges and use their resources such as self-talk that they can do this and control their emotions.[23]

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LEVERAGING TEACHING & LEARNING APPS FOR ENHANCED STUDENT ENGAGEMENT AND ACTIVE LEARNING THROUGH COLLABORATION AND SHARING

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INTRODUCTION

With the proliferation of mobile devices and the digitalization of classrooms, the role of applications (apps) in education has grown exponentially. Teaching and learning apps are not just tools for content delivery but catalysts for engagement, creativity, and community-driven learning. This research examines how digital tools, when effectively leveraged, transform passive learning environments into active, participatory, and collaborative ecosystems. The increasing integration of technology into education has fundamentally transformed teaching methodologies and learner engagement. Teaching and learning apps foster enhanced student engagement and facilitate active learning through the lenses of collaboration and sharing. Drawing on current academic literature and case studies, this paper evaluates the pedagogical implications, highlights successful implementation, and proposes frameworks for optimizing the use of such tools in diverse educational settings.

Background

The Manchester Metropolitan University's 'Road to 2030' strategy[1] aims to enhance the student experience by cultivating an active learning community, underpinned by the Digitally Enhanced Learning, Teaching, and Assessment (DELTA) Strategy.[2] This institutional vision aligns with research by,[3] whose longitudinal studies reveal a strong student preference for participatory models of education. Rather than passively receiving feedback, students increasingly engage in co-constructing it through sustained dialogue with educators. Such approaches not only develop feedback literacy but also reinforce learner agency — a central principle in fostering inclusive, student-centred environments.

As part of developing the student experience and rethinking and reformatting traditional lectures by building interaction, the Apps for Teaching and Learning toolkit has been developed, comprising six apps: Padlet, Miro, Vevox, Mentimeter, Nearpod, and Kahoot. Deploying digital tools institutionally has aimed to give university students personalisation, flexibility, and choice in what, where, when, and how they learn. These tools enable students to engage actively in their learning process, regardless of their device or location, by facilitating the digital capture, sharing, and revisiting of their inputs and outputs. This innovative approach aims to transform the student learning experience, preparing them for future careers or further studies. Additionally, the emphasis on active learning,

defined as "anything that involves students in doing things and thinking about the things they are doing",[4] allows participants to explore both theoretical and practical aspects through group discussions and various digital and non-digital methods.

ACTIVE LEARNING AT MANCHESTER METROPOLITAN UNIVERSITY

Manchester Metropolitan University defines active learning as learners actively involved in interesting tasks, often with their peers. At the heart of active learning and student engagement is providing an LMS to distribute learning materials or information. By embedding new technology when aligned with their teaching practice,[5] conclude that a prerequisite for making teaching and learning regimes explicit is to develop a commonly understood discourse about teaching and learning in higher education (HE).[6] further highlight that student engagement is most often illustrated through concepts such as [allowing them to] communicate, co-construct, experiment, interact, investigate, produce, and participate. Research on teaching that engages students often highlights ideas like interactive, active, collaborative, and problem-based learning.[7] defines interactive engagement (IE) as methods designed at least in part to promote conceptual understanding through interactive engagement of students.

The organizational aspirations of Manchester Metropolitan University focus on creating a transformative, active learning community where students can develop, grow, and actualize their potential to positively influence the future of society. To realize this vision,[8] argue that digital transformation "is a series of deep and coordinated culture, workforce, and technology shifts…" which supports the growing consensus that successful institutional change demands cross-functional collaboration and sustained strategic planning. Central to this transformation is Mezirow[9] theory of transformative learning, which emphasises the importance of learners critically interpreting and reinterpreting their sense experiences to construct new meaning. This reflective process requires students to evaluate prior knowledge and assumptions, considering new learning outcomes, fostering deeper understanding and personal growth. By embedding transformative learning principles within digital and organisational innovation, Manchester Metropolitan University seeks not only to adapt to a changing educational landscape but to cultivate a culture of critical inquiry and lifelong learning.

Active Learning Paradigm

Bonwell and Elson 1991[10] define active learning strategies as "instructional activities involving students doing things and thinking about what they are doing," emphasizing an educational shift from passive knowledge transmission to active skill development. This pedagogical approach encourages students to engage critically with content, collaborate meaningfully, and take ownership of their learning process.

Expanding upon this foundation, Misseyanni et al.[11] describe active learning not merely as a set of practices, but as a sophisticated and dynamic educational paradigm. It prioritizes the delivery of high-quality, collaborative, engaging, and motivating instruction—fostering both academic excellence and personal growth. Therefore, active learning is commonly defined as learning by doing, enabling deep learning through autonomy and problem-solving skills in preparation for employment, and lifelong learning.

Active learning forms an integral part of the DELTA strategy, and research shows that students engage better through active learning Healey and Healey.[12] Constructivist learning theory further emphasises learning through building their knowledge, connecting new ideas and experiences to existing knowledge and experience to form a new to enhanced understanding.[13] The active learning paradigm in HE shifts from a traditional lecture-based model to a more student-centred approach

where students actively engage with the material and construct their understanding. This paradigm emphasizes deeper learning, critical thinking, and the development of skills through meaningful activities. Felder and Brent[14] argue that "active learning consists of short course-related individual or small-group activities [...]alternating with instructor-led intervals in which student responses are processed and new information is presented".

Sewagegn and Diale[15] highlight that HE encounters significant challenges in equipping students with essential skills for learning, life, and the workplace. In parallel, the prevailing emphasis on graduate attributes and employability underscores the need for learners to develop capabilities in creative problem-solving, effective collaboration, and critical analysis.[16] The DELTA strategy is designed to confront this challenge by fostering students' empowerment in their learning process. Traditionally, student learning was grounded in didactic teaching methods, operating under the assumption that all students learn uniformly and at the same pace. Conversely, active learning methodologies adopt constructivist principles, with a specific focus on the significant role that social interactions can play.[17]

Dewey[18] regarded the ongoing process of collaborative reflection as leading to deepened understanding. Vygotsky[19] theorised that learning occurs when students resolve problems that surpass their current developmental levels, with the assistance of tutors or peers. Collaboration enables students to perform at a higher cognitive level when engaged in collaborative activities compared to working individually. Building on this, Bruner[20] emphasizes that collaboration introduces diverse perspectives, which enrich problem-solving processes. Hartikainen et al.[21] and Gokhale[22] further highlight the educator's role in such settings as a facilitator who guides learning through meaningful experiences. With students reporting that the process encouraged justification and reflection of opinions, stimulated deeper thinking, and fostered shared responsibility, which in turn helped reduce anxiety. The institutional education strategy, grounded in organisational aspirations, aims to transition towards a more student-centred approach.

COLLABORATION, ENGAGEMENT, AND MOTIVATION

Student engagement encompasses more than attendance or academic achievement; it involves sustained effort, purposeful goal pursuit, and a genuine sense of fulfilment derived from the learning process.[23] According to Self-Determination Theory,[24] student engagement increases when learners experience autonomy, competence, and relatedness in their educational environment. Whilst presupposing that humans have an inherent tendency towards activity and integration, while also being susceptible to passivity[25] and Sims[26] discovered a strong correlation between learner interaction, collaborative learning practices, and academic performance, highlighting the pedagogical value of social engagement in educational settings. Vaughan[27] found that the integration of collaborative learning apps within self-assessment activities aided student performance and fostered deeper engagement with academic practice. Tools like Vevox, Kahoot, Mentimeter, Padlet, Miro, and Nearpod support these psychological needs by offering features such as real-time feedback, interactive collaboration, and learner choice. For instance, Kahoot and Mentimeter enhance competence through gamified quizzes and instant feedback; Padlet and Miro foster relatedness and creativity through shared visual spaces; while Vevox and Nearpod promote autonomy by allowing students to engage at their own pace and contribute anonymously. student-centered approaches—rather than their novelty or visual appeal. Ultimately, their role is to enrich the learning experience and empower educators, not to automate or replace them. These technologies should be selected based on their pedagogical value—how well they support active learning and student-centered approaches—

rather than their novelty or visual appeal. Ultimately, their role is to enrich the learning experience and empower educators, not to automate or replace them.

DIGITAL TRANSFORMATION

Digital transformation is inherently context-dependent and cannot be achieved through a universal framework. Effective digital initiatives should be informed by the organisation's foundational values and strategic objectives, reflect its long-term business aspirations, and be executed through a carefully considered and systematic approach. Successful transformation requires a systematic and reflective approach that integrates technological innovation with cultural adaptability and strategic foresight. Adapted from Jisc n.d.[28], successful digital transformation at the Manchester Metropolitan University involves a series of steps that act as a visual roadmap for the development of digital practice.

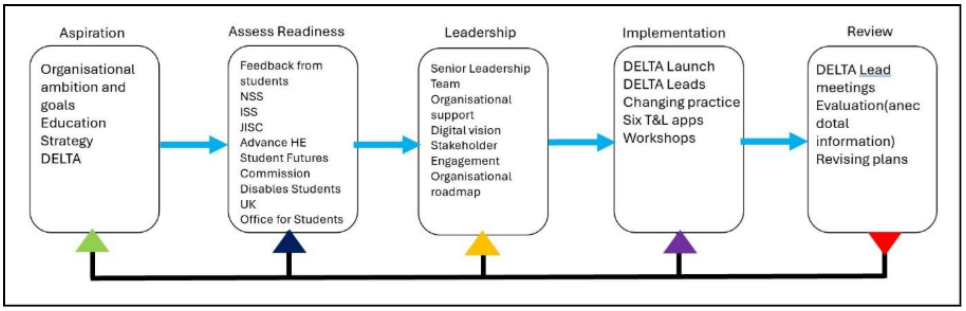

Figure 1. Digital transformation framework (Adapted from Jisc, n.d)

Digital transformation should be regarded not merely as a finite objective but as an ongoing strategic initiative—one that critically assesses and leverages emerging digital technologies to improve institutional efficiency, pedagogical effectiveness, and the broader experiences of learning, teaching, and research.[29] asserts that digital transformation extends beyond 'an IT Services thing'. The Manchester Metropolitan University transformation process has aimed to include and involve all stakeholders affected by this initiative through collaboration and cross-departmental engagement.[30] emphasize that digital transformation is a revolutionary and ongoing process, rather than a project with a well-defined timeline. Digital transformation has facilitated a shift in business activities, processes, and organizational capabilities,[31] strategically harnessing the opportunities and impacts of digital technologies, with priorities tailored to both present and future contexts.[32]

Drivers and barriers to change

HE necessitates learning to benefit and be accessible to all. Whilst generation Y students show a preference for active rather than passive learning styles in becoming lifelong learners, personal characteristics and demographics affect learning styles within all generations. The broad diversity of student generations and profiles means no single teaching style can accommodate all learners uniformly. But this exposure to diverse learning methods cultivates adaptability, enhancing future employability skills.[33]

To equip educators with the skills necessary to implement collaborative and engaging active learning, professional development, and the alignment of technology with their pedagogical practice is critical. Børte, Nesje, and Lillejord[34] and Shelton[35] emphasize that such support enables a shift from simply adapting innovative technologies to existing teaching methods toward the intentional design of effective active learning experiences.

Pedagogical Considerations

Digital transformation in education must be guided by pedagogy rather than technology.[36] The selection and implementation of digital apps should be intentional, ensuring alignment with clearly defined learning objectives and outcomes. A pedagogy-first approach ensures that technology enhances, rather than detracts from the learning experience. For example, Vevox and Mentimeter can promote active learning and real-time feedback, while Miro and Padlet support structured collaboration aligned with group-based tasks. Digital tools enable students to utilise and move seamlessly in flexible spaces using active learning.

Røe, Wojniusz, and Hessen Bjerke[37] emphasize that professional development must extend beyond technical training to include pedagogical integration. Educators require support in understanding not only how to use digital tools, but also why and when to use them to achieve meaningful learning outcomes. This includes exploring how digital tools align with learning theories, assessment strategies, and inclusive practices. Novoa-Echaurren, Pavez, and Anabalón[38] argue that effective digital integration requires educators to be reflective practitioners who continuously assess the impact of technology on student learning, and adapt practices based on evidence. Institutions should support this process through ongoing professional development, communities of practice, and a culture that values pedagogical innovation.

As students increasingly engage with digital platforms, educators have a responsibility to embed digital literacy within the curriculum. This includes instruction on digital etiquette, privacy awareness, and the critical evaluation of information. These competencies are essential for ethical, responsible, and informed participation in digital learning environments.

Educators need to play a vital role in fostering a collaborative learning environment by actively promoting interaction, shared responsibility, and mutual support among learners. This dialogue facilitates the co-construction of knowledge and deepens the learning experience.[39]

CASE STUDY

Manchester Metropolitan University adopted a top-down approach in implementing the Apps for Teaching and Learning toolkit. This strategy enabled the deployment of institution-wide licences for six educational apps at no cost, ensuring equitable access for all staff. The initiative aligns closely with the university's strategic vision, embedding active learning and digital innovation into its educational practices. This has resulted in 4000 licences being issued with approximately 1650 active users.

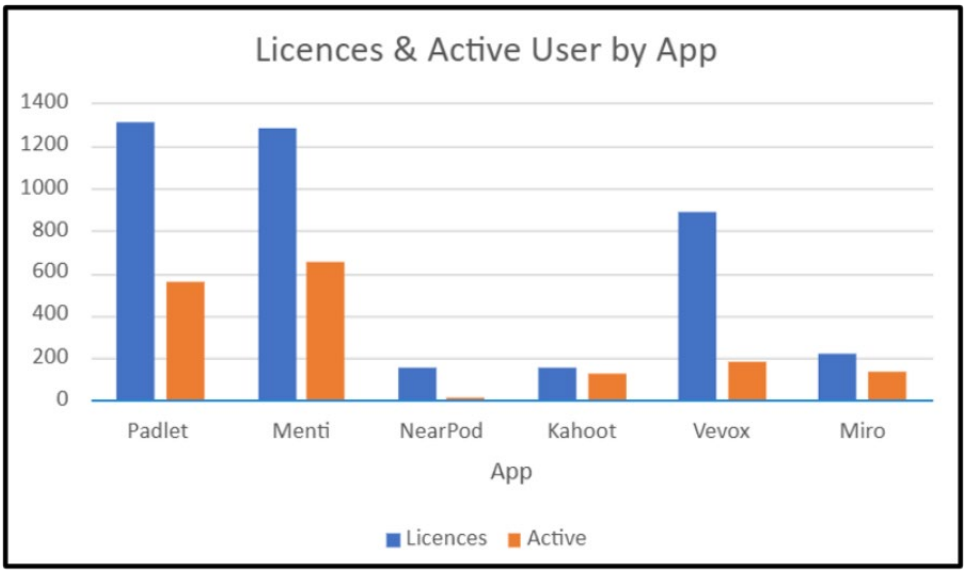

Figure 2. Licenses & Active User by App

App	*Licences*	*Active*	*%*
Padlet	*1307*	*557*	*43*
Mentimeter	*1279*	*654*	*51*
Nearpod	*151*	*11*	*7*
Kahoot	*150*	*126*	*84*
Vevox	*890*	*184*	*21*
Miro	*220*	*131*	*60*

Table 1. Percentage of Active Licenses Per App

Educators' adoption of new pedagogical approaches and enhancement of digital competencies were supported by Digital Education Specialists, who provided a diverse range of Continuing Professional Development (CPD) opportunities tailored to varying levels of experience and need.

One of the Teaching and Learning apps, Miro, is an online collaborative workspace designed to support teaching, learning, innovation, and planning while promoting student engagement. At Manchester Metropolitan University, Miro was adopted by the Department of Journalism and Media Ethics to enhance seminar engagement among Level 5 students. The immersive and interactive nature of the platform facilitated the collaborative development of ideas, data collation, research, and argumentation. This approach empowered students to take ownership of their learning, fostering a sense of control and active participation.

Grounded in constructivist learning theory, Miro supports the co-creation of content and collective problem-solving. By integrating a digital platform, it enables sustained interaction and an iterative learning approach, allowing students to take charge of their learning[40] and develop collaborative skills. Encouraging critical thinking, students can engage in collaborative activities. Bruner[41] emphasizes that the purpose of education is not merely to impart knowledge but to facilitate the development of thinking and problem-solving skills that can be applied beyond the current environment. Creating an environment based on collaboration, students become active participants in their learning, with the teacher guiding the activity to address students' pre-existing conceptions, which fosters deep understanding and application.[42] Anecdotal evidence from educators indicates that active learning has become an integral part of student engagement. Educators are increasingly

incorporating the Apps for Teaching and Learning into their practice, using them to foster active participation and deeper involvement in the learning process.
There is a clear need for greater clarity regarding the role of digital technologies in advancing institutional ambitions, missions, and values. Successful digital transformation extends beyond the adoption of new tools; it demands a holistic and strategic approach. Positioning digital as a core enabler of educational and organisational transformation requires effective digital leadership, sustained investment, a robust and secure infrastructure, active stakeholder engagement, and the development of digitally capable staff and students.

CONCLUSION

Educational applications for teaching and learning, when thoughtfully and strategically integrated into the classroom environment, possess the transformative potential to significantly enhance student engagement and foster a culture of active, participatory learning. These digital tools offer interactive features, multimedia content, and personalized learning pathways that cater to diverse learning styles and needs, making education more accessible and effective for all students. By emphasizing collaboration, communication, and the seamless sharing of ideas and resources, educational apps create opportunities for students to work together in real time, both in physical classrooms and virtual settings. This collaborative approach not only deepens understanding but also cultivates essential 21st-century skills such as teamwork, critical thinking, and digital literacy.
Moreover, these tools enable educators to craft more dynamic and inclusive learning experiences by using data-driven insights to customize instruction, track progress, and offer timely feedback. As the roles of educators, digital education specialists, and learners continue to develop together, the connection between pedagogy and technology becomes more powerful. With ongoing advances in artificial intelligence, augmented reality, and adaptive learning systems, the potential to transform education through digital innovation expands rapidly. Ultimately, when used intentionally and creatively, educational applications can bridge learning gaps, inspire curiosity, and prepare students for a rapidly evolving world.

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INTERPRETING SUSTAINABILITY IN POLICING: RELEVANCE, CHALLENGES, AND FUTURE PERSPECTIVES

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INTRODUCTION

Sustainability is now a common term,[1] and a key goal for Norwegian higher education and research.[2] Yet, scholars debate its precise meaning,[3] with over 20 interpretations found in the literature,[4] making it a contested concept.[5] Robinson[6] notes that its meaning varies across contexts and has been criticized for being vague. The interchangeability of the concepts sustainability and sustainable development further complicates its definition.[7] A lack of definitional clarity can hinder education, as the way sustainability is understood shapes pedagogical approaches and their effectiveness.[8] Misconceptions can also reduce motivation.[9] A study on police students indicated that conceptual clarity is an important success factor for education for sustainable development (ESD).[10] In order for ESD to be perceived as interesting and relevant, the students highlighted the need for demonstrating real- world relevance to their future working life, using practical examples and expert insights.[11] However, Matczak and Bergh stress that a shared understanding of sustainability in policing is lacking, depriving educators of these pedagogical measures.[12] More research is needed to integrate sustainability into policing practice and education.

Research questions

This study addresses this research gap by exploring two research questions: 1) *How is the term sustainability understood?* and 2) *What relevance is sustainability perceived to have in a policing context?* To address these questions, we first examine the concept of sustainability in relation to policing before outlining our methodology, findings, implications and conclusions.

Theoretical Framework

The concept of sustainability and sustainable development

Sustainability may be defined as "that which can be maintained over time"[13] and is concerned with safeguarding the livelihoods for present and future generations.[14] While often used interchangeably with the term sustainable development, sustainability represents the end goal, while sustainable development refers to the processes to achieve it.[15]

The terms sustainability and sustainable development were put on the agenda and received international attention through the report "Our Common Future" in 1987, also called the Brundtland

Commission.[16] The widely cited definition states: "meeting the needs of the present without compromising the ability of future generations to meet their own needs".[17] Originally introduced in the 1950s,[18] focusing on natural resources,[19] the concept later evolved to balance economic, social, and environmental goals,[20] often called the three dimensions of sustainability.[21] Economic sustainability focuses on restructuring economies within ecological limits, social sustainability focuses on ensuring basic human welfare, and environmental sustainability focuses on mitigating climate change.[22] Effective strategies require all three dimensions to be addressed.[23]
The United Nations Sustainable Development Goals (SDGs) aim to guide sustainability efforts,[24] but face criticism for being vague, inconsistent[25] and ineffective in ensuring economic and social progress within ecological limits.[26] Given these limitations we choose to use the three dimensions of sustainability, that is, economic, social, and environmental goals, as framework for our work.

Sustainability in a policing context

Parts of the law enforcement community increasingly recognize sustainability challenges such as climate change.[27] The UK College of Policing lists climate change as a key issue,[28] Interpol aligns its Global Policing Goals with the UN SDGs,[29] and the UN Police emphasize law enforcement's role in sustainable development.[30] Still, these topics are rarely featured on the agenda of police leadership.[31]
A lacking sense of urgency[32] may stem from temporal exhaustion; immediate crises leave little room to address long-term threats.[33]
Matzcak and Bergh argue that climate change, a manifestation of the current lack of sustainability, will reshape law enforcement.[34] It amplifies existing risks and introduces new challenges such as civil unrest, intercommunal violence, climate migration, international instability[35] and dealing with natural disasters.[36] These impact the police as first responders, border and maritime security, civil protests, and conventional crime.[37]
To respond, sustainability must be integrated into policing strategies and practices, risk assessments and preparedness plans.[38] International cooperation is also essential, and the police may be expected to implement more sustainable practices.[39]
Further, new capabilities must be identified.[40] The police may need a new approach to environmental crime and conflict management,[41] and foster new leadership qualities.[42] A study by Filstad et al. found "being sustainable" to be a central competence that future police leaders should possess.[43] Fagerland et al. describe sustainable policing leadership as strategic, ethical, and innovation-driven, grounded in emotional intelligence, inclusion, and shared values.[44] However, a recent study suggests that sustainable leadership varies in Norwegian policing,[45] and according to Haake et al., many police organizations face unfavorable leadership and culture for change initiatives.[46] Further research is however needed to understand the transferability and implications for Norwegian policing.

METHODOLOGY

The study was registered with the Norwegian Agency for Shared Services in Education and Research (SIKT) under reference number 380353. Data collection adhered to GDPR guidelines.[47]

Participants

A convenience sampling method was used, selecting participants based on accessibility.[48] While this method has limitations, it offered an adequate sample of 11 participants, while optimizing time and cost.[49] We choose to address those who answered the semi-structured interviews as participants, implying a more active role in the research than "informants", "respondents" or "interviewees".[50] Baker and Edwards emphasize the significance of taking into account the total population size with

relevant experience.[51] The final sample included 11 police leaders, averaging 27 years of experience, aligning with Jacobsen's definition of "elite" participants.[52]
45% of the participants were female and 55% were male. This slightly exceeds the Norwegian police's target of 40% female leadership by 2027.[53] Participants averaged 53 years in age, with 73% in special units and 27% in police districts. In contrast, 19% of all Norwegian police leaders work in special units, while 81% work in districts.[54]

The interview guide

The interview guide was developed by the authors and included ten questions about sustainability and policing. Only responses to the following two research questions: 1) *How is the term sustainability understood?* and 2) *What relevance is sustainability perceived to have in a policing context?* are reported in the present study.

Procedure

Participants received questions via email before their interviews to allow for reflection, given sustainability's novelty in policing. Semi-structured interviews were conducted, allowing follow-up questions and in-depth exploration.[55] This approach aligns with Geertz's concept of thick description, which contextualizes social and cultural patterns.[56] Eight interviews were conducted by phone, and three in person, each lasting 30-45 minutes. Participants were assured anonymity and encouraged to answer honestly.

RESULTS

Interpretations of the term sustainability

Answering our first research question: 1) *How is the term sustainability understood?*, six of our participants' responses aligned with the theoretical framework's definition. One participant noted: "It is about a way of living and operating that endures over time—essentially into the unforeseeable future. That means acting in an economically, socially, and environmentally responsible manner, so that drastic changes are not required later." Another stated: "I see it as something we must be able to live with over time." A third reflected: "For me, sustainability is about ensuring that today's activities also secure future generations' ability to experience the same level of welfare as we do. By ensuring safety, law and order the police establish the foundation for sustainability in the industry and other parts of society too." These views are consistent with Heinberg's definition of sustainability.[57]

The confliction of the concepts sustainability and sustainable development

Three of the participants referenced both sustainability and sustainable development: "Sustainability is about what you do—whether it involves people or concrete actions, it must provide value that lasts over time. It's about long-term thinking. It was Brundtland who once coined the term "sustainable development." Another participant noted: "I immediately think of the UN's Sustainable Development Goals and the categories of social, environmental, and economic sustainability. The goal is to prevent the planet from being destroyed and to ensure sustainable development. "A fourth reflected: "The understanding of the term sustainability is highly open to interpretation." A third said: "I see it as something we must be able to live with over time. It is a somewhat vague concept in many ways." These findings align with Robinson's critique that these terms are often conflated, and that the concept of sustainability may be perceived as vague.[58]

Broadening the perspective of what sustainability is

One participant noted that the concept has evolved from an environmental focus to a broader emphasis on quality of life while minimizing negative impacts: "I became familiar with sustainability when studying for a master's in societal safety. At that time, sustainability was closely linked to environmental issues, adaptability, and taking corporate responsibility for the future. That is how I understand and define it. Today, sustainability is about more than just the environment—it is about quality of life and policymaking. The general impression is that sustainability involves minimizing negative impacts." This resonates with reflections by Duran et al.,[59] suggesting that the concept has evolved.

Last, one participant reflected: "Sustainability is a very broad concept, and it has evolved significantly. Previously, it was about sorting waste and flying less, but now we see that sustainability has taken on a completely different meaning. For me, sustainability now also includes ensuring that the competence we provide to our students meets the right level. We must use dialogue with police districts to tailor education to actual needs." These findings align with observations by Klein et al.,[60] suggesting that lean principles of elimination of waste and the generation of customer value are closely aligned with economic, social and environmental elements of sustainability practices. The findings also complement Sillerud and Boe´s findings,[61] illustrating the need to connect sustainability education to students' daily lives and professional practice to enhance learning outcomes.

The relevance of sustainability in a policing context

Answering our second research question: 2) *What relevance is sustainability perceived to have in a policing context?,* all the participants agreed on the relevance of sustainability in policing, highlighting the police's role in supporting sustainability through education and law enforcement. One participant stated: "The police cannot afford to neglect sustainability—whether environmentally, in terms of public trust, or economically. All aspects of their operations must be viable over time, whether viewed from a one-year perspective or a longer-term outlook." Another participant emphasized: "It is essential to evolve, renew, and keep up with developments, particularly for a societal institution like the police." A third participant noted: "The police, as a state agency, should serve as role models and practice sustainability themselves. We have a societal responsibility to engage in activities that contribute to sustainability. Given the mandate provided by the Norwegian Police Act,[62] and its definition of what the police are supposed to do, this opens up several perspectives." These insights align with Matczak and Bergh's findings,[63] seeing sustainability as integral to the police' societal responsibility and public trust.

The need to make a significant contribution to sustainability

Participants noted that the police can and should make a significant contribution to sustainability. One noted: "This is highly relevant to Norwegian policing. Many of the UN's SDGs relate to both education and law enforcement. The police are a large institution with a significant ecological footprint. Their economic and environmental decisions greatly influence society's overall sustainability." Another participant corroborated:" This is relevant both in terms of how we handle this internally in our operations and in relation to our societal mission. Sustainability spans many dimensions. It affects how we deliver, what we deliver, and has significance from both a national and an international perspective. It is along these lines we need to think; To which extent do we fulfill the expectation that future generations should also be able to fill their needs in relation to how we use and allocate our resources, and which prioritizations we do?" These responses align with Interpol's findings, suggesting that "greening" policing will require a multi-dimensional approach.[64]

The need to combat environmental crimes and ensure social sustainability at the workplace

Some stressed the need to contribute by combating environmental and climate- related crimes, and highlighted the role of transnational cooperation: "We have an international obligation where police cooperation is crucial for addressing environmental and organized crime." Another participant corroborated: "We need to collaborate more across sectors. This has significant implications for the investigation of environmental crimes and climate-related cases—striking the right balance between what is necessary and what is not. (..) It requires long-term thinking—how to utilize resources in a way that does not deplete them, in all aspects of societal development." These insights align with Interpol's[65] and Matczak and Bergh's[66] research, linking environmental crime to issues of governance, sustainability and inter- agency cooperation. Offering a critical counterpoint, one participant reflected: "Investing in the police to combat environmental crime may not necessarily be the most cost-effective measure- prevention may be better than cure". This reflection corroborates Kelly and Mears line of thinking that the police ought to be more focused on preventing than punishing crime. [67]

Other participants noted the importance of maintaining a sustainable working environment to retain skilled personnel: "Social sustainability is crucial for maintaining a good working environment, ensuring continuity. Otherwise, competence is lost. We want to retain the best people and secure our future, which means taking care of our human resources." Another participant corroborated: "It's about taking care of and developing society and relationships with people in a sustainable way." A third participant noted: "Employees must be involved, the psychosocial aspects must be taken into account, and good workplaces must be created to attract and retain skilled personnel. It is about taking care of employees, ensuring good working conditions and salaries, and facilitating family life." These findings are in line with observations by Semeijn et al. that core values within work and business have shifted toward a stronger emphasis on sustainability, including in the domains of human resource management.[68]

Challenges to implementation: Short time horizons and a reactive mindset

Some participants reflected that there are challenges to implementing sustainability in policing work, including short time horizons and a reactive mindset: "I believe there is a widespread feeling within the police today that people are just running around putting out fires. We work with short time horizons and fail to work consistently over time or implement long-term strategies." These insights align with Interpol's[69] findings, suggesting that temporal exhaustion may represent a challenge to sustainable policing.

A knowledge and awareness gap

Some participants pointed to a second challenge to implementation, highlighting a lack of knowledge and awareness: "This is absolutely relevant to policing. It is an enormous question that we have only just begun to consider, and we have yet to fully grasp its implications, at least not in my department. Give me a clue… We have worked so little with this. (…) But it is something we need to take responsibility for and see as an opportunity." A second participant reflected: "The police must be part of this, but perhaps it is not the first thing that comes to mind." A third added: "I must admit that I am most familiar with the concept of sustainability from other contexts. I feel that we have discussed it more there than within the police." A fourth noted: "I believe there are barriers to implementation in practice, do we, for example, have the necessary knowledge?" These findings align with observations by Interpol, underscoring the need to address the awareness gap as future preparedness starts with awareness.[70]

A lack of resource prioritization and strategic adaptation

One participant pointed to a third challenge: “Another barrier relates to the management model, specifically the goal- and performance-based steering system used in the agency. The Directorate governs each police district through performance agreements. You are evaluated based on what is made visible in these types of agreements. So, if sustainability is not included as a requirement or a performance indicator, it tends to be deprioritized. There are simply too many other tasks that need to be addressed.” These findings align with previous findings by Sillerud and Boe, suggesting there is a need to make sustainability measured to get it managed.[71]

A lack of efficient change leadership

A lack of efficient change leadership was also noted as a challenge: “Leaders don’t invest enough time in explaining why new working methodologies, such as knowledge-based policing, are good ways to do things. If employees do not understand why something is meaningful, they only do it as long as they are under strict supervision. That is why time must be invested in anchoring, explaining the strategy and methodology, and why it is beneficial. Employee engagement must be prioritized.“ This resonates with findings of Haake et al., suggesting there is insufficient change leadership in many police organizations.[72]

CONCLUSION

This study addressed the following research questions: (1) *How is the concept of sustainability understood?* and (2) *What relevance is sustainability perceived to have in a policing context?* Employing a convenience sampling strategy, we conducted semi-structured interviews with 11 senior police leaders, aligning with Jacobsen’s definition of "elite" participants.[73]

Our findings suggest that most participants’ conceptualizations of sustainability broadly align with established theoretical definitions. However, several participants conflated the terms "sustainability" and "sustainable development," underscoring the need for greater conceptual clarity.

All participants emphasized the significance of sustainability in policing. They noted that sustainability influences both the nature of police responsibilities and the manner in which they are executed. Participants viewed policing’s contribution to sustainability as an integral part of law enforcement’s social responsibility and essential to maintaining public trust. Given their societal influence, police institutions can and should promote sustainability through education, enforcement, and internal organizational practices.

Critical impact areas focusing forward included preventing and addressing environmental and climate-related crime, fostering social sustainability in the workplace, prioritizing resources effectively, and enabling strategic adaptation. Participants also highlighted structural and cultural challenges to implementation, such as limited awareness, insufficient integration of sustainability into management models and performance evaluations, weak change leadership, and a reactive mindset.

Addressing these challenges requires the integration of sustainability into police education and the alignment of police practices with broader societal sustainability norms. Future research should aim to validate these findings and investigate practical strategies for implementing sustainability within law enforcement.

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CONTEMPORARY PROCESS OF BLURRING VARIOUS BOUNDARIES AS A CHALLENGE FOR INCLUSIVE EDUCATION

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INTRODUCTION

This paper analyzes the blurring of boundaries between pop culture and high culture as an example of the fading of once-strict educational themes. The analysis identifies key factors that foster interdisciplinary teaching: the democratization of educational elements in a multicultural context, shifts toward a globalized student mindset, and the impact of digitalization on interpersonal relationships. By focusing on these developments, this paper highlights the main features of this process and explores its effects on modern education and learning strategies.

We live in a time of rapid technological, social, and cultural change. As national borders blur, access to knowledge is increasingly democratized. Amid these changes, inclusive education has become essential to address students' real diversity.[1]

Inclusive education gives everyone equal opportunities to learn and develop, regardless of background, economic situation, or ability.[2] In cases of disability, the Polish system provides integrative classes and schools, where students with disabilities join non-disabled peers.[3] This is about more than access to schools or technology—it's about building a society rooted in empathy and cooperation.

This type of education teaches us that diversity is a value, not a hindrance. Thanks to it, young people learn to function in a world full of diverse perspectives, which later translates into openness, creativity, and problem-solving skills.

BLURRING BOUNDARIES IN VARIOUS DIMENSIONS, ESPECIALLY GEOGRAPHICAL

Contemporary changes involve the blurring of various boundaries. Primarily, this refers to geographical boundaries, which are shaped by globalization, technological progress, and socio-political changes. In the past, national boundaries defined territory and limited communication, trade, and culture. Today, these boundaries are gradually disappearing.

A key factor in this change is communication technology. The internet, social media, and modern transportation reduce the importance of distance, making real-time information exchange common. Societies are increasingly interconnected, with intensified international economic and cultural interactions. The distinction between work and home life is also blurring, largely due to the growth of remote work during the COVID-19 epidemic.[4]

Additionally, the blurring of geographical boundaries is evident in the context of migration. Originally, geographical borders, understood mainly in a political context, functioned as barriers in various ways, primarily to the free movement of people and their material products, such as goods, and intangible products, such as culture.[5] This phenomenon has both economic and political implications, impacting the structure of societies and challenging inclusion. Many countries face the need to adapt their education systems, labor markets, and social policies to accommodate growing diversity.

It's also worth noting that administrative and political boundaries don't always align with actual social or cultural boundaries. Contemporary megacities like New York and London are places where diverse nationalities, languages, and traditions intertwine, creating new, global identities.

In summary, the blurring of geographical boundaries is an irreversible process that brings both benefits and challenges. It requires adapting social, economic, and educational structures to a new reality in which traditional divisions are losing their significance and the world is becoming increasingly integrated.

BLURRING CULTURAL BOUNDARIES AND INCREASING SOCIAL DIVERSITY

The blurring of centuries-old geographical boundaries is gradually dissolving boundaries in another dimension – between different cultures, as reflected in the dichotomy of high (elite) culture and low (popular) culture, characteristic of the past.[6] This is characterized by ongoing social changes caused by globalization and human migration. This is accompanied by technological developments that, in turn, enable the rapid flow of information and ideas.

Globalization contributes to cultural homogenization through the spread of common consumption patterns, languages, and lifestyles, which previously led to a weakening of stereotypes and a misunderstanding of differences among culturally diverse individuals and groups.[7] Research indicates that in Poland, the English language and the American way of life are increasingly influencing culture, becoming factors that unify linguistic and cultural differences between cities and rural areas.

On the other hand, migration, both international and, on a smaller scale, internal, promotes the dissemination of diversity and thus increases social diversity. For example, in Poland, there is an intensification of settlement of residents of large cities in rural areas, contributing to changes in the social and cultural structure of these areas. Taking the rural area of Stare Juchy as an example, around 2015, migration led to a noticeable gentrification as the urban middle class settled there. The broader perspective, however, takes into account further internal factors, including the rapid expansion of educational attainment in rural areas, which has contributed to the formation of a rural middle class, as well as the growing prosperity of rural inhabitants—a phenomenon often described as the embourgeoisement of the countryside. This process is frequently linked to the emergence of housing in rural areas that reflects urban architectural styles, along with significant upgrades to local infrastructure.[8] Furthermore, the influx of immigrants from around the world enriches society with new traditions, languages, and customs.

The internet and social media also play a key role in blurring cultural boundaries. Thanks to the widespread availability of information, people can learn and adapt elements of different cultures, leading to their interpenetration. The first quarter of the 21st century saw the beginning of a process of blurring not only the differences between urban and rural areas, but also between Polish and Western cultures. This issue is particularly relevant to post-socialist states, where access to Western models of leisure was effectively absent prior to 1989. Polish representatives of Generation Z constitute the first cohort to be born and socialized entirely within a sovereign, democratic, and culturally open environment. The three decades since the collapse of the Berlin Wall have been sufficient for

globalization to standardize the leisure practices of this generation. Globalization processes that drive ongoing cultural homogenization facilitate the diffusion of comparable leisure practices derived from what is commonly defined as Western culture.[9]

The blurring of cultural boundaries and the growing social diversity are processes with both positive and negative consequences. On the one hand, they foster greater openness and social integration, but on the other hand, they can lead to the loss of local traditions and cultural identity.

CHALLENGES FOR INCLUSIVE EDUCATION

The education system faces the challenge of incorporating the brief changes outlined above, which often necessitates profound transformation. Above all, flexible curricula are essential, allowing for individualized learning and adapting teaching methods to diverse learning styles. Implementing modern technologies, such as artificial intelligence and assistive technologies for students with disabilities, significantly improves the quality of inclusive education.[10]

Equally important is the preparation of teaching staff. Teachers should possess appropriate competencies in working with students with diverse needs, which requires changes to the education and professional development system.[11] Psychological support, mentoring, and interdisciplinary collaboration can play a key role in the effective implementation of inclusive education.[12] This is all the more advisable because the role of a teacher today is being transformed from a person with superior knowledge into a mentor with a more human face, offering an individual approach, conversation, empathy, cooperation, and sharing of experience in a given area, i.e., a role that also includes psychological competencies.[13]

Finally, it is worth emphasizing that effective inclusive education requires not only structural reforms but also a shift in social awareness. This broader perspective draws together the threads discussed throughout this analysis.

Contemporary inclusive education is supported by reliable data and research. According to a 2020 UNESCO report, as many as 258 million children worldwide remain outside the education system, which poses one of the greatest challenges for this type of education. By contrast, the number of women completing secondary school is zero in more than 20 countries, mainly in the sub-Saharan region.[14]

In Poland, according to a report by the Center for Education Development, approximately 10% of students required specialized educational support in the 2019/2020 school year, and the number of schools implementing inclusive education programs is steadily growing.[15] However, significant barriers remain – research by the Central Statistical Office indicates that the availability of infrastructure adapted to the needs of students with disabilities remains limited, with only 60% of educational institutions having appropriate facilities.[16]

Adapting the education system also requires investment in technologies that support learning. The UNESCO report highlights that over 40% of students worldwide lack internet access at home, which clearly hinders distance learning and digital inclusion.

In summary, effective inclusive education requires not only structural reforms but also systemic, data-driven support. Investments in infrastructure, technology, and teacher training are crucial to ensuring equal educational opportunities for all students.

The above considerations lead to the conclusion that modern technologies can be both a support and a challenge for inclusive education. On the one hand, the availability of digital tools enables individualized learning, adapts materials to students' diverse needs, and facilitates communication among them.

A review of the literature on inclusion reveals that sensory disabilities (60%) and gender equality (36%) constitute the most frequently addressed areas. These are followed by discussions on racial and ethnic inclusion (35%), physical disabilities (34%), mental or intellectual disabilities (34%), and cultural inclusion (30%). Collectively, these categories underscore the imperative to modify educational and social environments to accommodate individuals with sensory, mobility, or cognitive limitations, thereby ensuring equitable opportunities irrespective of gender. They further highlight the importance of embracing diversity within educational and social contexts by actively integrating individuals from various racial and ethnic backgrounds, fostering mutual respect and intercultural understanding. Moreover, socioeconomic inclusion (28%) focuses on mitigating barriers associated with poverty and promoting equitable access to resources. Additional areas of emphasis include learning difficulties (27%), linguistic inclusion (8%), age inclusion (4%), and health-related inclusion (2%), each of which points to the necessity of providing fair and inclusive conditions for individuals across different linguistic backgrounds, age groups, and those living with chronic health conditions. Taken together, this multidimensional conceptualization of inclusion highlights the critical importance of systematically removing barriers to create environments that are genuinely equitable, accessible, and conducive to full participation for all individuals.[17] On the other hand, the lack of access to appropriate technologies in less developed regions of the world, as well as the digital exclusion of people with disabilities, can lead to educational inequalities.[18]

In today's globalized society, encounters among multiple cultures, languages, and identities in classrooms are becoming increasingly common. Inclusive education must meet the challenge of integrating students from diverse backgrounds, often those who have arrived in the country through migration. Language barriers, cultural differences, and adapting to a new educational system can hinder the learning process and require appropriate tools and methods to support students on their educational journey.

THE FUTURE OF INCLUSIVE EDUCATION IN THE CONTEXT OF BLURRING BOUNDARIES

Innovative programs supporting inclusive education are currently being implemented worldwide. An example is the "Let's Make Inclusion Happen" initiative, which is part of the Polish Presidency of the Council of the European Union. Innovative programs supporting inclusive education are currently being implemented worldwide. This European project brings together experts and decision-makers working on solutions that foster education accessible to all students. This initiative organizes conferences to discuss best practices in inclusive education, including the use of technology and psychological support for students.[19]

Another example is the "European Youth Conference," which focuses on youth dialogue and on enhancing the role of inclusive education in the European Union's decision-making processes. As part of this initiative, young people from various countries can participate in workshops on social and educational inclusion.

The report "The Future of Education: Scenarios 2046" indicates that technological advancements, including brain-computer interfaces and learning algorithms, will have a profound impact on education. Hyper-personalized teaching methods, tailored to individual student needs, can significantly increase the effectiveness of inclusive education. The main social foundation is the entry of new generations into the consumer market – Generations Alpha and Z – for whom the default culture is nanosecond, meaning the expectation of instant access to information and knowledge (including products and services). Meanwhile, in the technological arena, people are widely using

various systems to create personalized knowledge catalogs containing data on the motivations and behaviors of specific individuals across areas such as education, professional life, and health.[20]

CONCLUSION

In short, everyone can contribute to improving inclusiveness in education by recognizing its immense potential for fostering a more equal social reality.

If we want future generations to be prepared for today's challenges, we must invest in inclusive education. We must create a space where every voice is heard, every talent is valued, and every difference is respected. Because a truly strong society is one that leaves no one behind.

The contemporary world—profoundly reshaped by globalization, intensified migration processes, and rapid technological advancement—confronts educational systems with challenges that can no longer be addressed within traditional structural or conceptual boundaries. The progressive dissolution of distinctions between high and popular culture, between local and global identities, and between diverse modes of learning and social functioning generates a new sociocultural landscape in which heterogeneity constitutes a fundamental condition rather than an exception. Within this context, inclusive education emerges not as a supplementary pedagogical model but as a foundational principle of modern schooling.

The analysis presented in this paper demonstrates that the effective implementation of inclusive education requires coordinated, systemic action across multiple domains. These include modernizing educational infrastructure, integrating advanced digital technologies, developing teacher competencies for work in heterogeneous environments, and transforming broader societal attitudes toward diversity. Empirical data at both the national and international levels indicate that, despite measurable progress, significant structural and socioeconomic barriers persist, limiting equitable access to education for numerous groups of learners. Simultaneously, the expansion of digital tools, the emergence of hyperpersonalized learning environments, and the proliferation of international educational initiatives create new opportunities to rethink and redesign inclusive pedagogical practices.

In light of these developments, it becomes imperative to construct an educational system that not only adapts to ongoing transformations but actively contributes to shaping them. The education of the future must be characterized by flexibility, openness, and a strong normative commitment to equality, cooperation, and respect for human diversity. Only such an approach can adequately prepare learners to function in a world in which geographical, cultural, and social boundaries are increasingly fluid.

Ultimately, inclusive education should be understood not merely as a pedagogical strategy but as a broader societal project grounded in the principles of solidarity and social justice. Investing in inclusive educational practices constitutes an investment in a future in which every individual is afforded the opportunity to participate fully in social life and to develop their potential. This, in turn, forms the basis for building a resilient, cohesive, and genuinely modern society.

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SKYSCAPES: VIRTUAL AIRBORNE CITIES OF UDDE 607

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INTRODUCTION

In response to the challenges of overpopulation, climate change, and resource depletion, the concept of a Sky Island emerges as a speculative yet visionary architectural paradigm where an airborne, gravity-defiant city exists beyond terrestrial constraints in both a virtual and or physical realm. This research investigates the urban, societal, and technological implications of such a future, where humanity evolves in a self-sustaining elevated habitat. By integrating narrative-driven urban design, inspired by literature about cities in the skies, generative artificial intelligence (GAI), and immersive virtual reality (VR) modelling, this study conceptualizes and critically analyses the feasibility of Skyscapes. Situated at the intersection of research, teaching, and emerging technologies, this study reflects on the evolving role of urban design education in the digital age. It highlights how AI, VR, and virtual modelling are reshaping the way we design, teach, and engage with speculative urban environments, bridging the gap between academia and practice. The case studies done in UDDE 607 serve as both a pedagogical tool and a research framework, demonstrating the blurring boundaries between research, practice-based learning, and digital experimentations. It aligns with the broader discourse on the digital turn in academia, questioning how immersive technologies and AI-driven methodologies are redefining architectural pedagogy, interdisciplinary collaboration, and the future of the built environment. The process culminates in architectural visualisations, offering a comprehensive exploration of this speculative urban paradigm. The methodology taught in the course incorporates multidisciplinary frameworks and follows a structured design-research-technology approach. The findings explore how digital innovations, AI-driven urbanism, and virtual environments can redefine human habitation, positioning Sky Islands as new typology of sustainable urban futurism, one that transcends conventional architectural boundaries and offers alternative pathways for post-terrestrial evolution.

AIRBORNE CITIES, SPECULATIVE FICTION OR VISION OF THE FUTURE?

The realm of speculative scenarios has long been an interesting ground for exploring the possibilities of future urban landscapes, and the concept of airborne cities has captivated the imaginations of authors and readers alike by uncovering the rich cultural and environmental diversities embedded within these visionary urban constructs. There are many visionary narratives from renowned authors such as Italo Calvino, Selim Omarovich Khan Magomedov, and Paul Dobraszczyk, that have impacted our understanding and appreciation of plausible futuristic environments. These imaginative

works allow us to explore the complex societal and ecological effects of such aerial metropolises, providing a platform to envision and investigate potential solutions to pressing challenges facing our world. Italo Calvino's "Invisible Cities," stands as a testament to the power imagining urban landscapes. Through his poetic descriptions of fantastical metropolises, he invites readers to contemplate the cultural and environmental implications of such cities, where the boundaries between the real and the imagined are blurred. Magomedov's "The Flying City and Beyond" delves deeper into the technical and architectural aspects of these aerial urban marvels, exploring the challenges and opportunities they present for sustainable living.[1] Similarly, Dobraszczyk's "Future Cities: Architecture and The Imagination" examines the interplay between imagination, innovation, and the built environment, providing a critical lens through which to analyze the cultural and environmental drivers behind the conception of flying cities. By exploring these imaginative works, we can gain valuable insight into how the vision of the future can be implemented in the design and development of the cities of tomorrow. The exploration of flying cities within the realm of speculative fiction holds great significance to envision and investigate potential solutions to the pressing challenges of our time, such as resource scarcity, environmental degradation, and the quest for sustainable living, and gain insights that can inform the design and development of more sustainable and equitable cities.[2]

The utopian imagination is often most vividly expressed in fictional accounts that include airborne cities, whether in novels, films, or other media. These narratives frequently serve as thought experiments, exploring alternative social, political, and technological arrangements that challenge existing norms and conventions. They also consider other possible outcomes, such as the post-apocalyptic or dystopian environments for humans. While utopian flying cities can offer a unique blend of technological progress and social harmony, where advanced transportation systems, sustainable energy sources, and innovative architectural designs can converge to create ideal living environments. In contrast, dystopian flying cities can depict societies characterized by inequalities, environmental degradation, and oppressive control mechanisms.[3] These narratives serve as cautionary scenarios, highlighting the potential pitfalls of unchecked technological advancement and social stratification. The exploration of utopian and dystopian themes in the context of flying cities can provide valuable insights into the challenges and opportunities that lie ahead as we contemplate the future of urban living. Examples of utopian and dystopian concepts are evident within a myriad of speculative and science fiction narratives and films, many of which directly correlate to the context of future and flying cities.[4] One of the earliest notable appearances of a flying city can be traced to Jonathan Swift's *Gulliver's Travels* (1726), in which the floating island of Laputa is introduced. Suspended in the air through magnetic levitation, Laputa represents scientific hubris and detachment from practical affairs. Swift's satire criticized intellectual elitism and the disconnect between academic theory and real-world problems.[5] In 20th-century fantasy, flying cities often appear as lost or mystical realms, hovering above the earth as sanctuaries or threats. In, *The Castle in the Air* (1990) by Diana Wynne Jones, the city is magical in nature, echoing Arabian Nights-style motifs. Such portrayals focus less on technological plausibility and more on the mythical and allegorical dimensions of these worlds. In Alastair Reynolds' *Chasm City*, a once-utopian human settlement on the planet Yellowstone, has become a nanotechnological nightmare where its inhabitants live in a precarious balance between technological progress and environmental degradation. Another fiction depicts how quickly the world's ice sheets will shrink and sea levels will rise, Kim Stanley Robinson's *New York 2140* elaborates on a partially submerged Manhattan, where the wealthy reside in high-rise buildings while the less fortunate struggle to survive in the flooded streets below.[6]

The contemporary world faces a deficit in imaginative engagement with the human response to climate change, a gap that literature is uniquely positioned to address. Fiction, in particular, offers

fertile ground for exploring speculative futures and ethical dilemmas, thereby enriching our capacity to envision alternative pathways. These literary works provide critical and thought-provoking commentaries on pressing urban challenges, including social inequality, environmental crises, and the transformative role of technology in shaping future cities.

Cultural Identity, Belonging, Class Division, and the Escape Narrative

Airborne cities inherently disrupt conventional understandings of community and place, opening possibilities for the formation of novel social structures and cultural identities. By detaching architecture from the ground, such cities not only liberate terrestrial space for ecological restoration and expanded green areas,[7] but also generate enclosed, self-sufficient environments. Within these elevated habitats, residents may cultivate distinctive forms of collective belonging, shaped by the shared condition of inhabiting the sky. However, this separation could also lead to social stratification and exclusion, similar to the creation of "new cities" from scratch, as access to airborne cities may be limited by economic or social factors.[8] Furthermore, the design and governance of airborne cities will profoundly impact the social dynamics within these floating metropolises. It will also influence the nature of their interactions with the world below. Airborne cities also provoke questions of identity and belonging; Who gets to ascend? Who is excluded? In many speculative texts, such as *Laputa: Castle in the Sky* (1986), the flying city was a relic of an ancient civilization, accessible only to a chosen few. This selectivity ties airborne cities to broaden themes of cultural heritage and colonial legacies. David Harvey's concept of spatial justice and his emphasis on the "right to the city" as a collective entitlement to urban life and its resources,[9] may highlight the cultural tensions inherent in airborne urbanism. In such scenarios, this right risks to becoming increasingly abstract, as the city is physically withdrawn from shared accessible ground. This spatial detachment threatens to marginalize populations on the ground, effectively excluding them from participation in futuristic or post-climate urban solutions and models. For instance, in the 2013 science fiction film *Elysium*, a dystopian future is portrayed in which the wealthy inhabit a pristine orbital habitat while the poor are relegated to a deteriorating Earth.

Such narratives frequently imagine elevated cities as exclusive domains of the elite, leaving those on the ground to endure environmental decline and economic collapse. This vertical segregation serves as an allegory for persistent urban inequalities, where access to cleaner, safer, and technologically advanced environments is structured by wealth and power. Scholars like Keller Easterling have discussed how spatial arrangements can reinforce or disrupt social hierarchies, especially in vertical and mobile urban forms. In *Extrastatecraft*, he argues that urban design can both reveal and produce power structures, often hidden in infrastructure and technological systems.[10] Airborne cities, by occupying space above traditional territorial borders, offer a speculative environment where sovereignty, access, and identity can be radically reconfigured or more rigidly enforced. Another example in the game, *BioShock Infinite* (2013), the floating city of Columbia represents an exaggerated version of American exceptionalism, where class and racial divisions are spatially reinforced through elevation. Columbia's residents believe in their divine right to rule from above, and the city's air-bound nature becomes a literal detachment from the problems of the ground below. These representations function as powerful metaphors for contested questions of equity, belonging, and justice. It reminds us that the struggle over who has the right to the city does not vanish when the city takes flight but may become heightened in an even more profound way.

Speculative airborne cities have been framed as well within discourses of eco-innovation and sustainable design. One of their most compelling dimensions is their potential to confront pressing environmental challenges by envisioning a built environment that exists in greater harmony with the

planet's ecosystems. Frequently depicted as responses to climate catastrophe, these speculative solutions promise ecological restoration on the ground,[11] the integration of renewable energy, autonomous systems, and sustainable design strategies. Yet such visions also risk perpetuating "escape" narrative: rather than engaging directly with the crises of earth, airborne cities may come to symbolize the withdrawal of elites from collective responsibility, reinforcing patterns of exclusion rather than fostering planetary resilience. An illustration of what Bruno Latour describes in *Down to Earth* as the "Out-of-This-World" attractor, a dangerous myth that evades ecological accountability in favor of a techno-utopianism scenario. Latour proposes instead the alternative of the "Terrestrial," a grounded politics of shared belonging and ecological interdependence.[12] Moreover, *In The Vertical City: A Sustainable Development Model*, Kheir Al-Kodmany explores the potential of vertical urban forms in what he terms the "vertical city paradigm," as a strategic response to population growth and urban sprawl, through passive design, green infrastructures, and transit-oriented integration.[13] While this framework foregrounds environmental and infrastructural sustainability, it compels us to ask whether technological feasibility alone suffices. Inclusive airborne environments must account for equity, meaningful governance, and human psychological well-being, dimensions that remain underexamined even in much of the vertical-city discourse.

Flying Cities and the Metaverse

Platforms such as Sansar, Somnium Space, and Decentraland have already seen the emergence of fantastical urban forms that defy real-world limitations. The notion of the metaverse, a term originated from Neal Stephenson's 1992 science fiction novel "Snow Crash,"[14] has evolved to encompass a broader range of technologies and applications, including virtual reality, augmented reality, blockchain, and artificial intelligence. While rooted in different disciplines, the concepts of airborne cities and the metaverse intersect in their speculative, free from constraints, transformative visions of future living. The metaverse offers a digital space where such visionary urban models can be explored, tested, and even inhabited virtually.

Recent scholarships have begun to examine the convergence of these ideas, opening new avenues for rethinking spatial design, sustainability, and digital-physical hybridity. Ideas of cities suspended in the sky such as the likes of Buckminster Fuller's *Cloud Nine* (1960),[15] which imagined geodesic spheres floating in the air, can now be experienced and experimented in an immersive manner inside virtual worlds. Accordingly, the metaverse in general, and virtual worlds specifically offer new arenas where airborne city concepts can be digitally prototyped and explored without the constraints of physical engineering or budget. In virtual environments, architects and designers can simulate flying cities that respond to user interaction, environmental changes, and speculative societal structures.

METHODOLOGY AND WORKFLOW

The design of the airborne cities termed sky islands was undertaken through a speculative-research methodology that merges narrative imagination, emerging technologies, and immersive real-time design processes and visualization. This flipped process aimed to position itself as an iterative and critical design exercise: envisioning alternative urban futures beyond the constraints of gravity and traditional urban form. The project began by establishing a speculative cultural and societal framework for a gravity-free, airborne civilization. This future society was explored through the lens of societal, cultural, economic, and environmental implications, emphasizing sustainability and resilience in virtual environments. A narrative design approach was then employed, in which each student developed their own portrayal of their envisioned city. These narratives drew stylistic inspiration from literary precedents such as Italo Calvino's *Invisible Cities*, using storytelling to

ground abstract architectural ideas in experiential human contexts. To translate these speculative visions into tangible forms, generative artificial intelligence (GAI) tools such as Midjourney were used to create a plethora of visual ideations based on these narratives. This iterative loop between text and image enabled a dynamic development of spatial concepts, atmosphere, and architectural language. Through enhancing the prompts and resulting visuals, a selection of the most relevant images was chosen for further refinement. By using upscaling and expanding tools, improved iterations of the chosen images were made to develop greater details as seen in Figure 1. This process allowed the focus on the main design elements and atmospheric moods, resulting in more refined and visually compelling images that represent the students' concepts of their airborne cities. After enhancing the overall architectural design, materials, textures, environments, styles, and quality, the final vision of the elevated city has come to life in a series of images that served as a visual blueprint for the design implementation.

Figure 1. AI Developed Images using Midjourney

Then VR was employed as an immersive design medium where the construction of the cities were done in an immersive three-dimensional environment that enabled real-time spatial exploration at a 1 to 1 scale using VR Sketch application. Designing inside VR enhanced the ability to assess scale, proportion, and the phenomenological experience of exploring airborne cities as seen in Figure 2. The integration of GAI and VR was conceptual, representational, and experiential, serving as an experimental virtual immersive environment into the future of architecture and urban design.

Figure 2. Students modeling in VR

Following the creation of a fully 3D virtual models, the work was transferred to a real-time rendering and visualisation software. In Twinmotion, the integration of realistic lighting, textures, environments, and animated elements brought the airborne city to life. This workflow with more than 50 hours inside

VR not only streamlined the design process but also ensured an experiential, visually captivating, and engaging final presentation of the innovative airborne cities. The methodology emphasized not only design production but also critical reflection. Each project was documented in both individual and collaborative research, synthesizing design outcomes with scholarly analysis, and situated the Sky Island projects within debates on sustainability, cultural identity, and technological innovation.

SKY ISLANDS CASE STUDIES

The case studies presented here serve as architypes of the Sky Island project. These cases are not only final products but also embodiments of the iterative design-research process described above. Each case demonstrates how narrative imagination, generative artificial intelligence, virtual reality modelling, and immersive real-time visualization were combined to construct possibilities that emerge when architecture is liberated from the ground. More importantly, through VR they reveal how speculative design functions as both a critical and creative methodology, producing visions that interrogate pressing questions of sustainability, identity, and resilience in future urban life. In doing so, the case studies highlight the capacity of speculative design to move between imagination and technical exploration. They reveal how the integration of literary inspiration, advanced digital tools, and critical reflection enabled students to construct future airborne environments. Equally significant is the pedagogical framework underlying these projects. The course fosters a form of design education that is both experimental and experiential. This approach resonates with contemporary discourses on speculative design and immersive learning, where the act of imagining alternative futures becomes a method of critical inquiry. The incorporation of immersive technologies and AI not only enhances representational techniques but also positions students at the forefront of debates surrounding digital-physical hybridity and the future of urban practice. In this way, the projects demonstrate how architectural education can serve as a laboratory for innovation, cultivating both critical reflection and creative agency in addressing the challenges of an uncertain future.

Sky Island #1: Aetheris by Ayah Albaumy

Aetheris, emerges as a flying urban modular composition of white cubes with varying scales, each serving a distinct programmatic function such as residences, workspaces, public plazas, and green zones as seen in Figure 3.

Figure 3. Modular Composition of Aetheris made by Ayah AlBaumy

Elevated and partially embedded in the clouds, the entire structure mimics an irregular, pixelated sphere shown in Figure 4. These interconnected clusters form a network of sky bridges that act as public promenades and connective tissue between districts, fostering movement and interaction. For flexible mobility, inhabitants commute via hovercars, personal hoverbikes, and rideable drones, all connected through four main transportation hubs embedded within the city's core clusters.

Figure 4. Perspectives of city made by Ayah AlBaumy

These transportation hubs are also connected throughout the city by hover platforms that travel vertically and horizontally as seen in Figure 5. Dotted throughout the city are expansive public spaces plazas, leisure terraces, and open-air communal areas that allow inhabitants to gather, socialize, and thrive in this urban ecosystem. The city is powered and suspended by a speculative and sophisticated magnetogravitic propulsion system, a fusion of magnetic levitation and gravitational manipulation. This system works through a vast grid of magnetogravitic nodes embedded beneath the city structure. These nodes allow the entire megastructure to hover steadily in the sky.

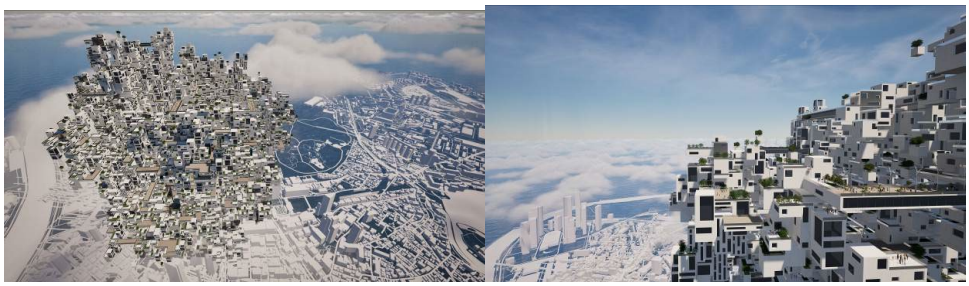

Figure 5. Overview of Transportation network in Aetheris made by Ayah AlBaumy

Central to the city is a green antigravitational biosphere, a dense, floating jungle-like core teeming with plant life, clean oxygen, and natural biodiversity. This biosphere not only regulates air quality but also acts as the ecological heart of the city. Smaller vegetation-bearing cubes float outward from it, acting as both aesthetic elements and practical food sources. This aerial metropolis is a self-sustaining utopia that blends high technology with ecological harmony as seen in the city's masterplan in Figure 6. While AI empowered the initial concept process to algorithmically generate and optimize the modular cube clusters VR enabled the designer to fully immerse themselves in the city and its spaces, building and exploring its floating plazas, navigating sky bridges, and experiencing the green biosphere at a real-world scale. The immersive design workflow blurred the line between imagination and practicality, allowing for iterative testing, connection with spaces, and a deep comprehension of human-scale interaction within a structure that defies traditional urban limitations.

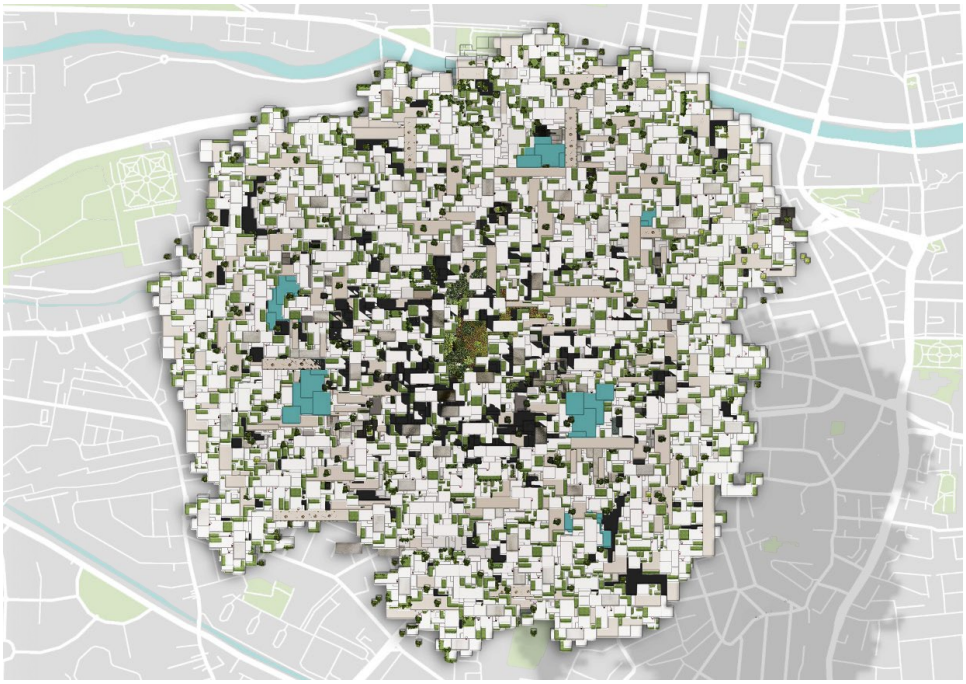

Figure 6. Masterplan made by Ayah AlBaumy

Sky Island #2: Celestria by Fahad Al Musalam

The creation of Celestria included elements vital to the mobility and life of a city freed from the restrictions typically found in ground-based urban environments. The city was shaped into distinct districts which include residential zones, work hubs, and floating leisure parks that are all suspended between towering structures. Sky bridges connect these elements together, linking buildings at various heights to form unexpected passages across districts. Without the limitations of earthbound construction methods, Figure 7 shows how Celestria sprawls vertically and horizontally, embracing a multi-layered and dynamic shifting districts.

Figure 7. Celestria's limitless construction and sprawl made by Fahad AlMusalam

The city's modules and elements can be maneuvered, exchanged, replaced, and repositioned within a novel kind of flexibility. The boundless void of the sky presented in Figure 8 allowed experimentation with formations, location, and concepts from below that were not possible to achieve in conventional earthbound urban environments.

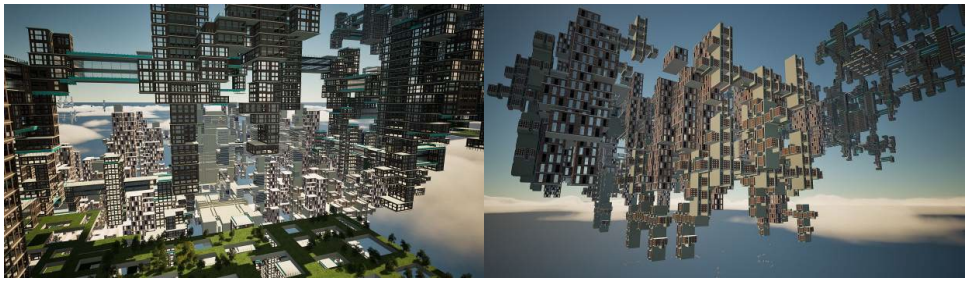

Figure 8. Dynamic districts of Celestria made by Fahad AlMusalam

Modeling in an immersive virtually open environment provided operations only possible in VR, such as immersive spatial manipulation, unrestricted movement, and modular assemblies. These iterations can be reimagined as construction strategies for airborne urbanism. The absence of fixed constraints enables a radical rethinking of spatial production, where design becomes less about accommodating gravity and more about orchestrating dynamic systems suspended in space. The very act of envisioning and designing a flying city pushes the limits of conventional built environments, challenging established standards of construction and habitation. Such explorations suggest the emergence of entirely new spatial archetypes distinct from terrestrial precedents that point toward the development of a novel urban language free from the ground.

Sky Island #3: Nuvora by Abdullah Shakir

Nuvora is a modular airborne city composed of a central core, surrounding mobility rings, and a network of transparent transit tubes as illustrated in Figure 9.

Figure 9. Central core and network of Nuvora made by Abdullah Shakir

At its center lies a pulsating city's lifeline housing essential infrastructure such as energy systems, governance hubs, and civic services as seen in the top part of Figure 10. Encircling its core are concentric mobility rings, in perpetual motion, shifting their functions with time, from a market at dawn to a forum by dusk. These rings serve as the programmable edge of the city, dynamically adapting to the needs and flow of its habitats. Radiating from the heart, transparent mobility tubes spiral outward like light veins, linking neighborhoods cores across the sky. Within these tubes, magnetically levitating capsules transport people offering a sensation of weightless travel.

Figure 10. Infrastructure and transportation network of Nuvora made by Abdullah Shakir

These capsules act as intelligent structures, dock onto the core rings and return to their honeycomb like hive as illustrated in the bottom part of Figure 10. Each module serves a purpose: some are homes, others are traveling forums, research labs, or temporary cultural stations. Their arrivals and departures compose the city's rhythm, responding to both need and environment. Overall, this aerial network forms a kinetic, living city, an ecosystem of floating architecture where form follows flight, and permanence yields purposeful motion.

CONCLUSION

The exploration of virtual airborne cities within the framework of UDDE 607 has represented an innovative and transformative vision of urban living that transcends traditional architectural and societal norms. By integrating AI and VR, the project encapsulates a paradigm shift towards a future where urbanism is not confined by the limitations of gravity and conventional design principles. The case studies served as prototypes illustrating how these technologies can cultivate self-sustaining ecosystems, challenge existing conceptions of space, and foster more equitable social structures. Beyond their outcomes, these projects highlight the broader pedagogical value of integrating literature, technology, and design experimentation. The use of AI in the design process has streamlined ideation, allowing for the generation and optimization of complex urban forms. Meanwhile, VR tools empowered students to immerse themselves in their designs, experimenting with compositions, experiencing scale, spatial relationships, and environmental impact in ways that traditional models could not achieve. This blending of speculative inquiry with experiential learning situates design education within the wider debates of sustainability, digital-physical hybridity, and sustainable urban futurism. By employing AI and VR, students are provided with a robust framework to explore complex design and environmental challenges through experiential learning. This explorative method redefines architectural pedagogy and actively engages a new generation of thinkers poised to address the multifaceted issues facing urban environments globally.

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RESILIENT LEADERSHIP FOR EDUCATIONAL INNOVATION: INTEGRATING DYNAMIC CAPABILITIES FOR TRANSFORMATIVE TEACHING

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INTRODUCTION

Higher education institutions stand at the nexus of multiple disruptions—technological acceleration, climate urgency, sociopolitical volatility, and global demands for equity and inclusion. In this increasingly VUCA (volatile, uncertain, complex, and ambiguous) context, leadership must evolve from traditional managerial control to a dynamic and ethically grounded practice of institutional foresight and resilience.[1]

This article advances a comprehensive framework that integrates the Dynamic Leadership Model (DLM),[2] with the Scandinavian concept of employeeship and embeds it within broader theories of sustainable leadership, agency theory, and epistemic justice.[3] Together, these perspectives offer a multidimensional approach to leadership in higher education that is anticipatory, inclusive, and transformative.

The DLM outlines five interrelated dynamic capabilities—digital imagination, strategic imagination, competence development, soft skills, and a learning culture—which empowers institutional leaders to navigate complexity and lead change.[4] Employeeship, grounded in Scandinavian leadership culture, emphasizes mutual responsibility, trust, and shared governance, reinforcing participatory and ethical decision-making.[5]

Building upon recent leadership development research conducted at the University of South-Eastern Norway, including data from 72 top-level leaders and pedagogical implementation in two university courses,[6] this paper situates leadership transformation within a framework of epistemic justice, sustainability, and institutional adaptability. These insights are aligned with the core concerns of the Prague Research in Education and Teaching Conference: fostering innovation, inclusive leadership, and sustainable educational futures.

Theoretical Framework

Resilient Leadership and the Dynamic Leadership Model (DLM)

Resilient leadership has become indispensable in navigating today's educational complexity. Resilience in this context is not limited to recovery from crises but extends to proactive capacity-building, strategic transformation, and future-readiness.[7] Within higher education, resilience entails

fostering adaptive systems that can respond to rapid changes in technology, societal expectations, and global disruptions. However, resilience must be scaffolded by theoretical clarity and operationalizable leadership models.

The Dynamic Leadership Model (DLM), developed by Fagerland and Fjuk,[8] provides such a framework. Grounded in dynamic capabilities theory,[9] DLM offers a forward-looking, empirically validated leadership architecture consisting of five capabilities:

1. **Digital Imagination** – the ability to envision and integrate emerging digital technologies into institutional development.
2. **Strategic imagination** – scenario planning and long-term orientation amid uncertainty.
3. **Competence Development** – continuous learning for leaders and their institutions.
4. **Soft Skills** – empathy, communication, and emotional intelligence as leadership essentials.
5. **Learning Culture** – embedding curiosity, collaboration, and innovation into institutional DNA.

These capabilities enable leaders to shift from reactive problem-solving to anticipatory leadership aligned with AI-driven educational transformation, sustainable innovation, and inclusive learning environments.[10]

Employeeship and Participatory Leadership

The Scandinavian concept of employeeship deepens DLM by contextualizing it within an organizational culture of trust, co-creation, and mutual accountability.[11] In contrast to top-down leadership, employeeship redistributes responsibility and empowers individuals at all levels to act as stewards of institutional values and goals. In doing so, it promotes relational leadership and inclusive governance—key dimensions for resilient educational systems.

As demonstrated in both research and teaching practice,[12] integrating employeeship with DLM strengthens institutional responsiveness, enhances innovation capacity, and increases stakeholder engagement. The principles of employeeship align closely with emerging demands for decentralized and collaborative governance models in higher education.

Sustainable Leadership and Justice-Oriented Frameworks

While DLM and employeeship emphasize adaptability and collaboration, the third layer of this integrated theoretical framework brings a normative dimension: sustainable leadership, grounded in ethical responsibility, epistemic justice, and long-term societal value.[13]

Sustainable leadership as articulated by Hargreaves and Fink[14] and expanded by Fagerland and Bergh[15] promotes the integration of:

- **Social Justice**: addressing systemic inequalities within education.
- **Epistemic Justice**: recognizing diverse ways of knowing and validating marginalized knowledge systems.[16]
- **Environmental Sustainability**: aligning institutional strategies with planetary boundaries.
- **Ethical Agency**: positioning leaders as stewards of both the institution and broader democratic ideals.

Furthermore, agency theory, traditionally applied in economics and management[17] is reframed here as an ethical tool for understanding how leaders exercise responsibility on behalf of present and future stakeholders. Educational leaders, in this view, are accountable not just to institutional metrics, but to societal wellbeing and intergenerational justice.[18]

Integrative Framework for Leadership in Education

Taken together, DLM, employeeship, and justice-based sustainable leadership form an integrative, multi-dimensional framework that addresses the needs of 21st-century higher education. This framework is distinct in that it unites:

- Operational excellence (via dynamic capabilities),
- Organizational culture (via employeeship), and
- Ethical and societal alignment (via sustainable leadership and justice frameworks).

It is especially suited for complex, mission-driven sectors like education, where leadership must navigate not only strategic challenges but also questions of legitimacy, inclusion, and democratic accountability.

METHODOLOGY

To ensure both conceptual rigor and practical relevance, this study employed a triangulated qualitative research design, integrating empirical data, pedagogical implementation, and theoretical synthesis. The methodology was structured across three complementary domains: longitudinal leadership inquiry, curriculum-embedded pedagogical testing, and critical document analysis. This pluralistic design ensures analytic depth and contextual validity while aligning with transformative paradigms in educational leadership research[19].

Longitudinal Executive Study (2020–2024)

The empirical foundation of the study is a four-year longitudinal investigation involving 72 senior leaders across public and private sectors in Norway. The participants, ranging from CEOs and municipal executives to educational directors and institutional deans, were selected based on their involvement in AI-driven change processes and strategic organizational development. Semi-structured interviews, expert panels, and foresight workshops were conducted over three iterative phases (2020, 2022, 2024), ensuring time-based comparisons and validation of emerging insights.

Data collection instruments were developed in alignment with the Dynamic Leadership Model's five capabilities. For example, questions on strategic imagination drew from scenario planning literature,[20] while competence development and learning culture were assessed via reflective leadership mapping and knowledge-sharing diagnostics.[21] Interviews were transcribed and thematically analyzed using Braun and Clarke's model,[22] supported by NVivo for coding reliability.

Pedagogical Implementation in Higher Education

To test the applied relevance of the integrated leadership model, the study included a pedagogical intervention across two academic programs:

- **ESB100E: Strategisk bærekraft** (Autumn 2024)
- **BARLED: Bærekraftig ledelse** (Spring 2025)

Both courses are part of the leadership education curriculum at the University of South-Eastern Norway and were restructured to embed the full DLM-employeeship framework. Students ($n \approx 90$) engaged in reflective leadership labs, scenario-based AI simulations, epistemic justice exercises, and collaborative foresight journals.

The educational design drew heavily on the pedagogical findings from Fagerland and Bergh,[23] who applied similar models in police education to foster ethical reasoning and participatory decision-making. Pre- and post-course surveys, qualitative student reflections, and course artifacts were collected to assess changes in leadership awareness, adaptive capacity, and inclusivity orientation.

This process-based evaluation provided insight into how theoretical models translate into personal and professional development trajectories.

Document Analysis and Theoretical Integration

A third layer of analysis consisted of critical document review and theory synthesis. This included:

- Institutional strategy documents (n=14) from higher education and public governance.
- Research-based literature from the three core articles.[24]
- National policy frameworks on sustainable and inclusive education.

This allowed for abductive reasoning across empirical patterns, theoretical principles, and policy discourse.[25] Integrating employeeship, epistemic justice, and dynamic capabilities within a shared interpretive framework ensured that findings were not only empirically grounded but normatively resonant with future-oriented educational leadership.

Ensuring Trustworthiness and Academic Rigor

The study employed several strategies to maximize validity:

- **Triangulation** across data sources (leaders, students, documents).
- **Member checking** with 12 selected executive informants in follow-up interviews (2024).
- **Peer debriefing** with an external academic panel.
- **Audit trail** documentation for all coding and thematic processes.

Together, these methodological pillars support the credibility, transferability, and confirmability of findings. By bridging leadership research, curriculum practice, and institutional context, the study offers a robust empirical and theoretical contribution to the evolving field of resilient and sustainable leadership in education.

INTEGRATING DYNAMIC LEADERSHIP MODELS (DLM) AND SUSTAINABLE LEADERSHIP (SL) IN EDUCATIONAL SETTINGS

Results and discussion

The integration of the Dynamic Leadership Model (DLM), employeeship, and sustainable leadership frameworks reveals a robust and interrelated set of leadership practices that are essential for institutional resilience and transformation. Findings from empirical data and pedagogical application underscore the capacity of this integrative model to foster innovation, ethical foresight, and inclusive institutional development.

DLM Capabilities in Action: Enablers of Innovation and Adaptability

Participants across sectors identified the five DLM capabilities as decisive in navigating educational complexity. Digital imagination emerged as particularly critical in enabling institutions to proactively harness AI, automate administrative tasks, and explore new pedagogical formats.[26] One university dean explained: “Our ability to integrate digital strategy with human insight was the turning point—we moved from survival to strategic positioning.”

Strategic imagination, facilitated through scenario-based workshops and curricular foresight labs, helped institutional leaders better anticipate socio-technical disruptions. The practice of foresight not only informed strategy but also reshaped leadership identity: from reactive problem-solvers to designers of institutional futures.[27]

Moreover, competence development and soft skills were repeatedly cited as “invisible infrastructures” for transformation. Empathy, reflective practice, and cross-functional dialogue created a culture of

trust that enabled adaptation during crisis moments. This reflects the interdependence between technical competence and relational leadership.[28]

Employeeship as a Catalyst for Participation and Co-Creation

The second dimension of findings highlights the impact of employeeship in embedding DLM into institutional routines. In contexts where leadership was shared, and employees felt ownership of strategic direction, innovation outcomes improved. This was most evident in collaborative curriculum redesign and ethical decision-making simulations.

As supported by both the executive interviews and student reflections, employeeship practices—such as distributed responsibility, open communication, and team-based leadership—enabled broader engagement in leadership processes. These principles are not only culturally anchored in Scandinavian governance but are essential for epistemic justice and inclusion.[29]

Sustainable Leadership and Justice-Oriented Institutional Cultures

The integration of sustainable leadership with DLM and employeeship produced a more ethically grounded and socially responsive leadership paradigm. Students and executives alike expressed that the greatest long-term value of leadership was not technical strategy but its alignment with epistemic justice[30] and intergenerational responsibility.[31]

Institutions that actively worked to democratize knowledge creation—by including diverse cultural perspectives, recognizing lived experience, and promoting social justice in curricula—demonstrated a stronger alignment with mission-driven leadership.[32] This aligns with broader calls from the Prague Research in Education and Teaching Conference to embed ethical governance, sustainability, and inclusive pedagogies into institutional structures.

Integrating DLM and SL: A Strategic Response to Educational Complexity

The synthesis of findings is captured in the integration of Dynamic Leadership Models (DLM) and Sustainable Leadership (SL), as outlined below. These tables show how core leadership principles map onto the major educational priorities of innovation, equity, and environmental sustainability.

Educational Innovation	Resilient Leadership Focus	Impact on Educational Leadership
Adapting to Technological and Societal Change	Emphasis on proactive leadership that anticipates disruptions	Enables leaders to navigate tech-driven shifts and foster innovation across institutional layers
Navigating Uncertainty and Complexity	Capacity to adapt strategies in real time	Builds institutional resilience by transforming disruption into learning
Promoting Inclusivity and Equity	Equity- and justice-oriented leadership	Embeds inclusive practices and broadens access to opportunity
Ethical Governance and Leadership	Transparent, accountable leadership	Strengthens institutional trust and mission-driven identity

Table 1. Resilient Leadership and Educational Innovation

Leadership Concept	DLM Principles	SL Principles	Impact on Educational Leadership
Digital Imagination & Strategic imagination	Visionary tech integration & foresight	Aligning with sustainability and long-term goals	Positions institutions as future-ready and responsible innovators
Competence Development & Lifelong Learning	Ongoing learning orientation	Commitment to professional and ethical growth	Builds institutional agility and sustained pedagogical renewal
Soft Skills & Collaborative Leadership	Empathy, trust, dialogic engagement	Participatory governance	Creates inclusive cultures and resilient educational communities
Inclusive Decision-Making & Governance	Shared responsibility & ethical agency	Social and epistemic justice	Enables equitable leadership that addresses systemic bias and fosters belonging

Table 2. DLM and SL – Guiding Educational Leadership

Sustainable Leadership Principle	DLM Capability	Educational Impact	Conference Alignment
Social Equity and Inclusivity	Soft skills and competence development	Addresses inequity through inclusive leadership and pedagogy	Supports the focus on inclusive education and diversity in teaching
Epistemic Justice & Diverse Knowledges	Learning culture and digital imagination	Integrates marginalized voices and expands curricular legitimacy	Aligns with recognition of diverse knowledge systems in research and teaching
Environmental Responsibility	Strategic imagination and competence development	Embeds green leadership and climate-literate curricula	Supports sustainability goals and environmental consciousness
Ethical Leadership and Governance	Learning culture and relational leadership		

Table 3. Sustainable Educational Futures – Integrating Leadership Principles

INTEGRATIVE LEADERSHIP FRAMEWORK

Figure 1. Integrative leadership framework

To visualize the conceptual synthesis emerging from the study's findings, the above figure presents an integrated framework for educational leadership. This framework unites the Dynamic Leadership Model (DLM), the Scandinavian concept of Employeeship, and a Sustainable Leadership paradigm grounded in ethical governance, social equity, and epistemic justice.

At the core of the model lies a systemic approach to resilient leadership, informed by both normative and operational dimensions. The left-hand dimension illustrates the five dynamic capabilities central to DLM—digital imagination, strategic imagination, competence development, soft skills, and learning culture—as developed by Fagerland and Fjuk.[33] Notably, *strategic imagination* replaces traditional strategic foresight to emphasize the creative, design-driven aspects of future-oriented leadership.

The right-hand side of the framework represents Sustainable Leadership, as outlined by Fagerland and Bergh,[34] and incorporates key principles such as long-term thinking, environmental accountability, and epistemic inclusivity. These principles are critical for aligning institutional leadership with global challenges and intergenerational responsibilities.

While not labeled as a separate axis, Employeeship underpins the integrative model, ensuring that leadership is not only exercised *for* institutional transformation but *with* those involved in enacting it. As theorized by Møller[35] and expanded by Velten and Heggen,[36] employeeship introduces shared responsibility, participatory governance, and trust-based collaboration as cultural enablers of change.

Together, these three leadership strands form a cohesive framework that is theoretically robust, empirically grounded, and pedagogically actionable. It is particularly well-suited for higher education institutions navigating the intertwined imperatives of technological disruption, inclusive governance, and sustainable development.

CONCLUSION

This study has proposed and validated an integrative leadership framework that addresses the urgent and interrelated challenges of innovation, sustainability, and inclusivity in higher education. By combining the Dynamic Leadership Model (DLM), Scandinavian employeeship, and sustainable leadership grounded in agency theory and epistemic justice, the framework enables institutions to cultivate adaptive, ethically grounded, and future-oriented leadership cultures.

Empirical evidence from longitudinal executive interviews, pedagogical implementation, and critical document analysis demonstrates that DLM's five capabilities—digital imagination, strategic imagination, competence development, soft skills, and learning culture—serve as dynamic levers of transformation.

These capabilities are amplified when embedded in participatory cultures shaped by employeeship and aligned with ethical principles of social and epistemic justice. This integrative leadership paradigm not only enhances institutional adaptability in AI-driven and post-pandemic contexts but also reposition leadership as a moral and strategic practice.

The Prague Research in Education and Teaching Conference emphasizes the importance of inclusive pedagogy, institutional foresight, and sustainable impact—objectives that resonate deeply with this framework. Educational leaders who adopt such integrative approaches are better equipped to move beyond compliance and performative change, toward transformational strategies that are accountable to future generations.

Ultimately, this study demonstrates that doing "more with less"—to borrow from Mies van der Rohe—requires a fundamental rethinking of what leadership means in the 21st century. Not just dynamic, but just. Not only adaptive, but inclusive. Not only innovative, but accountable.

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INTERPROFESSIONAL COLLABORATION BETWEEN THE POLICE AND OTHER EMERGENCY SERVICES: AN ANALYSIS OF OPERATIONAL COOPERATION AND THE NEED FOR JOINT EDUCATION AND TRAINING

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INTRODUCTION

Collaboration between the police and the emergency services is essential for effective emergency preparedness and crisis management. This study investigates the interprofessional collaboration between the Norwegian Police Service and the Norwegian Fire and Rescue Service. In Norway, these two emergency services operate under distinct administrative, educational, and economic frameworks, yet they frequently converge in complex and urgent situations that require collaboration and coordinated responses.

The Norwegian Police Service

The Norwegian Police Service is a national agency under the Ministry of Justice and Public Security, consisting of the National Police Directorate and 12 police districts with associated dispatch centers.[1] The police are responsible for maintaining public order, preventing and investigating crime, coordination of search and rescue operations and conducting administrative tasks such as immigration control and passport issuance. Police education is delivered by the Norwegian Police University College, a state-owned professional university college responsible for delivering the obligatory bachelor's degree in police studies, postgraduate and master programs, and applied research in police science.[2]

The Norwegian Fire and Rescue Service

The Norwegian Fire and Rescue Service are municipally organized and mandated by law to ensure both preventive and emergency preparedness. The service comprises 199 local services employing approximately 8,500 part-time and 3,500 full-time personnel. Full-time firefighters complete standardized training that includes online modules, structured in-service learning, and an eight-week foundational course at the Norwegian Fire Academy. Part-time personnel complete a similar curriculum but with a basic course delivered regionally, comprising fewer hours.[3] A new two-year

vocational education program introduced in 2024 marked a major step toward the professionalization of the field.[4]

From an economic standpoint, the police receive centralized state funding, whereas the fire and rescue services depend on municipal budgets. Furthermore, municipal-level differences in how fire and rescue services are organized contribute to structural variation across regions.[5] These disparities in organizational structure, educational background, and financial resourcing are known to influence authority dynamics, communication patterns, and mutual expectations during interagency operations.[6]

The aim of this study is to contribute to effective emergency preparedness and crisis management by identifying factors that influence inter-agency collaboration between the police and the fire and rescue service in Norway.

THEORETICAL FRAMEWORK

Previous research conducted by D'Amour et al.[7] and Helgesen[8] has identified four dimensions important for promoting interagency collaboration (see Figure 1). Governance refers to how managerial structures support collaboration and guide the development of new professional and organizational practices - for instance, by facilitating shared professional arenas and structured knowledge exchange. Formalization involves the use of tools and procedures that structure workflows and clarify responsibilities and expectations, such as the emergency communication network. Shared goals and vision refer to the extent to which common objectives are embraced across services, including the balance between citizen-oriented goals and alignment with professional or organizational interests. Internalization refers to mutual trust, interdependence, a sense of belonging, and knowledge of each other's roles and professional values.

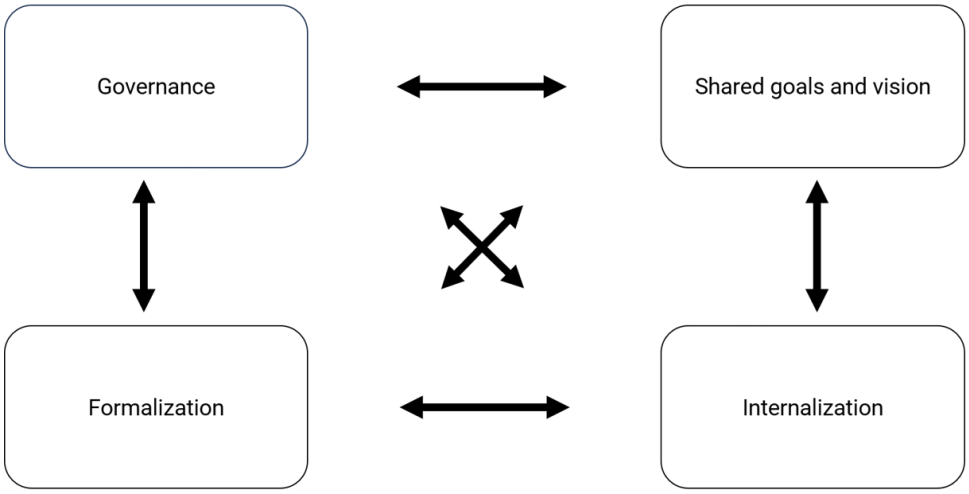

Figure 1. A structural model of collaboration.

The two dimensions on the left side of the model shown in Figure 1 pertain to organizational factors, while the two dimensions on the right-side address interpersonal relationships. These four interrelated dimensions are shaped by structural and external factors, including resources, financial constraints, and politics. The four dimensions influenced the development of our interview guide, which was adapted to the specific inter-agency context to elicit relevant responses aligned with our problem statement.

The problem statement in the present study

The problem statement of the study was: How is collaboration between the police and the fire and rescue service experienced by the police, and what factors contribute to effective inter-agency cooperation?

METHOD

This study uses a mixed-method approach, utilizing data from the Norwegian Police Operating System as well as qualitative semi-structured interviews with key participants from the police.

Quantitative data

Data from the Norwegian police operating system (PO-system)

The PO-system primarily serves as the police's duty log and operational management tool, not as a system for statistics or analysis.[9] The log reflect the situation as understood at a given moment, which may differ from the understanding that develops over time.[10] Entries in the PO-system cannot, in principle, be edited or corrected, even if the initial interpretation later proves inaccurate. Therefore, data from this system must be interpreted with caution.

The selection of assignments that may involve collaboration

To get an indication of the extent of assignments with physical interaction between the emergency services, we extracted the assignments where the police had registered that there was a resource from the police and the fire and rescue service and/or ambulance involved. We extracted data from 2019 and 2021. This data was mainly treated as a sample, and it amounts to approximately 46.000 assignments. These assignments do not include the situations where the interaction between the police and the fire and rescue service has only taken place between dispatch centers. The criteria for categorization of data from the PO-system included: date, priority of the assignment, nature of the incident, resources involved (police, fire, ambulance), the operations center log, routine assignments, planned assignments, recurring assignments, and incident descriptions. Number of assignments involving the following resources: 1) Police and fire services, 2) Police, fire, and ambulance services and 3) Police and ambulance, without fire and rescue service involvement.

Qualitative data

Semi-structured research interviews

Qualitative data were collected through semi-structured group interviews. Group settings were chosen to elicit insights unlikely to surface in individual interviews. The aim was to gather experiences and reflections from police officers and leaders regarding collaboration with the fire and rescue services, rather than to provide an objective account of Norwegian policing.

Each interview lasted approximately 90 minutes and was conducted by the second author. Participants were informed about the study's purpose and gave verbal consent to participation and audio recording. Confidentiality was ensured in accordance with ethical research guidelines.[11]

The qualitative data were analyzed both deductively using themes from the interview guide, and inductively through the use of Braun and Clarke´s method of thematic content analysis.[12] Responses were categorized and aggregated to identify underlying patterns and meanings.

Participants

Nine strategically selected police officers (eight men, one woman) from five geographically and organizationally diverse districts were interviewed. Two of the districts co-locate all three emergency dispatch centers — a factor presumed to influence the potential for collaboration.

Participants were chosen for their tactical experience in law enforcement, incident management, or operations centers; several also had specialized expertise, such as prior work in fire and rescue services or strategic leadership roles. They are thus considered what Jacobsen refer to as elite participants.[13] To reflect their active role, we refer to them as participants, following recommendations from Morse.[14] The selection aimed to capture diversity in Norwegian police practice.

The interview guide

The interview guide, developed by the second author, was based on the study's theoretical framework, and focused on questions related to the concept collaboration and the four dimensions of collaboration: Governance, formalization, shared goals and vision, and internalization. In the present article we focus upon the two organizational dimensions from the theoretical framework, that is, governance and formalization.[15] The remaining two dimensions in the framework related to interpersonal relationships, that is shared goals and vision and internalization, will be reported in an forthcoming article.

Collaboration

Participants were asked to reflect on their understanding and experiences of inter-agency collaboration, including how they conceptualize the term collaboration, provide examples of effective or ineffective cooperation with the fire and rescue service, to describe the types of incidents that typically involve such collaboration, and to estimate the proportion of their total operations that generally require coordination with the fire and rescue services.

Governance

Questions addressed was how the participants assessed governance and leadership practices facilitate for collaboration, and the frequency and nature of joint meetings, the organization of joint exercises, and whether incidents are evaluated retrospectively.

Formalization

Participants were asked about formal tools and procedures that structure inter-agency coordination. The questions focused on the processes of information exchange during operations, and the participants were asked to assess specific formal tools design to support information shearing and collaboration.

RESULTS

Collaboration

The quantitative analysis revealed that the police and fire service participate in the same assignment in 37% of all cases. Of these, assignments involving all three emergency services — fire, police, and emergency medical services — account for 25.6%, while assignments involving only the fire service and police account for 11.7%. However, the participants estimated that approximately 20% of police operations involve collaboration with the fire and rescue service. This indicate that the estimate made by the participants is considerably higher than the actual proportion of such joint assignments.

When asked about collaborative assignments between police and fire and rescue services, participants mainly mentioned fires and traffic accidents. Other examples included search and rescue, natural disasters, evacuations, maritime incidents, and gas leaks. This aligns with date from the Norwegian PO-system: of 5.400 joint missions, 39% involved fires, 25% traffic, and 9% rescue/preparedness.

Participants generally found collaboration with the fire and rescue service effective, citing clear communication, shared awareness, and flexible task distribution. One noted it works best *"when we understand each other's roles, know what needs to be done, and are aware of which tasks remain unaddressed."* Collaboration between dispatch centers was also seen as effective, marked by good coordination and communication, though some called for more coordinated and synchronized operations.

Governance

Formal and informal meeting structures

Participants largely reported an absence of regular, formal interagency meetings at the operational level, indicating that collaboration is not embedded in structured governance. As one respondent noted, *"Informal arenas are the most frequent; there are only a few regular meeting points otherwise."*

In support of this, informal meeting points - such as daily dispatch briefings or "blue light parties" - were more commonly cited. These arenas were viewed as important for trust-building but limited in strategic scope. One participant remarked: *"We meet every day at 08:15... It's not systematized, but it happens occasionally."* Another participant noted, *"We do have meetings, but they're not structured, and they happen too infrequently."*

Interagency collaboration often depends on bottom-up efforts, with inconsistent leadership involvement. In the absence of formal governance structures, collaboration was described contingent on individual effort and local culture, risking fragmentation and inconsistency over time.

Joint training and exercises

The ongoing life-threatening violence exercise emerged as the primary structured training across emergency services. While it is valued for both skill development and relationship-building, participants noted that it is not always conducted annually or attended by all relevant agencies, even legally mandated annually.

Besides the ongoing life-threatening violence exercise, joint exercises was reported to be infrequent and largely ad hoc. *"We occasionally have joint exercises, but the system is poorly organized and rather ad hoc,"* one participant explained. Such exercises were often initiated by external stakeholders but lacked strategic alignment across services.

Participants emphasized the value of scenario-based case exercises, identifying them as a potential model for a more systematic approach to interagency training. However, these efforts were highly dependent on local leadership and were not embedded within a formalized training strategy.

Another issue raised, was variation in cooperation across municipalities. Typically, one participant noted that when a neighbouring municipality opts out of intermunicipal fire service agreements, it can lead to inconsistent training and practices: *"Then maybe they have different ways of doing things,"* which was seen as a challenge for operational predictability and coordination across emergency services.

Evaluation practices

Evaluation practices is inconsistent and generally reactive. Most participants reported that debriefings followed major incidents - particularly within the police - but these primarily focus on personnel welfare rather than organizational learning. As one participant explained: *"The priority after an incident is to care for staff - formal evaluation comes later."*

Participants reported that tactical debriefs are more common than operational-level evaluations, which are often limited by logistical challenges, such as operational staff remaining on duty while others are relieved. Reflective practices are reported after larger incidents, but lessons learned is rarely shared across agencies. Within the police, dissemination typically occur via internal emails or document uploads, with limited follow-up: "*It's up to the individual to engage,"* noted one participant.
Overall, the findings indicate a lack of systematic, interagency evaluation and knowledge transfer. The absence of coordinated follow-up mechanisms constrains organizational learning and underscores the need for leadership to embed evaluation in formal governance processes.

Formalization

The participants emphasized that a common understanding of the situation and tasks is of central importance for good collaboration between the emergency services. They highlighted several formalized organizational mechanisms that facilitate this. These include physical co-location of dispatch centers, standardized alert protocols - triple notification, shared radio communication channels, and the establishment of a command post during critical incidents.

Co-location of dispatch centers

The participants reported that co-location of the dispatch centers improves the interagency collaboration between the emergency services. They noted that co-location contributes to improved resource utilization, as well as strengthens interpersonal relationships. For example, one participant expressed: *"We have visual contact with the fire service, and it's easy to exchange information, which helps prepare the fire service in case they need to mobilize"*.

Triple notification

Triple notification - where all emergency services are alerted simultaneously - was generally regarded as a positive measure for coordination. However, inconsistent use of the protocol, particularly by the fire and rescue services, was frequently cited as a barrier. One participant commented, *"When the fire service receives the first report of an incident, they use the protocol far too little."* Another noted, *"I see the fire service deploying with blue lights, and we haven't even been alerted."* Such discrepancies lead to instances where the police are unaware of incidents to which the fire service has already responded.
These findings indicate that while triple notification is viewed as a beneficial tool by the participants, its inconsistent implementation undermines its potential. Participants called for greater adherence to and training on the protocol to ensure coordinated responses.

Shared radio communication channels

The shared digital communication network and particularly talk groups as shared radio communication (BAPS in Norwegian), was widely seen as a valuable tool for achieving early and ongoing shared situational awareness. One participant described its significance: *"There is a time before and after BAPS"*. The participants underscored that BAPS is especially effective in situations where the fire service arrive before the police, allowing coordinated action via radio. However, challenges were reported regarding excessive or insufficient communication, fail in communication through designated channels and parallel communication streams. Some participants also highlighted a discrepancy in communication quality, especially from part-time fire personnel. In sum this indicate a need for clearer operational guidelines and training.

The establishment of a joint command post at the scene of major incidents was emphasised by the participants as an effective tool for collaboration. It was highlighted that this supports shared understanding of the situation and the capacities. According to the participants, the establishment of a joint command post also yields the added benefit of fostering familiarity among the parties involved, which in turn enhances collaboration.

CONCLUSION

The aim of this study was to contribute to effective emergency preparedness and crisis management by identifying factors that influence inter-agency collaboration between the police and emergency services in Norway. A theoretical framework based on D'Amour et al.[16] and Helgesen[17] was applied to analyze collaboration processes, emphasizing the two dimensions of governance and formalization. Using a mixed-methods approach, both quantitative and qualitative data was investigated. Quantitative data from 46.000 assignments was extracted from the PO-system and qualitative data was collected through nine semi-structured interviews. These data were analyzed in order to answer the extent of collaboration between the police and the fire and rescue service and how collaboration is experienced by the police, and what factors contribute to effective inter-agency cooperation.

The quantitative data adds an important corrective to participant perceptions regarding the amount of collaborative assignments. While participants estimated that approximately 20 percent of police operations involve collaboration with the fire and rescue service, the quantitative data show that the actual proportion is significantly lower.

The findings demonstrate that collaboration is often experienced as effective where there is physical proximity, mutual trust, and familiarity between personnel. In particular, co-located dispatch centers, joint command posts, and shared communication systems (such as BAPS) were perceived as valuable tools that enhance situational understanding and collaboration.

However, the study also uncovers several systemic shortcomings that constrain collaboration. These include fragmented governance structures, inconsistent implementation of formal mechanisms (e.g., triple notification), and a lack of shared evaluation routines. Joint exercises, when they occur, are often sporadic and lack strategic alignment. Importantly, learning from incidents is seldom captured systematically or disseminated across organizational boundaries, limiting opportunities for institutional learning and continuous improvement.

A recurring theme in both the interview data and the broader analysis is the need for increased shared competence and a deeper understanding of each agency’s roles, responsibilities, and operational logic. Without this, misunderstandings may arise that hinder timely and effective crisis response.

In light of these findings, it is evident that interagency collaboration must be supported by structured and institutionalized learning processes. One of the most effective and sustainable ways to achieve this is through expanded joint education and training initiatives. Shared educational programs offer a platform for developing mutual understanding, fostering professional respect, and aligning operational practices across the emergency and preparedness services. The recent establishment of such programs at the Norwegian Police University College represents a promising step in this direction.[18]

However, our findings also underscores a broader and pressing need: to scale up and integrate joint education as a core element of national emergency preparedness strategy. Only by investing in systematic, cross-sector competence development can Norway ensure that collaboration between emergency services is not left to chance, but becomes a robust and reliable foundation for future crisis management.

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DEVELOPING A COMBAT MINDSET IN PRISON OFFICERS: TRAINING FOR EFFECTIVE RESPONSE TO CELL RIOTS

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INTRODUCTION

The Norwegian Correctional Service (NCS) has historically experienced both small and large disturbances in its prisons. Some of these riots are cell smashing – a label called for when an inmate is damaging or smashing his cell in anger and or hurting himself. When an inmate does this, he must of security reasons, but also to avoid hurting the inmate's health, be stopped by a riot squad. From the decision is conceded to go inside the cell with the riot squad, the prison officers prepare to fulfill this task in a professional manner.

To gain deeper insight into this phenomenon, one of the authors will provide a unique perspective on a cell riot in a prison. By drawing on this firsthand experience, we aim to enhance our understanding of cell riots and explore how officers and the NCS can learn from this event to improve their response, i.e. their combat mindset before and during a cell riot. Our research question is: To which degree is understanding the prison officers' combat mindset before and during cell riots vital for educational purposes?

Cell riots and a well-functioning combat mindset

Norway has a small population of approximately 5.4 million people.[1] The country operates a relatively small prison system, consisting of around 56 prisons across various security levels. These facilities house roughly 3.000 inmates at any given time. Norway's maximum-security prisons combine strict security with a strong focus on rehabilitation.[2]

Full-scale prison riots are rare in Norway. The most serious incidents occurred in 1980 and 1982, involving escapes, major damage, and police intervention.[3] Another significant riot took place on New Year's Eve in 2000, when intoxicated inmates caused severe damage and injured officers before the situation was brought under control with help from police and attack dogs.[4] While full riots are uncommon, disturbances with the potential to escalate do occur. Smaller cell riots happen from time to time, and officers are trained to manage these.

There exists no research of prison riots in Norway, but the international literature has dwelled into the phenomenon.[5] Useem and Kimball define "a prison riot occurs when the authorities lose control of a significant number of prisoners, in a significant area of the prison, for a significant amount of time".[6] Cell riots are individual-level disturbances and different to full fledge riots that are a collective-level

disorder. We define a cell riot as “a disorder on an individual-level where an inmate, in his cell, do severe material damage or/and hurt himself”. In such a situation it is necessary, if the communication with the prisoner fails, to dress up a riot squad to have control of the situation and end the self-harm, material damage and avoid that the disorder is spread to other prison cells. Officers experience stress when an inmate is smashing his cell, shouting loud and injures himself. Siddle defines stress as a matter of perception, and perception can be changed through the training process.[7] Breath control are mandatory components of survival stress management. By learning symptoms associated with survival stress – abnormal sweating, rapid breathing, increased heart rate and uncontrollable muscle tremor will tell individuals that they are not in their survival performance zone. Then they may initiate and achieve controlled breathing exercises.[8]

The combat training for officers is designed to reduce stress and enhance the confidence in students. The combat mindset concept is a method for becoming better acquainted and confident with one's own emotions when dealing with dangerous critical situations, precisely to avoid unnecessary use of force.[9] Through simple techniques linking several response options through training in realistic scenarios, one may master a central part of the emotional challenges in handling stress. Understanding and managing emotions prevent unnecessary force, ensuring ethical and effective decision-making in high-stakes situations.[10]

A combat mindset includes courage, determination, mental stamina, and the constructive use of aggression.[11] It also involves effective emotional regulation through techniques like controlled breathing, helping to manage fear, anger, and frustration while maintaining calm judgment. Focus, concentration, and self-control are essential for attentiveness and measured responses. Maintaining continuous observation and analysis helps identify threats and adapt actions proportionately. A well-functioning combat mindset combines technical knowledge, physical readiness, and mental resilience.[12] According to Howe, managing emotions like fear, anger, and anxiety through value-driven, realistic training is key to maintaining control.[13] Boe and Ingdahl also stress the importance of balancing necessary aggression with ethical boundaries, as straying from these values can lead to dehumanization and excessive use of force.[14] Boe and Ingdahl further concludes that by training on extreme situations one will become properly educated both in aggression and aggression control.[15]

There are specific techniques for developing a well-functioning combat mindset. Grossman highlights two key psychological learning methods: classical and operant conditioning.[16] Classical conditioning links a stimulus to an automatic response, training individuals to react instinctively under stress. Operant conditioning, on the other hand, uses positive reinforcement — rewarding desired actions — to strengthen performance, especially in high-pressure situations.[17]

Mental preparedness is essential as technical or physical skills; without it, training has limited effect in real-world scenarios like cell riots. Doss highlights the value of visualizing where one mentally rehearses upcoming operations.[18] While mental training cannot replace realistic physical exercises when performing practical tasks, it plays a crucial role in managing negative thoughts and reinforcing a strong combat mindset. Techniques such as positive affirmations and self-talk — for example, repeating "I can handle it" — can reduce anxiety, doubts, and fear, helping to build confidence and mental resilience.

METHODOLOGY

Autoethnography is a qualitative research method where the researcher uses their own personal experiences as primary data, combining elements of ethnography and autobiography in a narrative writing, to show how individual stories reflect broader societal issues.[19] This qualitative method uses the researcher's own experiences as primary data[20] since it is difficult to get knowledge about

experiences few officers experience inside a closed prison institution. This is particularly useful for studying hard-to-access settings like cell riots. It blends ethnography's focus on culture with autobiography's personal reflections. Despite critiques of the method,[21] ethnography offers valuable insight into how individual experiences reflect larger societal structures.

FINDINGS AND DISCUSSIONS

Author one, with eleven years' experience from five prisons, views challenging situations through a well-functioning combat mindset lens, especially during riots where officers must be ready to use force. He recounts: “I have worked in different high-security prisons in Norway focusing on maintaining a stable, non-violent environment. The officer plays a crucial role in ensuring safety and security since they know that a quiet wing can be turned into a full fledge riot if situations and cell riots are not handled in a firm and rational way”. In the present paper we are analyzing an officer’s experience of a riot squad entering a prison cell where a combat mindset was essential. The autoethnographic description below is shared in two sections, before and during a cell riot.

BEFORE A CELL RIOT: TURNING ON A WELL-FUNCTIONING COMBAT MINDSET

“The phone is ringing at the prison wing, and a senior officer asks me to come down to his wing to help with a challenging task. I walk down to the department going through corridors and stairs, while thinking explicitly about what task I am going to do. Most likely we are going into a cell to an aggressive inmate. Down in the corridor, I see several officers going into the control and restraint room. The senior officers brief us five officers, chosen to go into his cell to get control of the situation: An inmate has crashed his cell and are using two 25 cm mirrors as weapons to injure himself, and said that if we enter his cell, he will kill us. The senior officers says that the inmate is psychically unstable, willing to hurt us and have bodily strength to hurt us. He is bloody after cutting himself several places on his body. When we are opening the door, we cannot hesitate, giving him time to injure himself. At the same time, we must act fast and firm using as much force as necessary that he can’t stab us with his “knives”. In the emergency room we are dressing up among helmets, shields and batons, hearing screams and banging on the cell door. We officers are quite calm, but the atmosphere is tense, serious and has a sense of adrenaline. Some of us look at each other with a supporting smile when dressed up, asking “are we ready” while doing warm up exercises. The adrenalin is pumping in my body acknowledging that I am ready for the assignment.”

As described by the officer, the body starts to prepare for a cell riot when asked to come down to the basement, since earlier experience is connected to cell riots. To be mentally prepared, like visualizing the upcoming mission, is essential.[22] Thoughts about what kind of situation that is ahead for the officer, but also the brief with the senior officer that this is a situation with death threats and “knives” followed up with dressing up in security equipment in the social context of shields and batons clarify the circumstances of the riot. The officers are smiling supportive and warming up that support each other and telling bodily that they are ready to solve their task. These are non-verbal signs that are a part of building up a combat mindset to increase courage and determination but also give mental resilience to withstand in the situation, like techniques of positive self-talk that can reduce anxiety and build confidence.[23] This can enhance an effective combat mindset and build up controlled aggression that ensures the body to be prepared to use necessary force when the officers are hitting the aggressive inmate with the shields.[24] This controlled aggression, and not overuse of aggression, reduces fear since the officers are in a state of mind that still enables them to self-regulate their emotions.

DURING A CELL RIOT: BALANCING MENTAL AND PHYSICAL AGGRESSION IN COMBAT

"The senior officer says we are going in with a five formations where two in front (number one and two) are going in with shields pushing the inmate into the wall while number three and four shall drag his legs, so the inmate falls to the floor, in a position where we have control. Number five are going in as extra help in the situation to help lay weight on the inmate's body when he is down on the floor. I go into his cell as number two with a shield. We are standing outside the cell door, and the senior officers are repeating our numbers that understate our tasks in the operation at the same time as he comradely touches our shoulders to confirm our tasks. The inmate screams infernally in the cell that I never have heard before, and 'set me out' for a couple of seconds. The senior officer opened the hatch asking the inmate to come volunteer but refused. He closes the hatch saying: 'he is standing into the wall in the opposite direction of the room. Are you ready?' Everybody nods and the senior officer opens the door while we are rushing into the cell fast and firmly. Number one and two (me) are pushing the inmate into the wall with shields. Number three and four takes his leg and drag him down to the floor. We have control of his body, but he denies letting go of his 'knife' in the hand I have control of. I try to press his hand to slip the 'knife', but instead he pushes his hand even harder around the 'knife' while the blood is piling out. I am controlling his hand with a fast grip and tell the senior officer about the problem. The senior officer slaps his baton on the inmate arm and the inmate automatically slip the 'knife'. We have control. A couple of weeks after the cell riot, I meet this inmate on a wing. He asks me if I was a part of the riot squad that 'took him', and I confirm positive. When I confirm he turns around and walk away."

Bringing officers into further mental preparation is when they are given individual tasks they are responsible for solving entering the cell. Here is courage to do a demanding job with determination, mental stamina and a balanced level of aggression necessary to fulfil their tasks. In other words, it is an adaptation of the use of force with focus, concentration and self-control.

When the leader follows up with a supporting "are you ready" this statement communicating the togetherness and express indirectly expectations of solving this situation if everybody does their task properly. This expectation to be ready is also preparing the body with adrenalin, from a calm state to a more aggressive state of mind. Mental training helps manage negative thoughts and to keep the mental state of mind in balance to be able to fulfil the mission.

As understood from the description, when the cell riot starts it is important to be prepared for infernally screams and not be switched of the combat mindset mode. It is important to maintain a sharp situational awareness, enabling officers to adjust their use of force appropriately and proportionally to the level of threat.[25] Cell riots can freak out an officer and led to a defensive state of mind that are not in accordance with a well-established combat mindset. Being defensive hinders the aggressiveness that are important to maintain when the officer and the riot squad are going into the cell, but also with an understanding that too much aggression is not good.[26] It is especially important to balance the mental and physical aggression since officers are meeting the inmate from a cell riot in the prison afterwords. A legitimate use of power is probably easier to accept for an inmate than an overuse of power that may led to conflicting relations afterwards.

This description gives us insight into contextual rooms for turning on the combat-mindset and preparing the body when getting the achievement to be a part of the riot squad and when moving to the situation in the basement where the cell riot is. Boe and Ingdahl uses the metaphor "Educating monsters with brakes" to indicate what this type of combat mindset is supposed to achieve.[27] If the officers under training are given this insight in these processes, they can acknowledge what is happening and maybe be better prepared in the cell riot. Acknowledging the mental scenario-thinking

that they experience when questioned to be a part of a riot-squad, enable them to reflect on what is happening in their body. The example gives us insight into different preparations that an officer does in a situation where it is necessary to prepare the body for the assignment. Developing a strong combat mindset involves two key psychological methods: classical conditioning, which trains automatic reactions to stress, and operant conditioning, which strengthens performance through positive reinforcement.[28] Both can be trained in a cell riot exercise.

When the officers arrive in such a situation, they will learn to recognize bodily reactions and how adrenaline triggers a more aggressive part of their combat mindset. This is a state of mind that is distinct from their usual duties. In this phase it is also necessary to be aware of the importance of giving camaraderie support,[29] both silently and non-articulated, communicating that we solve this together. This gives a form of safety expecting participating entirely and support each other in the situation. If officers under training are aware of the importance of being supportive on a comradely and emotional side, they can strengthen their teamwork and improve job performance.

Training officers to develop a combat mindset benefits from scenarios with stressors, helping them evaluate their performance, behavior, and coping under high-pressure situations. The reflection phase encourages shared situational awareness among team members, fostering collaboration and communication to effectively solve the mission during training exercises. Sde-Or Lichtenfeld and Yanilov argue that the ability to recognize when a situation requires a combat mindset is crucial, as identifying triggers enables a quicker transition to a constructive combat mindset.[30]

To enhance student during the prison officer education is to give them an understanding of what it is like to participate in a cell riot is not only based on functional skill in how to enter a prison cell. According to Filstad[31] experiences must be verbally expressed to learn about them, when they according to Nonaka and Takeuchi[32] are going from an implicit to an explicit understanding of the situation. For operational personnel this is just something they do, but for a student they need specific information about this context and the personal achievements that make them available to receive and integrate this information as a part of their body.

CONCLUSION

Using an autoethnographically method, this paper gives insight into the process an officer is going through and how an officer is building up a combat mindset personally when facing a cell riot incident. To effectively educate officers on handling a cell riot, it's crucial to start by understanding their personal experiences during such events. As stated by Doss: “Greater than any other calling, the life of the warrior requires mental skills in combination with physical or mechanical skills. Yet, mental training is an area which has been long neglected in the fields of conflict management and force application.”[33]

By examining how officers prepare to and act during cell riots, we can gain insights into how to train on a well-functioning combat mindset that is required to manage these pressure situations constructively. Balancing aggression and aggression control as well as maintaining focus, concentration, and self-control are essential for attentiveness and measured responses. This approach will allow the NCS to tailor training programs that equip officers with the necessary skills and mental resilience before and during a cell riot.

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DEBURNOUT: THE IMPACT OF A MASTERCLASS WITH DESIGN STUDENTS IN A MULTIDISCIPLINARY PROJECT

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INTRODUCTION

DeBurnout is a doctoral project designed to create tailored solutions for preventing burnout risk factors in healthcare professionals. It relies on a multidisciplinary team and collaborates with two Portuguese public health departments.

As a design project addressing a public health issue, connecting these 'worlds' was essential. To achieve this, we decided to use design methodologies previously employed in health-related fields, including Participatory Design and Service Design, and adapt methods from other fields towards the "Design for Health" approach.

This paper focuses on the use of one of these approaches, the "Creative Matrix", used with some adaptations during a masterclass to uncover insights into possible solutions idealised by Design students. The main aims are: 1) finding solutions, based on their format, place of implementation, and usability, that can be used to prevent burnout risk factors; and 2) determining the most effective course of action, based on the progression stages leading up to burnout.

Burnout in Healthcare

Burnout is an occupational syndrome that can affect any professional.[1] It can arise from unmanaged workplace stress[2] that comes from various organisational risk factors, and it is characterised by exhaustion, reduced efficacy at work, and increased negative feelings or mental health distance from the job. The major issue with burnout is that when it impacts one person on a team, it can spread to others, being seen as a pandemic.[3]

Some workplaces can become more prone to the development of this type of mental health issue, and the healthcare systems are one of them.[4] During the COVID-19 pandemic, the overload of work in healthcare systems became a risk for the professionals, not only physically but also mentally. During that time, various authors[5] mentioned that 1 in every 3 healthcare professionals suffered from burnout, and not only is the professional's work affected, but also the organisation, their colleagues, and their patients' quality of care can be impacted. Various risk factors can lead to Burnout, such as competition, lack of supervision, work shifts, emotional distress, work overload, a lack of autonomy, etc. Knowing the extent of these highlighted the need for preventive intervention,[6] and that is where the DeBurnout project aims to act.

"Creative Matrix" method

The use of design methodologies is an integral part of this project, and as a result, many methods are reviewed until the right one appears for each situation. In this case, for the implementation of a masterclass, the "Creative Matrix" method was selected. Developed by the LUMA Institute,[7] it is characterised as a concept ideation method, "sparking new ideas at the intersections of distinct categories".

The approach is based on the development of a grid, where columns represent the categories related to people and rows are the categories related to solutions.[8] Moreover, the authors[9] highlight the limitation of time for participation set at 15 to 20 minutes, done in silence, to allow the participation of all team members. Hanington and Martin[10] mention that "the beauty of the Creative Matrix is that it helps generate many ideas before they can be judged, explained away, or rationalised", giving examples of popular companies that could've been envisioned from one of these grids, given their apparent oddity prior to their creation.

DESIGN PROCESS

One of the processes undertaken during project DeBurnout involved a masterclass with master's degree students from "Design for Image", using an adaptation of the "Creative Matrix" method. This masterclass was designed to start with an explanation of the project DeBurnout, giving general information to the participants, followed by an activity that uses an adaptation of the "Creative Matrix".

Masterclass

Designed for only one session, the masterclass was expected to have a duration of one hour. The first part was the explanation of the project, with some time reserved for questions and answers. After that, the activity would be conducted, with 5 minutes for explanation and 15 minutes for the generation of ideas. The remaining time would be used for discussion of the ideas and solutions.

Adaptation of the method

For this activity, the aforementioned method "Creative Matrix" was adapted to the topic and aims. Instead of having a column related to people and a row for categories,[11] the columns contained three questions associated with the solutions and objectives, while the rows comprised the five stages of burnout (see Figure 1). The questions corresponding to the columns were:

1. What type of solutions can be developed in a small timeframe?
2. In which places should the solutions be implemented?
3. How to ensure professionals will use the solutions developed?

The five stages of Burnout were decided based on the publications by Bertolote and Fleishman[12], De Hert,[13] and Maslach and Leiter[14]. The nomination of each phase should underline the type of symptoms healthcare professionals go through. They are:

- Stage 1: "Honeymoon", usually described as a great moment where the professional feels engaged in their job and completely dedicated to doing it well,
- Stage 2: "Onset of Stress", the moment when some stressful moments start appearing.
- Stage 3: "High levels of stress", usually induced by some of the aforementioned risk factors.
- Stage 4: is composed of the senses of "Depersonalization", "Emotional Exhaustion" and "Lack of Accomplishment". Each one of these topics has other risk factors associated with it.
- Stage 5: professional reaches "Burnout Syndrome", being too late to implement solutions for its prevention.

	What type of solutions can be developed in a small timeframe?	In which places should the solutions be implemented?	How to ensure professionals will use the solutions developed?
Phase 1 Honeymoon			
Phase 2 Onset of stress			
Phase 3 High levels of stress			
Phase 4 Emotional exhaustion Depersonalization Lack of accomplishment			
Phase 5 Burnout			

Figure 1. Adapted Creative Matrix Grid

To fill this grid, two types of adhesive papers would be available. One would be yellow to represent the "Organisational", meaning that the ideas written on it would be based on the workplace/institution. The second one would be pink, to represent the "Personal", where ideas written should be based on the individual's lifestyle. As a rule, each paper should only have one idea, and if participants write the same idea in the same cell, they should either place one on top of the other or together.

Preparation

For the development of this activity, some materials needed to be gathered previously, such as yellow and pink adhesive papers. It was foreseen that a computer and projector would be used for the explanation part of the masterclass and the Creative Matrix guidelines. In case the room did not allow for the projection and implementation of the method on a wall, the questions of the columns and the identification of the phases were printed to fit in a large-sized table. Other materials prepared are linked to the recording and photograph of the activity for dissemination purposes.

Additionally, it was foreseen that the preparation on the day of the session would take around five minutes. These would encompass the time to connect the computer to the projector, and in case there were some technical issues.

Implementation

The masterclass was held on the 9th of January 2025 at the Faculty of Fine Arts of the University of Porto (Portugal). It occurred during a master's degree in Design for Image class. However, we consider participants only those who volunteered to participate in the implementation of the method (12 participants).

The phase of explanation compiled the following themes:

1. Context of the project and its objectives
2. Design process of the project
3. Network and research
4. Preliminary and expected outcomes

After that, it was the moment to explain the method to be used in that session, followed by the implementation of the activity (see Figure 2).

Since the room was not prepared to have the projection of the creative matrix, the printed materials were organised on a large table. The grid was created horizontally, and since it didn't have

demarcation lines, the projection was used as an accompanying guide. The adhesive pink and yellow papers were placed in front of the participants, duly identified with their meaning.
To finish the masterclass, an extra presentation was prepared. This presentation was delivered because of the master's students' interest in design research guidelines. The moderator explained helpful tools for design research and steps that have been taken to conduct this project.

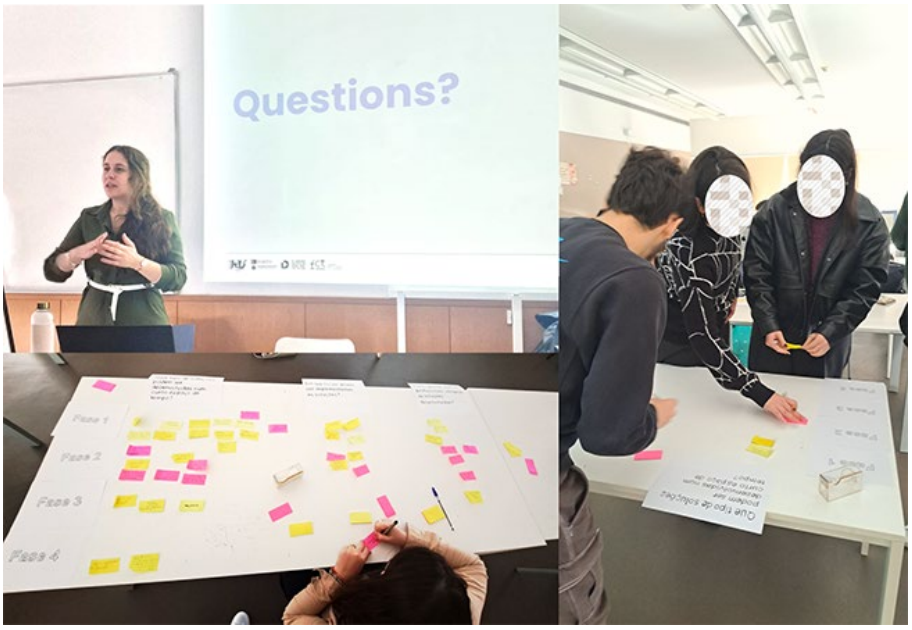

Figure 2. Photographs of the activity - students contributing to the activity and the moderator explaining the activity.

OUTCOMES

The activity allowed for the identification of potential solutions for healthcare professionals, the stages preceding burnout where these could be implemented, and by whom (individuals or organisations). Figure 3 shows the results gathered during the activity.

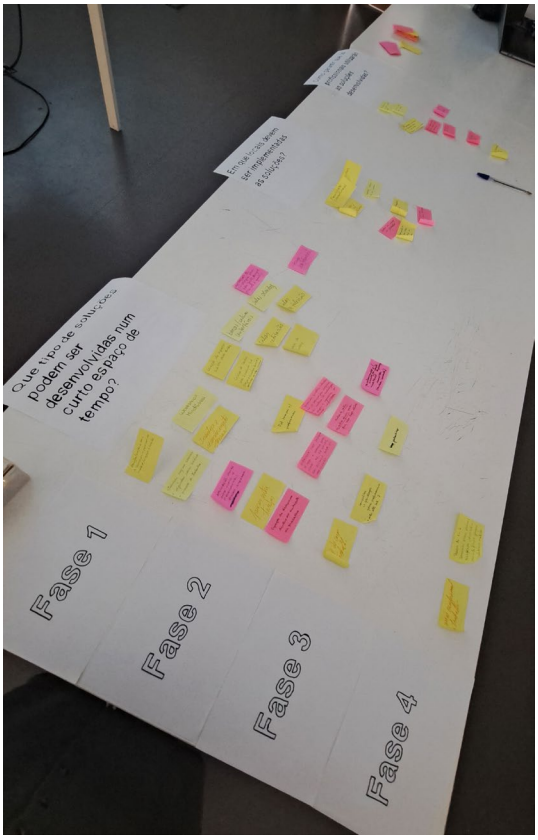

Figure 3. Final grid with solutions proposed by the students.

Digital outcome

To facilitate the dissemination of these results, they have been translated into a digital format (see Figure 4). In this digital image, it is possible to understand which phase the ideas are connected to, and it allows for the analysis of the results.

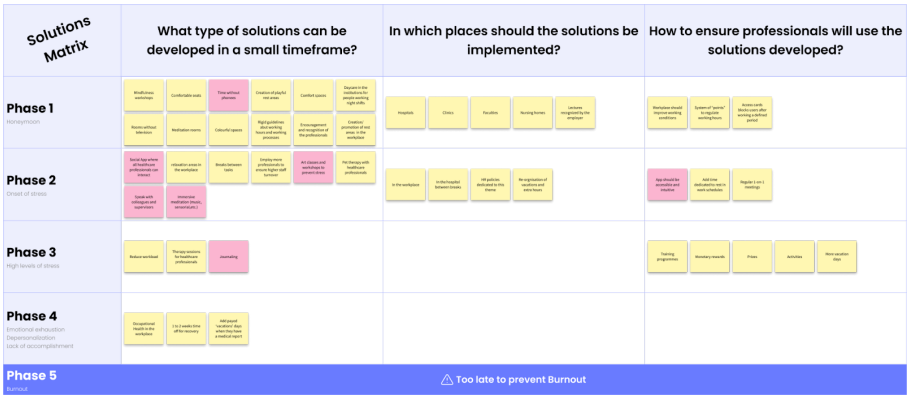

Figure 4. Digital representation of the solutions proposed.

Analysis

The analysis of these results was carried out both quantitatively and qualitatively.

On a quantitative level, it was important to understand the quantity of ideas in each phase and to which elements and questions they are related (see Figure 5). Examining the final grid is possible to

notice that 39 of the ideas shared are connected to the organisational level, while only 7 are connected to the individual's lifestyle. These ideas are scattered in various phases, but phase 1 has the highest number when compared to the others. Regarding the questions, it's noticeable that the majority of ideas are connected with solutions, followed by ways of ensuring their usage, and having a low number of places for implementation.

Analysis of Results	Types of Solutions		Places for Implementation		Ensure Usage	
	Organizational	Individual	Organizational	Individual	Organizational	Individual
Phase 1	11	1	5	0	3	0
Phase 2	4	4	4	0	2	1
Phase 3	2	1	0	0	5	0
Phase 4	3	0	0	0	0	0
TOTAL	**20**	**6**	**9**	**0**	**10**	**1**

Figure 5. Quantitative analysis of the activity results

On a qualitative level (see Figure 6), the solutions were separated into types of design: 1) products, which are divided into physical and digital; 2) experiences; 3) environments; 4) policies; 5) services; and 6) habits, which are linked to the individual's lifestyle. Besides having these categories, one solution may be connected to multiple categories, given the context it was written, as it occurs with the solution "workshops" that appears as both an experience, an environmental design and a habit.

Design Solutions	Products		Experiences	Environment	Policies	Services	Habits
	Physical	Digital					
Results	0	1	2	12	18	2	8
	–	- social app;	- workshops; - pet therapy;	- comfortable places (3x); - share burdens (2x); - workshops (2x); - rest areas (5x).	- daycare in institutions; - recognition of HCP; - therapy in workplace (4x); - rest areas (5x); - reduce workload (3x); - more rest/vacations (3x); - hire professionals.	- daycare; - occupational health.	- use app; - share information; - meditation; - workshops (3x); - journaling; - time without phones.

Figure 6. Qualitative analysis of the activity results

DISCUSSION

After conducting the masterclass and analysing the results of this adaptation of the creative matrix, several limitations and improvements were considered. These adaptations mainly concern the circumstances in which the activity occurred and the participants. Examples of this are:

- The noticeable variety of communication styles, where some participants shared their ideas openly while others preferred to give their contribution in silence.
- The estimated time for the activity was met; however, the overall duration of the masterclass exceeded by 10 minutes due to the necessary preparation.
- The rule that each student should share two ideas per column was not followed, with some not participating in the activity at all, others contributing with only one idea throughout the activity, and others sharing multiple ideas.

Some good practices were also noted during this intervention, such as:

- The open discussion added value by avoiding a cluster of sticky notes with the same information, and in a way helped participants generate new insights based on their colleagues' contributions.

- Wrapping up the masterclass by sharing research tips was a win for the students, who got info that could help them in the future, instead of just helping with the "DeBurnout" project.
- Holding a masterclass with outsiders to the topic of burnout and healthcare professionals brings different perspectives that can challenge some preconceptions, which is beneficial.

For future implementations of a similar masterclass with students, it is advised:

- To ensure that it does not occur on evaluation days. If the masterclass is held between students' presentations, those who have not presented yet will be anxious and more focused on their work. This then impacts the masterclass participation.
- Do not presume the participation of all students. All must be invited to join in and share their opinions during the activity, but it is possible that some may not participate, given their emotional state at the time.
- Activities that require periods of silence should be adapted to the context in which they take place. In this case, the activity was supposed to occur in silence, but it was more fruitful to see students comparing notes and building on each other's ideas.
- To be prepared for unforeseen circumstances. The preparation of printed materials was a wise precaution, but due to the time it took to assemble and the room layout, it was not possible to prepare the device for video recording.
- To bring a helper to photograph and place the recording device. This way, the moderator can be aware of "shy" participants, encouraging them to share their opinions, and be more focused on the participants' interventions.

CONCLUSION

We can conclude that the masterclass was essential and added value to the advancement of the "DeBurnout" project. The results of the masterclass indicated that, from a designer's perspective, adapting design methods for health-related projects can aid in (re)defining research. As a next step, these findings will be validated with healthcare professionals to understand whether the shared solution ideas, when implemented, would benefit individuals or the organisation, and they underscore the importance of benchmarking current digital solutions.

Additionally, it is worth mentioning that design students' contributions can be a valuable asset in multidisciplinary teams, given their familiarity with a range of design solutions that can be adjusted to different contexts, aligning them with burnout risk factor prevention.

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ADDRESSING THE IMPACT OF RACE AND CULTURAL CAPITAL ON STUDENTS OF COLOR IN HIGHER EDUCATION

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INTRODUCTION

Recent studies show that while college enrollment and completion rates among students of color (SOC) and students from low-socioeconomic (SES) backgrounds have increased over the past decade, these groups continue to lag significantly behind their White and higher SES peers.[1] Many students of color face systemic challenges, including stereotypes about lacking the academic and social skills necessary for a successful college experience. For decades in higher education institutions in the United States, Black and Hispanic students in particular have been forced to assimilate to cultural norms established by the dominant, White culture at the expense of suppressing the cultural and social skills they bring to campus.[2] Because of these historical past and present ongoing forms of social and cultural capital, SOC continue to navigate academic spaces that view them from a deficit-model perspective based on bias, assumptions and invalidation of their cultural assets. This paper examines how the concept of cultural capital—often shaped by dominant, white, middle-class norms—affects students of color in higher education. It focuses on the influence of deficit thinking, pressure for social conformity, impacts on self-efficacy, while proposing strategies to recognize, validate and leverage diverse cultural assets.

Cultural Capital

French sociologist, Pierre Bourdieu coined the term *cultural capital*, defined as "widely shared high-status cultural signals (e.g., attitudes, preferences, formal knowledge, behaviors, goods, and credentials) used for social and cultural exclusion."[3] While each college and university has its own organizational culture, higher education as a whole tends to privilege certain values and behaviors over others.[4] In college settings, some forms of cultural capital include: established knowledge–such as how a college schedule is arranged, how to find resources on campus or skills on how to arrange unstructured time in order to complete assignments and other tasks—as well as interpersonal skills, like knowing how to speak to professors or potential expectations from peers.[5] Although these skills and forms of knowledge may seem straightforward on the surface, more often than not, individuals who are first-generation students or those who come from cultural backgrounds where knowledge of college life is not as prevalent, may find it challenging to navigate these unwritten norms.

Bourdieu's description of cultural capital includes three distinct types: **embodied**, **objectified**, and **institutionalized**. *Embodied* explains knowledge and skills that become part of one's way of being

such as, someone's worldview, language fluency, or social etiquette. *Objectified* encompasses physical items with cultural value (e.g., books, paintings, musical instruments, or designer clothing), while *institutionalized* forms include credentials, such as academic degrees and professional licenses.[6]

Theoretical Framework

This paper draws on two key theoretical frameworks—**Postcolonial Theory** and **Institutional Theory**—to examine the social and cultural barriers faced by students of color in higher education and to identify ways to recognize, validate, and build upon the strengths they bring to academic spaces.

Postcolonial Theory

Postcolonial theory offers a lens for understanding and critiquing issues of culture, identity, and representation in higher education. Used across disciplines such as political science, sociology, and literary studies, it interrogates the legacies of colonialism, including nationalism, Jim Crow laws, and other forms of systemic discrimination against people of color. In the academic context, postcolonial theory helps dismantle narratives and structures for marginalize students whose histories and identities have been shaped by these legacies.[7]

Institutional Theory

Institutional theory examines how social norms, rules, unconscious (implicit) assumptions influence organizational behavior and practices, often leading to the mainstream understanding of certain structures and policies as legitimate and "natural" rather than those that are necessarily optimal. It emphasizes that educational institutions conform to the broader societal and cultural environment to gain legitimacy, even if it means adopting practices that may not be functional but are widely accepted as standard or modern.[8] Earlier work that linked institutional theory and higher education was conducted by sociologists who looked at education in the context of worldwide patterns, and as generalized case studies of broader organizational and societal behaviors. More recently, however, research in education also has drawn on these ideas to examine interactions between educational policies, school, and classroom practices.[9]

Intersection between Race and Ethnicity

Historically, educational spaces in the U.S. have often excluded students of color, both overtly and through systemic barriers. Educational spaces have been obstructed, barred, or outright denied access for students of color. Scholars such as, Gloria Anzaldua, Delores Delagdo Bernal, and Gloria Ladson-Billings have examined and called for the continual study of people of color and their plight within the American higher education system. Educational inequality specific to race and ethnicity has been at the center of Black, Hispanic, and indigenous student experiences since emancipation and the end of the American Civil War. On many college campuses, students from dominant White cultural backgrounds often benefit from unspoken norms that align with their own experiences, while others are perceived as lacking the "necessary" cultural skills to succeed.[10]

Yosso (2005) posits that the historical barriers to education placed people of color in precarious, nonautonomous circumstances, that forbade them from entering spaces of discourse, which often disqualified and excluded them from being a part of developing any form of cultural capital. For people of color, these theorizing spaces were forbidden territory that was vital for them to occupy. Instead, only white men and women were allowed to occupy these spaces. Yosso's work asks one of the most important questions pertaining to this topic: *"Whose culture counts as capital?"*[11] Throughout U.S. history, race and racism has shaped social institutions, paradigms, policies, and

practices in higher education. Our understanding of cultural norms as a society, of what constitutes as acceptable, expected, and normal is based on the perspectives and directives of the dominant culture, which has been passed down from generation to generation, and does not consider the cultural backgrounds of our Black, Indigenous, and other people of color (BIPOC) student populations. Instead, many of these students are taught to assimilate to gain recognition in order to succeed, but what they really interpret that to mean is that the culture and skills they already possess are considered non-legitimate capital that has no status in academia.[12] Consequently, this causes perpetual social and academic rifts for SOC in our colleges and universities, many of which have direct impacts on their health (mental and physical) and their overall persistence rates.

In 1903, sociologist, historian, and civil rights activist, W.E.B. DuBois wrote *The Souls of Black Folk*, a groundbreaking book about the history of Black people in America. In his book he wrote about a concept called *double consciousness,* which describes the psychological challenge African Americans face in the United States where they must navigate two conflicting identities: their own sense of self and the way they are perceived by a racially prejudiced society. DuBois describes how this two-ness forces Black Americans to exist in two different worlds while attempting to maintain their racial and cultural identity.[13] This concept is especially relevant for our SOC attending predominantly white institutions (PWIs). For them, contending with double consciousness and perceptions of invalidated cultural capital from professors, peers, and the general college community, has devastating consequences for these students. On a global scale, one of the most likely student cohorts to depart from college prior to degree completion are students of color and first-generation (first-in-family) students.[14]

Deficit-based Approach

From K-12 through higher education, disparities in standardized test scores, GPAs, attendance, and disciplinary actions disproportionately affect BIPOC and low-SES students. These inequities contribute to gaps in college preparation, access, and completion rates, having higher rates of absenteeism and referrals to suspension and special education services.[15] This deficit-based approach blames marginalized students and families for underperformance, framing their cultural knowledge as inadequate and requiring remediation rather than recognizing it as a source of strength. These factors directly and indirectly impact college entrance and persistence rates, creating opportunity and achievement gaps on a devastating scale.[16] Deficit-based approaches to student learning focuses on perceived weaknesses and problems of individuals and groups. This view often categorizes certain students (particularly Black and Hispanic) as lacking necessary skills and attributes.[17] One study conducted in 2018 found that little evidence exists to show that the achievement gap between students from less affluent backgrounds and more affluent families has decreased over the last few decades. Rather, the study showed disparities were even more detrimental based on race/ethnicity.[18]

Racial minority students are particularly impacted by these issues. Research indicates that they are less likely than their white peers to be prepared for college. Studies show that these students receive less than adequate preparation for higher education while attending primary and secondary school.[19] However, these studies do not evaluate the skills these students do have. Established forms of cultural capital in college settings includes academic and nonacademic school-related skills (i.e., ways of speaking, prior knowledge/understanding about topics of dominant cultural conversations, networking, or high-status social affiliations) students possess that give them advantages for success. Not surprisingly, these behaviors are embraced with affirmation and validation.[20] This narrative consistently perpetuates the notion that SOC are lacking in the skills needed for acceptance and success in college, and when compared with perceptions of their white peers, the narrative further

supports a deficit-based perspective that disempowers the cultural assets of students of color. Cultural capital functions as a system of high-value status symbols, basically a set of convertible resources developed and exchanged within school systems and other related social spaces.[21]

Race often has significant influence on experiences and expressions of cultural capital. For example, one study based in a multicultural university in south London used a postcolonial framework to counter the deficit-based narrative of its Black students by employing a concept called black cultural capital. Black cultural capital works to address the pre-established forms of cultural capital at the institution by intentionally centering the voices of its Black students, incorporating and uplifting their contributions in the classroom and curriculum.[22] In this study, many of the preestablished forms of cultural capital were not omitted, but rather, the forms of culture that Black students possessed were incorporated in discussions, assignments, and lectures. These types of examples provide strong validation to student groups who face challenges to their very identities. Moreover, deficit thinking takes the position that minority students and families are at fault for poor academic performance. It also pathologizes their home cultures and experience because: "(a) students enter school without the normative cultural knowledge and skills; and (b) parents neither value nor support their child's education."[23] Bourdieu's concept of cultural capital ignores the strengths that SOC and those from lower SES backgrounds already possess that lead to successful academic outcomes. As a result, the current deficit narrative has caused educators to lower expectations and provide remedial programs for these students in an effort to "fix-the-student" and pressure them to suppress their racial/ethnic identities in order to succeed.[24]

Institutional Invalidation of Cultural Capital

Colleges and universities frequently reward behaviors rooted in dominant White norms—such as individualism, competitiveness, linear logic, use of standard English, and incentivizes those students who adhere to them. In contrast, those students who do not are viewed as lacking, needing to be educated, and assimilated. For these students, institutions often focus on remediation rather than institutional reform. Cultural advantages, such as, multilingualism, community orientation, and oral traditions are strengths for many communities of color, however, these forms of capital are often undervalued and deemed to be non-legitimate when compared to mainstream cultural capital. Studies show that students who come from backgrounds other than the dominant culture possess different types of cultural capital that deserve the same understanding, acceptance, and validation. For example, many students from BIPOC communities, come from backgrounds where resilience, strong familial relationships and forms of collectivism are essential to their identity and critical to the way they view the world.[25]

These cultural assets are not given the same credibility in our classrooms and curriculum even from the very early stages of students' educational journeys. In early childhood, educators must begin to develop cultural awareness that leads to an understanding of the essentials proficiencies necessary to effectively teach across racial and cultural differences. Teachers must cultivate an awareness and ongoing development that moves away from believing there are deficits among students of color, their communities, and families, and move toward seeing students' behaviors and ways of processing through an asset-based lens, where they are able to see the strengths, contributions, and talents within these students.[26]

Self-Efficacy

For many students of color, their sense of self-efficacy significantly impacts their perceptions of self-worth, and the belief that they can accomplish major short and long-term goals (i.e., get a job, or obtain a college degree). Human behavior is substantially motivated and regulated through measures of self-influence. One's sense of self-influence has a direct impact on self-efficacy. Unless people believe that they can produce desired outcomes and decrease undesired ones by their actions, they have little incentive to act or to persevere in the face of difficulty.[27] Efficacy beliefs affect self-motivation action through its impact on goals and aspirations. People choose what goal challenges to undertake, how much effort to invest, and how long to persevere.[28]

Students of color and low-SES students who do not see many representations of themselves or validation of their cultural assets in their classrooms, on campus, or in the larger community often lose their sense of self-efficacy. They are less able to make valuable connections with peers and professors, causing academic disengagement, lowered self-esteem, alienation, and feeling they lack the social status to succeed in life.[29] On the other hand, perceived self-efficacy plays an influential role by incentivizing the potential of positive outcomes. The outcomes students anticipate often depend largely on their internal beliefs of how they will perform in given situations, as well as how they may be viewed by those who have influence on their experiences.

Recruitment and Retention

Two of the major challenges in higher education around recruitment stems from institutions' lack of culturally responsive outreach and admissions policies that often do not include measures to meet students of color where they are both physically and socially.[30] For example, the number of college admissions representatives that visit to urban high schools or neighborhoods where many of these students live for recruitment purposes is extremely low when compared to their White or more affluent peers. Even many institutions with campuses located in urban areas often fail to establish recruitment efforts for students of color and low-SES who reside in their general vicinity.[31] The other major challenge is limited representation in promotional materials, outreach staff, and programs created to intentionally appeal or incentivize these student groups. Likewise, some of the crucial challenges with retention deficits center on the experiences of SOC when they arrive on campus. Academic and social isolation, lack of faculty/staff of color, and curriculum exclusion are major areas of concern that need to be addressed in higher education.[32] In addition, hostile campus environments and microaggressions only add to the levels of discrimination and inequality.

Changing the Narrative

People of color have their own histories that have been shaped by racism and intersecting forms of subordination. In the United States, the discourse around race/ethnicity has primarily been two-dimensional. The Black/White binary significantly limits our understanding of the myriad of ways in which BIPOC individuals and groups continue to experience, resist, and respond to racism and other forms of oppression.[33] Institutional theories pertaining to social and cultural capital have been used to investigate factors affecting student persistence and retention. Several comprehensive studies have been conducted that identify the disadvantages that current forms of mainstream cultural capital have impacted marginalized student populations.[34] Alternatively, one study established a counter-narrative to the deficit-based approach to cultural capital for students of color. Yosso coined the term *community cultural wealth,* which has created a model with an assets-based approach to the cultural capital that our BIPOC students possess. This approach focuses on understanding the persistence of underrepresented minority students and highlighting the different types of capital they have developed

in their families and communities, that supports potential pathways to their success in college settings.[35]

Community Cultural Wealth (CCW) highlights the unique strengths of communities—particularly those historically excluded from the economic, political, and social mainstream.[36] CCW research identifies six forms of cultural capital common in many of the communities our students of color come from: **aspirational capital**—maintaining hopes and dreams despite barriers; **linguistic capital**—intellectual and social skills gained through diverse language practices; **familial capital**—cultural knowledge nurtured through kinship and extended family; **social capital**—networks of people and community resources; **navigational capital**—skills for navigating institutions not built for communities of color; and **resistant capital**—knowledge and skills that promote social justice and challenge inequality. CCW does not reject mainstream forms of cultural capital; instead, it offers a vital alternative, advocating for the intentional recognition and integration of these six forms into higher education to benefit all students.[37]

CONCLUSION

To meet the needs of an increasingly diverse student body, higher education must expand its understanding of cultural capital, moving beyond a single dominant cultural framework. Today's student demographics are shifting not only by race, but across multiple intersecting identities, including gender identity, sexual orientation, socioeconomic status, and disability. Institutions must keep pace with these changes to effectively serve all marginalized student groups. Embracing and integrating multiple forms of cultural capital enriches not only students of color, but the academic community as a whole.

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NORDIC EXCEPTIONALISM IN PRISON OFFICER EDUCATION: BALANCING REHABILITATION IDEALS AND CORRECTIONAL REALITIES

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INTRODUCTION

Prison officers are fundamental to the functioning of correctional systems, yet the nature and quality of their education and training vary widely across national contexts. The duration and content of training range from just a few weeks in some countries to multi-year, university-based programs in others.[1] International standards stress the importance of both initial training and ongoing professional development for prison officers.[2] Nevertheless, many officers worldwide remain underprepared to manage the complex demands of contemporary correctional work, including responsibilities related to security, rehabilitation, and human rights.[3]

Although investment in prison officer education is identified to enhance professional status, improve working environments, reduce turnover, and strengthen rehabilitation outcomes, a global lack of standardization in recruitment and training are documented.[4] Higher education for prison officers remains rare, despite growing recognition of the need for professionalization and interdisciplinary competence.[5] The importance of further research and the development of researched-based educational models to support modern, rehabilitative correctional systems are also highlighted.[6]

The Norwegian prison officer education stands out as "exceptional" in this international landscape. Offered by the Norwegian Correctional Service's University College and Education Centre (KRUS), the program provides a pathway to a bachelor's degree, with a strong emphasis on rehabilitation, ethics, and relational competence.[7] This approach contrasts sharply with shorter, security-focused training programs found in countries such as the USA and Canada, where courses typically last between 100 and 300 hours.[8] Norway is often cited as a model for a professionalized and humane correctional approach, and the education of prison officers plays a key role in this perception.[9] Norway can be seen as a model for a professionalized approach to the prison officer role and to be unique in this regard.[10] This assumption is explored in this article through the following two research questions: *1)How do key actors working in Norwegian prisons assess their education, responsibilities, working methods, and treatment of prisoners? 2)To what extent do their descriptions correspond with the notion of Nordic exceptionalism?*

The Norwegian prison officer education

The Norwegian prison officer education is a comprehensive, full-time two-year college-level program delivered by KRUS. It is designed to qualify candidates for the professional title of prison officer and is structured around three core thematic areas: (1) risk and security, (2) sentence execution and reintegration, and (3) professional understanding, law, and ethics.[11]

The two-year vocational program may be followed by an optional third year of part-time study, which builds on the foundational training and leads to a full bachelor's degree in correctional studies. This third year includes coursework in the structure and operation of the correctional system, crime prevention in correctional contexts, elective modules, and culminates in a bachelor's thesis.[12]

The program emphasizes the development of relational competence, ethical awareness, and critical reflection - skills seen as essential for balancing custodial responsibilities with the rehabilitative goals of the correctional service.[13] Education is grounded in both research-based and experience-based knowledge and aims to foster proactive, responsible, and compassionate professionals. Central to the pedagogy is the idea that correctional officers play a vital role not only in maintaining safety but also in promoting social reintegration and change.[14]

The curriculum is shaped by national policy documents that stress ethical integrity, professionalism, and a rehabilitative approach to punishment.[15] Prison officers are thus prepared to act not only as enforcers of legal sanctions but also as rehabilitation agents who contribute to a humane and socially responsible correctional system.[16] This educational framework reflects a broader ambition to develop a seamless and knowledge-based correctional service rooted in Nordic values.

The Nordic exceptionalism

Criminologist John Pratt introduced the concept of Scandinavian (later referred to as Nordic)[17] exceptionalism to describe how countries such as Norway, Sweden, and Finland distinguish themselves from other Western societies through lower incarceration rates, more humane penal practices, and a pronounced emphasis on rehabilitation. According to Pratt, these penal characteristics are closely tied to broader societal traits - particularly high levels of trust, social equality, and strong welfare institutions - which allow for a less punitive and more inclusive criminal justice policy.[18]

The education of prison officers plays a central role in fostering these values, and KRUS emphasizes the development of relational competence, critical reflection, and ethical awareness throughout its curriculum.[19]

Pratt also notes that the Nordic countries are exceptional in their commitment to accessible, high-quality public education and the state's active role in building professional competence.[20] This is evident in Norway's investment in professional prison officer training as a publicly funded and policy-driven effort to uphold correctional standards. Scholars such as Bruhn, Nylander, and Johnsen argue that the strong institutional support for professionalization reflects broader Nordic values, where the establishment of academic disciplines and welfare-oriented professions is a deliberate state strategy.[21]

However, the thesis of Nordic exceptionalism is not without criticism. Some scholars argue that it tends to idealize and homogenize Nordic penal systems, overlooking national variations and internal contradictions.[22] Others, have highlighted that marginalized population are not included in this humane model.[23] Moreover, increasing political populism, media-driven discourse on crime, and a gradual tightening of penal policies raise concerns about the durability of Nordic exceptionalism.[24]

Professionalization and occupational roles in the Norwegian Correctional Service

The professionalization of the prison officer role has become an increasingly prominent theme in correctional systems globally, driven in part by the growing complexity of incarcerated populations and their need for more specialized, rehabilitative, and relational support.[25]

Professionalization is commonly understood as a process through which occupational groups develop a scientifically grounded body of knowledge and maintain control over this domain through formal educational requirements.[26]

In the Norwegian context, this development has been particularly pronounced.[27] Norway has pursued a strategy reminiscent of the post-war evolution of classical welfare professions, emphasizing academicization, the establishment of a distinct scientific discipline - correctional studies - and an educational model that integrates theoretical knowledge with practical training.[28]

The overarching aim is to cultivate prison officers as professional actors endowed with a high degree of professional discretion. The prison officer education is designed to reflect the goals and values of the Norwegian correctional service, including contributing to the execution of sentences within a framework that ensures public safety, prevents recidivism, and facilitates the reintegration of incarcerated individuals into society.[29]

In Norway the professionalization process is exemplified by the accreditation of prison officer education as a college-level program.[30] It is closely linked to a governance logic based on trust in professional expertise. This reflects the broader welfare policy tradition and national priorities.[31] The concept of "profession" and how best to prepare practitioners has long been debated.[32] Traditionally, the term was reserved for long academic programs such as theology, law, and medicine. Aubert's classical definition describes professions as occupational groups with high-level academic training, a monopoly over specific tasks, and strong internal control through ethical and professional standards.[33]

A defining feature of contemporary professional education is the integration of theoretical instruction with practical training aimed at developing specific, work-relevant competencies.[34] Grimen describes professions as "heterotelic," meaning they serve purposes beyond themselves.[35] This external orientation shapes the composition of the knowledge base in professional education, distinguishing it from discipline-based programs, where content is determined by the internal logic of a scientific field.[36]

Unlike most professional education programs governed by the Norwegian Ministry of Education, prison officer education is overseen by the Directorate of the Norwegian Correctional Service and the Norwegian Ministry of Justice and Public Security. This strong top-down control has been argued to conflict with classical notions of professionalism, which emphasize autonomy and discretionary judgment.[37] Such limited professional autonomy raises questions about whether prison officer education and practice meet the criteria for professional status.[38]

Nonetheless, from a more liberal interpretation of the concept, prison officer education may be considered professional insofar as it prepares individuals for a specific occupation. The program shares many characteristics with other professional education programs in the university college sector, offering specialized knowledge and skills for a defined field of practice. Moreover, prison officers also operate within a normative and ethical framework that guides their conduct.[39] As such, the education can be seen as part of an ongoing professionalization process, wherein an occupational group develops a scientific knowledge base and secures control over its domain through formal education and institutional recognition.[40] In Norway, this process is evident in the establishment of a two-year college program, and possibilities for a third year qualifying for a full bachelor degree that combines theoretical studies with practical training in correctional institutions. The curriculum is

organized around interdisciplinary themes such as security, social work, and reintegration, aiming to develop prison officers with strong relational competence and professional autonomy.[41]

METHOD

This study is based on a qualitative research design and forms part of a larger research project examining how ideals of rehabilitation, cooperation, and humane treatment central to penal and welfare policy - are operationalized in Norwegian correctional services.[42] The empirical material consists of qualitative interviews with employees from both the correctional services and the specialist health services who work closely with incarcerated individuals.

Participants

To reflect the active role of those we interviewed, we refer to them as participants, following recommendations from Morse.[43] The sample comprises a total of 23 participants from various professional backgrounds, including prison officers, psychologists, environmental workers, and leaders within both the correctional and health services. Participants were recruited from five Norwegian high-security prisons. A purposive sampling strategy was employed, emphasizing variation in professional affiliation, organizational background, and experience with rehabilitation work to elicit a diversity of perspectives.

Data collection

Data collection was carried out through individual semi-structured interviews and focus group interviews. The interviews were guided by a thematic interview guide containing open-ended questions related to the relevance of education, professional role understanding, interaction with inmates, and experiences with implementing rehabilitation initiatives and milieu therapeutic methods.
The data from the interviews were analyzed through systematic text condensation[44] and empirical patterns and theoretical concepts particularly those related to professional identity and Nordic exceptionalism - were brought into a mutual interpretive process.
The study was approved by the Norwegian Centre for Research Data (numbers 33868 / 30823). In line with research ethics guidelines,[45] written informed consent was obtained from all participants, and anonymization and confidentiality have been prioritized in the presentation of data. This approach provides a solid basis for analyzing how the ideals underpinning Norwegian prison officer education are realized in practice, and the extent to which these ideals correspond to the notion of Nordic exceptionalism.

RESULTS AND DISCUSSION

Assessing prison officers education, responsibilities, working methods, and treatment of prisoners

Educational ideals: Rehabilitation and relational competence

Answering our first research question: How do key actors working in Norwegian prisons assess their education, responsibilities, working methods, and treatment of prisoners?, the data reveal that Norwegian prison officer education is strongly anchored in values of rehabilitation and relational competence. Participants consistently emphasized the importance of building trust-based relationships with inmates as a core professional skill. One officer articulated this by stating, *"We learn that the relationship is our most important tool. It is what creates security and allows us to contribute to change."* This perspective reflects the normative framework of the education, which promotes a humanistic view of incarcerated individuals, as echoed by another participant: *"The education teaches*

you to see the person, not the sentence." These ideals are in line with the formal objectives of the KRUS curriculum, which emphasizes ethical reflection, communication, and dynamic security.[46] In our context, this is reflected in a correctional philosophy that emphasizes relational work, ethical treatment, and the reintegration of prisoners into society. Officers are expected to engage with inmates through everyday interactions that promote mutual respect and build trust, thereby reducing recidivism and contributing to public safety.[47]

Dissonance between these ideals and the realities of everyday prison work

However, several participants noted a dissonance between these ideals and the realities of everyday prison work, where time constraints and institutional routines often limit the scope for relational engagement. An important feature of the prison officer education is its emphasis on interagency and interdisciplinary collaboration, reflecting the integrated nature of correctional work in Norway, where officers routinely interact with professionals from healthcare, education, and social services.[48] This can be seen in the following statement from one prison officer talking about reflective practice and inmate interaction: *"These days, I almost feel like one of teachers at KRUS - I find myself turning the questions back on the inmates, asking them what they want and how they perceive the situation they're in."*

The educational model promotes a holistic view of sentence execution, encouraging future officers to engage with inmates through trust-based interactions, dynamic security principles, and a humanistic understanding of the correctional environment.[49] The educational model is resonated in the following statement from one prison officer talking about dialogue, discretion, and trust: *"I try to create dialogue. You often have to say no — but if there's no real reason to refuse, then why should you? Our routines may require a no, but when possible, saying yes can help me building trust and strengthen the relationship. It's something you learn by experience. "*

Professionalization and interdisciplinary collaboration

The results indicate that there is a gradual shift in the professional identity of prison officers. Several participants described an evolving role that increasingly involves interdisciplinary collaboration and the management of complex inmate needs. However, this transition is not without friction. As stated by one officer: *"I am a prison officer. The inmates are aware of that — they know who works here and the kind of job we do. The main challenge is that you are also a contact officer, responsible for building relationships and having meaningful conversations. You're expected to be a source of support, while also being the person who enforces rules and sets boundaries."*

Officers reported challenges in being recognized as equal partners by healthcare professionals, despite their continuous presence and close knowledge of inmates. One officer remarked, *"We officers are there all the time. We know the inmates best. But the healthcare personnel do not always listen to us."* This reflects broader issues of professional boundaries and organizational silos. Where collaboration functions well, participants reported enhanced job satisfaction and more coherent rehabilitative efforts.

Conversely, fragmented collaboration was associated with role ambiguity and reduced efficacy. The analysis suggests that professional responses to these challenges vary by occupational affiliation. Prison officers tend to adopt rule-based and loyalty-driven practices, while professionals from health and social care backgrounds often employ more flexible, relational strategies. This divergence underscores the need for enhanced interprofessional training and shared competence development.

Furthermore, the findings show that interprofessional collaboration appears necessary but challenging. The value base and position of different professional groups in the organization affect both the

willingness to cooperate and role understanding. This points to the need to further develop prison officer education with an emphasis on interprofessional collaboration skills and critical reflection on institutional frameworks.

Do prison officers descriptions correspond with the notion of Nordic exceptionalism?

Answering our second research question: To what extent do their descriptions correspond with the notion of Nordic exceptionalism?, we find that there exist structural barriers to reform and that there are tensions between educational ideals and institutional practice.

Structural barriers to reform

Despite strong normative commitments to rehabilitation and collaboration, the implementation of reform-oriented practices varies between different prison units but are according to the participant, to various degrees hindered by structural constraints. Participants pointed to hierarchical governance structures, fragmented responsibilities, and insufficient managerial support as key obstacles. These findings challenge the notion of a unified and exceptional Nordic model, revealing instead a complex and sometimes contradictory institutional landscape. These findings are in line with Ugelvik and Dullums´s criticism that Nordic exceptionalism tend to overlook national variations and internal contradictions.[50]

Tensions between educational ideals and institutional practice

A recurring theme in the data is the gap between the normative ideals conveyed through education and the structural conditions encountered in practice. Participants described how organizational demands - particularly those related to security, efficiency, and documentation - often undermine the implementation of rehabilitative and relational approaches. As one environmental worker noted, *"We are supposed to work with relationships and trust, but we barely have time for conversation. Everything is about logistics and reporting."*

This tension illustrates a broader institutional dilemma: while the education promotes a rehabilitative ethos, the operational logic of the prison system frequently prioritizes control and procedural compliance. According to the participant this discrepancy is particularly pronounced in high-security settings, where the dominance of security logics constrains the relational space necessary for rehabilitation.

The education's value base is strongly rooted in principles of rehabilitation and trust, but this often clashed with institutional demands for control and efficient operation of the prison.

On the one hand, education contributes to the development of a professional identity that is in line with Nordic penal exceptionalism.[51] On the other hand, this identity is undermined by structural factors that weaken the rehabilitation ideal in practice. This finding is in line with previous studies that have shown that officers often have to balance between competing logics – a welfare logic and a security logic.[52] Nielsen[53] highlights a gap between the ideals and actual practices of penal systems, arguing that the lived experiences of those inside may fall short of the exceptional standards that Pratt[54] identifies from an external perspective.

CONCLUSION

This study shows that prison officer education in Norway conveys strong ideals related to rehabilitation, humane treatment and relational security. At the same time, the results highlight that these ideals are often challenged in practice – by lack of resources, management logics and collaboration challenges. The article argues that the realization of the Nordic model of exceptionalism

requires more than normative education; it also requires structural framework conditions and professional support systems that give officers actual room for manoeuvre to exercise their role as rehabilitation actors.

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BUILDING TOGETHER: INTEGRATING TEACHING AND RESEARCH IN BUILT ENVIRONMENTS EDUCATION

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INTRODUCTION

This paper reports preliminary findings of a research project conducted within a comprehensive built environment faculty in Australia by an academic development group. The project has built upon Healey and Jenkins' framework that considers multiple forms for productive intersection of teaching and research activity.[1]

Central to the investigation is a case study exploring the development of a new subject. The subject has been designed to embed active research projects, and to allow students to engage with research and learning in multiple capacities. The approach seeks to bridge theoretical knowledge and its practical application. The paper presents facets of research-teaching integration identified through the study, highlighting both individual and institutional perspectives in relation to this work.

The study contributes to the broader discourse on research-informed teaching and practice-based learning in contemporary academia through the lens of this specific case. The findings have implications for curriculum design, faculty development, and the enhancement of student learning experiences in built environment education and related fields.

CONTEXT AND BACKGROUND

Anticipated and expected links between education and research activities have been offered since Humboldt in 1809.[2] These links are now deeply embedded in both expectation and practice. In the Australian Higher Education Standards Framework (Threshold Standards), 2021, they can be found at B1.3: "The undertaking of research that leads to new knowledge and original creative endeavour and research training are fundamental to the status of a higher education provider as an 'Australian University'." [3]

Despite assumed and encouraged connection, a body of scholarship has outlined challenges to the effective linking of research and teaching. Some scholars argue differing motivations and skillsets or varying outcomes from time and energy invested limit positive correlation between research and teaching for an individual academic.[4] The obstacles presented by organisational structures in institutions,[5] and the complex disciplinary specificities for knowledge building and sharing are key factors that have been explored.[6] The expectations of research and the relationship to practice in applied disciplines present specific and nuanced challenges, particularly relevant to built environment

disciplines.[7] Some work outlines opportunities to build connections between teaching and research in academic practice,[8] and more recently, opportunities for 'authentic' research-engaged learning through communities of inquiry are suggested as a positive opportunity to respond to integrity challenges,[9] such as those delivered by GenAI.

INTRODUCING THE CASE STUDY

This paper reports preliminary findings of a research project conducted within a comprehensive built environment faculty in Australia. The project has built upon Healey and Jenkins' framework that considers multiple forms for productive intersection of teaching and research activity.[10] Our study engaged participants with diverse faculty roles. To investigate specific stakeholder perspectives, study participants were invited to participate in a semi-focused interview relating to the development of a new research-led case study subject. Interviews were conducted in accordance with protocols approved by the Human Research Ethics Committee.

The graduate program level case study subject is designed to draw on faculty research projects, allowing students to engage with research and learning in multiple capacities. It has identified 'housing' as an area of research that is relevant and active across most disciplines in the faculty, and a topic of current focus in the broader community. The approach seeks to bridge theoretical knowledge and practical application in built environment disciplines by introducing students enrolled across programs to contemporary housing theory and issues through current research initiatives. In this way, it will open avenues for students to engage their own disciplinary backgrounds through collaborative exploration.

This pilot study has two main aims. Firstly, to document the process of setting up a new subject aligned with a research-led teaching model, and the ambitions and strategy of the ABP faculty in doing so. Secondly, to inform a new research project which aims to study how the learning design of the subject will be tailored to suit the research project for a specific offering, and the potential models this learning design framework can take. These will inform a more comprehensive research project, investigating models for integrating research and teaching for Built Environment education to deliver impact.

CASE STUDY PROJECT BACKGROUND

The project reported in this paper has been undertaken by the Built Environments Learning + Teaching (BEL+T) group, an academic development group based in the Faculty of Architecture, Building and Planning at the authors' institution. The BEL+T group is focused on the sustained improvement of teaching quality and student engagement for learning. The group's initial establishment and the direction of its current efforts are determined by faculty strategy, and informed by scholarship and the broader institutional context. The most recent Faculty strategy includes a focus on the intersection of research and teaching, by celebrating the research work and contributions of faculty members, as well as noting a responsibility "to set our future generations of built environment practitioners, leaders, entrepreneurs, and critical thinkers up with the skills to navigate and positively contribute to an ever-changing global landscape".[11] The strategy states specific ambitions, below, that have driven the engagement of the group with this case study project:

"Ensure research-led teaching enhances learning outcomes, supports research innovation, and creates systemic impact"

"Continue to embed research in the Faculty's core teaching, strengthening a research-teaching nexus"

The first author of the paper holds two roles relevant to the focus of the study. These are Associate Dean (Teaching and Learning), a role that centres on the development and review of subject and course offerings by the faculty; and on the translation of university policy, processes and recommendations to local teaching and learning activities. The second role is as Director of the BEL+T group, and this role focuses on identifying support needs and strategies for improving and evolving teaching practices. Both of these roles include work on faculty and university committees that review subject and course proposals, and the first author regularly meets with course or subject coordinators to discuss and advise on these. Early ideas for the case study subject were discussed in one of these committees, and the first author identified the opportunity for the academic development group to support its development. The project team, including all authors, met with stakeholders to understand their perspectives on the relationship between teaching and research in the subject offering.

As the formal subject proposal developed, the first author met with the subject coordinator on more detailed development. Typical discussions of this type explore planning for changing student cohorts, and the mix and balance of students' disciplinary backgrounds, in elective subjects. For research-led teaching projects, contributions from both teaching and research staff are also important to investigate.

CASE STUDY PERSPECTIVES

Director Of Graduate School:

The perspective of the director highlighted the importance or research as a mechanism to connect both students and researchers with real world contexts to allow for interaction and exchange.

"I'm particularly interested in this question of overlapping research and teaching given that we're in a research-intensive university … it's just making sure that those aren't two separate worlds … So our teaching is informed by the best cutting-edge research, but equally our research is informed by having students and teaching activities generally engage with the research side."

In relation to Healey and Jenkins' diagram,[12] the director described modes of teaching and research as not mutually exclusive. Rather they were seen as overlapping and iterative processes.

"… *it's, certainly not, for instance, just the bottom left one, learning about current research and discipline, but equally, you can't do research without doing that* … and it's certainly engaging in research discussions, is in the idea of research and research again, and like testing and discussion."

It was suggested that moving across these different modes allows for an accumulation of learning for and about research processes.

"I guess you do need some skills and techniques at some point early on, but those skills and techniques will be refined throughout. So, it's not like you go 'first I do the bottom then I do the bottom left, then I, work round it clockwise'. *It's more like a blobby jellyfish when you're shifting emphasis at different points*. "

Figure 1. Course Director perspective on research learning in case study subject (after Healey and Jenkins, 2009)

Research was described by the Director as a dynamic process with manifold inputs. The subject itself was understood as a permeable container where these inputs were focused on systemic challenges.
"We've been using (focus topics) as a way of pulling together research and teaching … what I'm increasingly trying to do with the school is find environments that are *complex, systemic challenges (to) force us to work in a different way* … but what that really means is an emphasis more on applied research or making clear our *civic positioning as a university by connecting it to matters of concern of everyday life.*"
The Director further articulated that this dynamic extends to the classroom itself.
"... I much prefer the idea of living labs at least… *a lab where you can't isolate variables … (students) need to have some way of building their confidence or attitude or acumen for handling that kind of challenge* through this process …"
The open-ended nature of this conceptualisation implies change in how subjects are normally conceptualised and designed.
"… there is an understanding of research that I like by the anthropologist Tim Ingold, and it's very basic. He just says, the word *"research" means "to search and then search again"* … so it's that ongoing process. … And that feels right for this subject, but it probably changes how people think about it."

SUBJECT COORDINATOR AND LECTURER:

In the research interview, the subject coordinator's perspective centered on how teaching and learning activities might activate different forms of research and teaching and their relationship. Teaching and learning activities that focused on teacher-led content delivery were seen as more 'research-led' whereas assessments were described as 'research-based' actions by students. This perspective proposes the research and teaching relationship as dependent on the mode or type of activity performed by both students and teachers at different times across the semester.
"research led teaching seems to be where the students are mostly as audience, …*I would say (assessments are) two kinds of activities* … related to what we see here in the research-based category, where it's undertaking research and actually making some inquiries … so they're actually participating in the process.

Figure 2. Subject Coordinator perspective on research learning in case study subject (after Healey and Jenkins,2009)

The subject coordinator further reflected that a move to a research-based approach requires a shift in teaching practice and repositioning of the role of the educator.

"A facilitator or supporter role instead of just being the lecturer and give students all the content"

An associated risk in moving beyond familiar roles and expectations was acknowledged, particularly when students compare subjects and learning experiences.

"They might feel like the subject might (have a) lack of guidance or lack of support from time to time."

The evolving nature of research was identified by the subject coordinator as informing the design of the subject, allowing response to changes in research trajectories, projects and collaborators. However, there was a sense that this dynamic could be limited to research content and approach, retaining the underlying pedagogical frameworks.

"I would assume that whenever we're introducing a new topic the *skills methods or the teaching contents will need to be shifted* according to what the researcher is focused on. But in terms of the main structure or the *basic structures and the basic knowledge (for focus) will stay the same* across the semesters."

The subject coordinator described a level of uncertainty around research topics and approaches from semester to semester.

"I'm not a hundred percent confident that my research can be one of the topics this year … But *in the future, I also wish to integrate my research*"

The interdisciplinary nature of the subject was recognised as a factor for the subject coordinator in being able to establish baseline knowledge and skills.

"One of the biggest challenges that I'm currently having right now is to *gauge the background of the potential students* who will be enrolled in and also what kind of existing knowledge they would have."

The subject coordinator noted that the integration of research in the subject added complexity, in that different disciplinary approaches to research might present challenges to anticipated research frameworks and teamwork expectations.

"(mixed discipline students) learn from each other from different backgrounds … the challenge would be how to balance whose idea *or what kind of research approach* they should take"

CASE STUDY FINDINGS

The preceding sections have outlined perspectives of some key contributors to the development of a new subject in a built environment faculty. This section explores some of the themes that emerge from this early work.

The comparison of the formal roles represented across interviewees and the project team offers a fairly obvious, but useful lens on the development of new education offering.

These different perspectives may be characterised as below:

- A *systemic* view that focusses on the relationship of learning offerings of the faculty to that of the broader university, and considers the development of a new subject in that context;
- A *practice-centred* perspective that considers pedagogical practices influencing teaching delivery, with a view to broadening influences on learning needs and teaching offerings;
- A *strategic disciplinary* outlook that thinks about the ongoing development of a school and its interactions with discipline/s and connections with the community;
- A *pragmatic and operational* view considering detailed subject design and expectations for its delivery and value to students.

In addition to the formal roles and positions occupied by the participants, contrasting perspectives on research have also emerged. Each offers a personal perspective on research that is relevant to the expectations for a subject aiming to link faculty research with student learning.

These broad characterisations of research can be considered in the following ways:

- Research as an activity that is *connected to innovation in practice*, with "design as a mode and also as a focus for research" linking both to learning. This conceives research as an 'applied mode of knowledge production' particularly relevant to built environment disciplines.[13]
- Research as an *individually-driven focus and agenda*, implying particular methods or themes, requiring adjustment of research and/or teaching for their effective integration. This aligns with a perceived lack of correlation between time invested in research productivity and positive teaching evaluations.[14]
- Research as emergent and iterative, and as *a means to engage with community* and phenomena artfully in a collaborative exploration, rather than to "hold the world to account, or to extract its secrets through force or deception".[15]

While the interviewees anticipated a different journey for students of the case study subject across the model presented by Healey and Jenkins,[16] it is of note that all concluded with an expectation that students would be active participants with an emphasis on research processes and problems framed by a subject context.

In addition to these themes, pragmatic concerns emerged in relation to subject design. These brought a particular focus on the need for flexibility when accommodating students from across multiple disciplines and introducing them to an emergent area of research and scholarship.

Needed flexibility was considered at different scales, and included:

- Consideration of the *changing cohort between semesters*, and expectations for learning and participation that would need to be accommodated in teaching plans and activities;
- Planning for a *shifting mix of students' disciplinary backgrounds*, and the navigation of these values against those of external participating researchers who would also change;
- The adoption of a 'studio pedagogy' in which learning and performance is *emergent rather than specified in advance* calling for confidence and adaptability, particularly for those new to this mode of learning or of teaching.

CONCLUSIONS AND LOOKING AHEAD

The study outlined above has identified key perspectives, values and needs that influence the relationship of teaching and research. These have been explored through the lens of subject development and a small case study. They have included strategic and practice-focused perspectives, as well as values in relation to research and its practices that influence decision-making and expectations when it is considered in relation to teaching. It has also identified pragmatic needs, when the timeframes and cycles of researchers and research project must intersect with the frameworks of subject delivery and teaching practices.

While this initial case study has offered a view on some specific, and diverse, contributors to subject development, it also highlights the contributions of academic developers to the development of new subjects that integrate research and teaching activity. It has highlighted opportunities for academic developers to support the development and the initial offerings of a subject, as a contribution to refinement of the subject itself, and the establishment of a "learning organisation".[17]

As built environment disciplines are considered "something of a microcosm of the university as a whole"[18] research applications may vary in their levels of specificity. They may relate to other practices and concerns such as "business-oriented fields (e.g. property development), public policy-oriented fields (e.g. housing; planning), design-oriented fields (e.g. architecture; landscape design), technology-oriented fields (e.g. construction)" and more.[19] In these circumstances, the careful review and design of learning activities that anticipate and support interdisciplinary learning, and a range of student ambitions as well as backgrounds, will be needed.

The study has identified specific areas for focus in the extension of the inquiry. These include opportunities to identify and articulate contributions to the broader community as an engagement with research, through the medium of education. These seek new avenues and models to connect the world-leading research of academic colleagues with student learning. This work has also highlighted some of the subtlety at the intersection of research and education and impact, and to frame education activity as an important way that new discovery within the institution can contribute outside of the institution.[20]

We look forward to the development of other subjects and offerings that can fruitfully combine research and teaching, relevant to our faculty, our disciplines and researchers, and most importantly for our students.

NOTES

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[15.] Tim Ingold, "Art and Anthropology for a Sustainable World." *The Journal of the Royal Anthropological Institute* 25, no. 4 (2019): 611. http://www.jstor.org/stable/45282257.
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[17.] Siva Krishnan and Harsh Suri, "Demystifying Academic Development Practice." *Higher Education Research & Development* 44, no. 3 (2025/04/03 2025): 638-41. https://doi.org/10.1080/07294360.2024.2410264.
[18.] Griffiths, "Knowledge Production and the Research–Teaching Nexus," 711.
[19.] Griffiths, "Knowledge Production and the Research–Teaching Nexus," 712.
[20.] For built environment disciplines, this highlights the relevance and opportunities for applied knowledge - through a lens of 'high vs low consensus disciplines' or the extent to which a specific paradigm is defined for a discipline as outlined by Kuhn in Anthony Biglan, "The Characteristics of Subject Matter in Different Academic Areas." *Journal of Applied Psychology* 57, no. 3 (1973): 195.

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PEER FEEDBACK AS A LEARNING ACTIVITY IN POLICE INSTRUCTOR EDUCATION

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INTRODUCTION

One of the areas Norwegian students are dissatisfied with year after year is feedback, or the lack of it.[1] At the same time, research tells us that feedback is a critical component of students' learning and performance.[2] Numerous studies since the turn of the millennium have indicated that peer feedback enhances learning in several ways.[3] Among other findings, research indicates that implementing peer feedback may help students broaden and deepen their understanding of the topic at hand.[4] The question is whether peer feedback – among other feedback methods - may be an untapped source of learning to meet students' needs for more feedback.

Research indicates that certain preconditions related to the conduct of peer feedback are important for the learning potential of it, including structure and criteria, trust, specificity, roles, training in giving feedback, as well as the opportunity to elaborate on what the feedback means, to mention some.[5] However, the literature in this field is inconsistent or divergent in several of the factors, and some factors are weakly researched.[6] There has been relatively little research on peer feedback in a police education context. Dahl et al.´s review from 2023 points out that many insights from general educational research on peer feedback are valid in police education, but at the same time they call for more research on how such feedback can be implemented in the police.[7]

The context of the study – police instructor education programs

In order for the police to be able to work with local skills development and training, the Norwegian Police University College (NPUC) educates instructors within eight different police-related areas, such as police tactics, emergency driving and investigation. These education programs are called “Instructor Education Programs” (IEP). The programs are interdisciplinary as they consist of different police subjects and subdisciplines, and they are profession oriented in the sense that they are closely related to the professional field of working as a police instructor. The main goal of the programs is to educate reflective practitioners who can facilitate colleagues' competence development.

The case in study - Instructor Education Program in Police Operations Centers

The case used for this study is the IEP in Police Operations Centers.[8] This program is specially designed and organized to meet the requirements and challenges of instruction in this specific field of practice. For example, the instructor must be able to train others in the use of operational management

systems at the operations centers and how to handle stress during demanding police operations. The program has a clear pedagogical profile, and there is a strong focus on how an instructor should work to facilitate the learning of others. During the education, the students therefore prepare 3-4 teaching plans and carry out and evaluate teaching based on these in mandatory educational activities named as "teaching exercises".[9] Students in the program carried out peer feedback on one of the teaching exercises, along with a written teaching plan developed for that specific activity.

THEORETICAL FRAMEWORK - PEER FEEDBACK AS A SOCIOCULTURAL LEARNING ACTIVITY

Peer feedback is in this study understood as deeply rooted in a sociocultural view of learning,[10] as we consider it to be a way of facilitating learning through situated activity, social interaction, dialogue and shared knowledge building. Our approach to peer feedback is heavily influenced by Vygotsky's theory of the zone of proximal development[11] and Wood et al.´s theory of scaffolding.[12] Both theoretical concepts draw attention to the following key conditions for learning; how support in the learning process will help reinforce learning, how the quality of the social interaction is central to learning and how help must be adapted to the individual's level and needs to be effective.

"Peer feedback" refers to feedback given and received between learners of a similar status.[13] Peer feedback can be described as a dialogic process through which students exchange knowledge and insights, thereby contributing to continuous learning.[14] We think that peer feedback has the potential to allow students to see their academic work from the perspectives, angles, experiences and knowledge bases of someone who has a similar educational, experiential and professional background as themselves. The students can thus represent a supportive "scaffolding" for their fellow students when connecting academic knowledge with practice.[15]

The conceptual rationale for peer feedback is that it enables students to take an active role in managing their own learning,[16] as it provides opportunities for active interactions and meaningful negotiations.[17] This involves elements of self-regulated learning, which is an important precondition for enhancing learning.[18]

Research question

Using the theoretical concepts of Wood et al.[19] and Vygotsky,[20] we examined how students could act as scaffolds, enabling greater development within each other's zones of proximal development than they could achieve independently. Our idea was to facilitate a collaboration between our students, where they could be able to have a dialogue about the specific professional issues and through this share knowledge building. This in order to achieve a better teaching plan than they would have achieved on their own. The research question of our study was: *What are students' perceived learning experiences with giving and receiving peer feedback on written assignments?* In other words, we wanted to know if peer feedback could improve the students' learning processes related to the preparation of the teaching plans and result in improved teaching plans.

METHOD

This study used a qualitative approach, utilizing data from 17 reflection notes written by police officers taking part as students in the IEP in Police Operations Centers program at the NPUC. As part of the third session in the IEP in Police Operations Centers program, participants were asked to write reflections on their experiences with giving and receiving peer feedback. The qualitative data were analyzed both deductively, using themes from the two categories giving and receiving peer feedback, and inductively through thematic content analysis as described by Braun and Clarke.[21]

Participants

Participants were chosen for their tactical experience in law enforcement, incident management, or operations centers. They are thus considered elite participants with a very specific knowledge.[22] The selection of participants aimed to capture diversity in Norwegian police practice.

Data analysis

Following the six steps outlined by Braun and Clarke,[23] we started with step 1 and familiarized ourselves with the data. Here we read and re-read the data, noted initial ideas, and began to immerse ourselves in the depth and breadth of the data. We then created a separate summary from each participant. Step 2 included generating initial codes, as well as identifying repeated patterns or elements of meaning. Here we identified statements belonging to either giving or receiving feedback. In step 3 we searched for themes, grouping together the main features of the 17 summaries in a new document. We then extrapolated the data into three potential themes. Step 4 included reviewing the themes and ensuring coherence and distinction between the three themes. Step 5 included defining and naming the three themes as well as identifying the "story" each theme told in relation to our research question. We chose to divide the most interesting findings into the following three main themes: the importance of giving and receiving constructive and specific feedback, the importance of trust and safety in relationships, and the importance of oral dialogue. In step 6 we related our findings back to our research question and to our theoretical framework.

RESULTS AND DISCUSSION

Trust, safety and dialogue are complex issues and intertwined in complex ways. Despite this, we have chosen to view them as separate factors in order to shed light on the learning potential of each factor and each factor´s unique contribution to the success of peer feedback. That said, several of the sections could have been placed under one or more of our three identified themes.

The importance of giving and receiving constructive and specific feedback

A key finding is that constructive and specific feedback seems to be crucial for students' development. Peer feedback responses with specific suggestions for improvement have been found to be particularly beneficial in achieving real progress, although general praise can also provide motivation.[24] Participant 3 illustrated this point by explaining that they hoped the peer responses would improve their teaching plans by emphasizing principles of good peer response practice — focusing on positive motivation and self-confidence. They further pointed out the importance of observing their peers' body language and explaining the content of the peer responses so that their own concrete input could provide guidelines for further improvements.

Furthermore, the participants found that constructive and specific peer feedback helped them to reflect on their own choices, thereby strengthening their academic awareness. Receiving feedback from fellow students prompted participant 9 to reflect on her own practice, while participant 11 has noted that the variety of feedback received encouraged her to evaluate her own judgments. Lastly, participant 14 stated: “I experienced the session with peer feedback as a good example of professional dialogical interaction. It's an effective method of providing feedback that enhances understanding and insight.” This statement corroborates well with Bjørndal´s description of how you as an educator can proceed to see your own practice better.[25]

Several participants shared how structured tools, such as color coding to highlight areas for improvement and the use of plenary discussions to deepen reflections, contributed to a more conscious approach to their own work and learning. This is consistent with the findings of Liu and

Carless,[26] who highlight that peer feedback not only improves understanding of assessment criteria but also enhances both assessment competence and self-regulated learning.
Several students felt that they were vulnerable when giving feedback, especially if they perceived it as negative criticism. Participant 6 said that "Giving feedback to fellow students can feel unfamiliar, especially when you see each other as equals", and pointed out that the lack of objective assessment criteria can lead to feedback being characterized more by personal opinions than constructive criticism. This perception of a lack of objective assessment criteria can also lead to unnecessarily mild praise.[27] However, experience shows that this uncertainty can be reduced through dialogue and reflection.[28]
Constructive, forward-looking responses are crucial for actual progress. Liu and Carless showed that specific suggestions for improvement provide better learning outcomes than general praise.[29] Participant 3 expressed that she wanted the feedback to "strengthen both motivation and self-confidence" while providing tangible advice on further work.
Finally, Participant 13 illustrated how the transition from focusing on errors to giving directional feedback strengthened the professional development of fellow students. Participants 14 and 15 highlighted the importance of clear success criteria for targeted evaluations, while Participants 16 and 17 highlighted that systematic analysis combined with visual comparisons and forecasting strengthened the understanding of the didactic relationship model.[30] Our data here agrees well with the fact that processes can be perceived as demanding,[31] so it for our participants it was important to have good assessment criteria and to reflect on the feedback in relation to their own thoughts.

The importance of trust and safety in relationships

Peer response is characterized by relationships and security as pillars of learning. When students know that their colleagues are truly engaged in their work, both openness and receptivity to constructive input increase.[32] This mutual trust creates a learning environment where feedback is perceived as professionally meaningful dialogues, rather than criticism.
Safe relationships are built through clear frameworks and mutual respect and are essential for absorbing feedback.[33] Participant 8 found that previous collaboration paved the way for honest and caring feedback. When participants know each other's insecurities and levels, it's easier to adapt their responses.
These established relationships reduced the fear of misunderstandings and allow for more courageous reflection. At the same time, structure is required to avoid "too kind" comments that do not promote development.[34] Some of the participants pointed out that feedback should be based on clear criteria to prevent mild praise from hindering further learning. Participant 11 found that a balance between recognition and forward-feedback concrete suggestions for next steps - maintaining motivation and making feedback actionable.
A safe and trusting learning environment is fundamental for this dialogue to work. When students feel that fellow students have taken the time to understand their work, both openness and receptiveness to criticism increase.[35] Participant 4 explained that by using the didactic relationship model[36] - with an emphasis on respect and empathy - they were able to interpret both verbal and non-verbal signals, which ensured more relevant feedback.

The importance of oral dialogue

Safe relationships form the foundation for such dialogue. When students know that their peers have thoroughly engaged with their work, both openness and willingness to receive criticism increase.[37] Similarly, Participant 8 emphasized that "established relationships make it easier to give honest feedback, because you know the recipient's level and uncertainty".

Research shows that written feedback is often vague. When feedback is followed up with an oral conversation, however, it is transformed into concrete action points and the intention behind them is clarified.[38] It has been emphasised by Dahl et al.[39] and Steen-Utheim and Hopfenbeck[40] that dialogue and relationships are key factors in peer feedback, where written assessments are concretized by oral conversations and responses are catalyzed into understanding, processing and translating into action. Participant 3 confirmed this: "For my part, the feedback was not perceived as criticism. It was perceived as part of a dialogue between the three of us." Participant 1 initially felt uncomfortable giving direct feedback but grew in confidence as he anchored his views in the curriculum literature. Likewise, Participant 2 discovered that "opening up discussion around the feedback" increased his awareness of his own strengths and weaknesses and helped identify areas for improvement in his teaching plan. These experiences highlight that a multimodal approach, in which written comments are supplemented by follow-up dialogue, lays the foundation for deeper professional reflection, an increased sense of mastery, and purposeful action.

Several participants emphasized that the combination of written comments and subsequent oral discussions improved the accuracy and structure of their peer feedback. Once the dialogue was established, it provided concrete adjustments to teaching plans.[41] Participant 4 said that a feedback process characterized by dialogue can highlight nuances in observations, help problematize them and encourage reflection. In this way, it can contribute to a better foundation for actively learning about one's work. Participant 11 explained that a misunderstanding about the assessment category was resolved through group discussion.

The oral dialogue contributes to clarifying unclear comments and transforms them into concrete action points. As we have seen, participant 3 thinks he got feedback as part of a discussion, so it was not criticism. The oral conversation clarified the written part of the feedback. When participants were given the opportunity to ask clarifying questions, misunderstandings disappear and feedback can be transformed into targeted improvements.[42] Participant 6 pointed out that "by asking questions to better understand the feedback, a good discussion occurs where we share thoughts and processes." This statement resonates well with Liu and Carless[43] and Lauvås et al.´s[44] findings of what promotes self-regulated learning and metacognitive awareness.

The dialogue also has concrete consequences for lesson planning.[45] Participant 4 said that "the good dialogue led me to change my lesson objectives for the better". Participant 11 described how a misunderstanding about the assessment category was corrected through peer group discussion. A balanced approach - where feedback is preceded by praise before forward-looking messages formulated as questions - increased motivation and seriousness.[46]

Participant 12 emphasized that "feedback must be given based on clear success criteria to avoid mild praise inhibiting further development." Through repeated meetings, both assessment skills and objectives were honed, creating a continuous circle of improvement.

The quality of feedback is further enhanced by combining written notes with oral dialogue.[47] Dialogue-based feedback stimulates analytical skills and reflection. Participant 3 noticed that a fellow student viewed the feedback as a dialogue rather than as criticism. The participant gained a better understanding of what they meant by "this was good" thanks to the verbal dialogue. Through

questions and clarifications, the intention behind the advice becomes clear, misunderstandings were avoided, and the feedback can be transformed into targeted improvement measures.

CONCLUSION

The aim of this study was to investigate students' perceived learning experiences with giving and receiving peer feedback on written assignments. Using 17 reflection notes written by police officers taking part as students in the IEP in Police Operations Centers program at the NPUC, we aimed to answer the following research question: *What are students' perceived learning experiences with giving and receiving peer feedback on written assignments?*

Three main themes emerged from our thematic analysis: The importance of giving and receiving constructive and specific feedback, the importance of trust and safety in relationships, and the importance of oral dialogue were highlighted as significant contributing factors for the participants learning experience. Our findings are consistent with other studies in the field of peer feedback,[48] and they support Dahl et al.´s[49] point that many insights from general educational research on peer feedback are valid in police education. The results suggest that peer feedback contributed to the development of students' critical thinking and academic understanding. Giving each other feedback allows students to reflect on their choices and strengthen their analytical skills. This process contributes to a deeper understanding of academic concepts and assessment criteria, which is essential for academic growth. Identifying factors that can influence the processes and outcomes of peer feedback could help teachers implement effective peer feedback activities in their classrooms.[50] When students feel comfortable talking with other students, they are more open for praised and receiving positive feedback. This establishes the basis for cultivating a learning culture where feedback is not just seen as a form of evaluation, but also as a catalyst for growth and improvement.

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