

Striking gold: navigating the education massification maze for work readiness

Education
massification
and work
readiness

Rickard Enstroem

*Department of Decision Sciences, School of Business, MacEwan University,
Edmonton, Canada, and*

Rodney Schmaltz

*Department of Psychology, Faculty of Arts and Science, MacEwan University,
Edmonton, Canada*

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Abstract

Purpose – This study investigates the impact of large-scale teaching in higher education on students' preparedness for the workforce within the context of evolving labour market demands, the expansion of higher education and the application of high-impact teaching strategies. It synthesizes perspectives on employer work readiness, the challenges and opportunities of large-scale teaching and strategies for fostering a dynamic academia-industry feedback loop. This multifaceted approach ensures the relevance of curricula and graduates' preparedness while addressing the skills gap through practical recommendations for aligning teaching methodologies with employer expectations.

Design/methodology/approach – The research methodically examines the multifaceted challenges and opportunities inherent in large-scale teaching. It focuses on sustaining student engagement, maintaining educational quality, personalizing learning experiences and cultivating essential soft skills in extensive student cohorts.

Findings – This study highlights the critical role of transversal skills in work readiness. It also uncovers that despite its challenges, large-scale teaching presents unique opportunities. The diversity of large student groups mirrors modern workplace complexities, and technological tools aid in personalizing learning experiences. Approaches like peer networking, innovative teaching methods, real-world simulations and collaborative resource utilization enrich education. The importance of experiential learning for augmenting large-scale teaching in honing soft skills is emphasized.

Originality/value – This manuscript contributes to the discourse on large-scale teaching, aligning it with employer expectations and the dynamic requirements of the job market. It offers a nuanced perspective on the challenges and opportunities this educational approach presents, providing insights for crafting engaging and effective learning experiences in large cohorts. The study uniquely integrates experiential learning, co-creation in education and industry-academia feedback loops, underscoring their importance in enhancing student work readiness in large-scale teaching.

Keywords Large-scale teaching, Personalized learning, Higher education, Workforce preparedness, Employer expectations

Paper type Conceptual paper

Introduction

The teaching and learning landscape is going through rapid changes, one of the most prominent being the shift towards large-scale teaching due to the massification of higher education and economic pressures on institutions (Hornsby and Osman, 2014).

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This transition brings challenges and opportunities, especially as class sizes increase and student demographics diversify (Bosworth, 2014; De Paola *et al.*, 2013). Amidst this backdrop, our paper seeks to address a critical yet underexplored question: How does large-scale teaching impact students' preparedness for the workforce, particularly in the context of the Industry 4.0 era's job market demands (Enstroem and Schmaltz, 2023; Shore and Dinning, 2023)?

Transitioning from academia to the professional world is critical in a student's journey. The knowledge and professional skills acquired during their education set the foundation for their future careers. However, with the rise of large-scale teaching, concerns have emerged regarding the quality and depth of learning experiences (Cuseo, 2007; Mulryan-Kyne, 2010). Can a lecture hall filled with hundreds of students truly cater to individual learning needs, foster critical thinking and nurture the professional skills often prized by employers?

While there is a concern with increasing class size, large classes also come with unique opportunities. For example, the diversity in large cohorts can simulate the environments of contemporary workplaces and collaborative projects in these settings can mirror team dynamics and communication requirements in large organizations (Bunger and Lengnick-Hall, 2018). Furthermore, technological advancements in digital pedagogies can also offer innovative solutions to personalize and enhance learning (Crittenden *et al.*, 2019; Xie *et al.*, 2019).

When considering the learning outcomes of large classes, the industry's voice becomes paramount. After all, they are the ultimate recipients of graduates from these large-scale teaching environments. Their expectations, needs and feedback should drive current educational practices and highlight areas of alignment or disconnect. This paper aims to bridge the gap between the massification of education and the need for educational approaches that impart knowledge and facilitate the development of professional skills, soft skills and enterprising traits.

Our research synthesizes three interrelated perspectives: the evolving demands of the labour market, the expansion of higher education and the application of evidence-based, high-impact teaching practices. We explore the expectations of employers regarding work readiness, examine the challenges and opportunities of large-scale teaching and investigate strategies for establishing a dynamic feedback loop between academia and industry. This approach ensures that curricula remain relevant and graduates are well-prepared for their professional roles. Additionally, we conduct a skills gap analysis and propose practical recommendations for aligning large-scale teaching methodologies with the evolving expectations of employers.

Limning “work readiness”

Evolving employer expectations

Employers are increasingly looking beyond technical proficiency and domain-specific knowledge in their candidates (Dafou, 2009; Scheerens *et al.*, 2020). While these attributes remain foundational, there is a growing emphasis on soft skills as critical components of work readiness. These soft skills encompass a range of interpersonal and cognitive abilities, including critical thinking, adaptability, collaboration and effective communication (Graham, 2017; Scheerens *et al.*, 2020). Such skills are highly valued because they enable employees to navigate complex problems, work effectively within diverse teams, and communicate ideas cohesively (Fajaryati *et al.*, 2020). In the face of relentless technological advancements and industry shifts, a growth mindset—an eagerness to learn and adapt—becomes imperative, coupled with the ability to apply foundational knowledge to novel and evolving situations (Dweck, 2017).

The need for adaptability and a growth mindset becomes even more pronounced in the Industry 4.0 landscape, which demands resilience and creativity, particularly in the volatile–uncertain–complex–ambiguous (VUCA) business environment. [Enstroem and Schmaltz \(2023\)](#) highlight that managers face unique challenges today, including business disruptions, fast data and complex system interfaces. These challenges extend beyond traditional soft skills, necessitating creativity and resilience. [Enstroem and Schmaltz \(2023\)](#) advocate for tailored professional development and business education strategies to enhance these skills, emphasizing the importance of a dynamic skill set, including adaptability and creative problem solving, for effective navigation in an unpredictable business world.

Integrated dimensions of work readiness

Employers' expectations for work readiness are multifaceted and holistic, varying across different job roles, industries and organizational cultures. These expectations often intersect and can be broadly categorized into three key areas: soft skills, enterprising attributes and behaviours and professional skills.

- (1) Soft skills encompass broadly applicable interpersonal skills and cognitive abilities essential for effectively relating to, understanding and interacting with others in personal and professional contexts (e.g. [Graham, 2017](#); [Scheerens et al., 2020](#)). Central to this skill set is social and emotional intelligence ([Scheerens et al., 2020](#)), which are critical for fostering productive teamwork ([Farh et al., 2012](#)) and cultivating a positive work culture ([Jamshed and Majeed, 2019](#)).
- (2) Enterprising attributes and behaviours signify a proactive and opportunistic mindset, a readiness to take calculated risks for driving change and self-confidence ([Enstroem, 2018](#); [Quality Assurance Agency for Higher Education, 2018](#)). Key elements also include resourcefulness and personal accountability, highlighting the importance of adaptability and ownership in professional settings.
- (3) Professional skills are more occupation-specific than enterprising attributes and behaviours and soft skills. They encompass teamwork, presentation, critical thinking, research, technology, ethics and writing ([Benson and Enstroem, 2017](#)). While occupation-specific, these skills are enhanced by and often overlap with soft skills and enterprising attributes and behaviours, forming a holistic skill set for modern professionals.

The integration and application of these three broad areas of skills in the interdisciplinary and collaborative work environment of today will determine professional effectiveness. For instance, the professional skill of presentation is not just about conveying information; it is enhanced by soft skills such as effective communication and empathy. This integration enables a more nuanced and impactful delivery, resonating better with diverse audiences.

Similarly, being resourceful in problem-solving, an enterprising attribute, often hinges on a solid foundation in specific professional skills. The ability to approach and solve problems innovatively is amplified when underpinned by deep technical knowledge and expertise. A practical example can be seen in a tech company's project manager role. While they may rely heavily on professional skills like technology expertise and project management methodologies, their effectiveness in these roles depends equally on soft skills like effective team communication. Additionally, enterprising attributes such as adaptability and strategic thinking are essential for navigating the complex and dynamic nature of technology projects. The confluence of these skills—professional, enterprising and soft—enables the project manager to lead successfully, drive innovation and adapt to changing project demands and industry trends.

Applied skills and subject-matter knowledge

Further specialization occurs in applied skills, which involve the practical application of subject matter knowledge in real-world work scenarios. Examples include inventory management, data analytics, market research, logistics planning, customer relationship management, business planning, risk management or expertise in a specific programming language (Schlee and Harich, 2010; Verma *et al.*, 2019). At the first level of this hierarchy is subject-matter knowledge, representing an understanding of the content within a particular field, such as marketing, finance or supply-chain management. Subject-matter knowledge entails theoretical depth rather than the practical applied skills required for the job execution. Figure 1 illustrates the work-readiness hierarchy as a conceptual framework to guide the discussion of work readiness in the context of education massification.

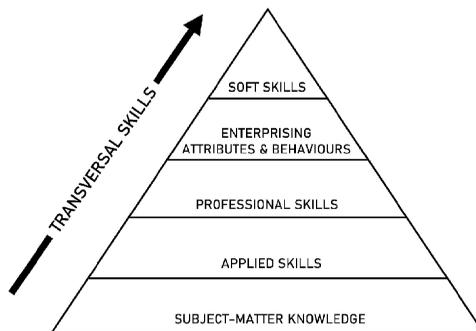
Transversal skills

Central to work readiness is the honing of transversal skills, moving upwards in the work-readiness hierarchy from non-applied subject-matter knowledge in the direction of professional skills (Benson and Enstroem, 2017) and enterprising attributes and behaviours (Enstroem, 2018), with the apex being a worker’s soft skills. Another central learning outcome for work readiness is learning transfer, which is the ability to apply knowledge, skills and behaviours from one context or situation to other similar contexts and situations, exhibiting straight analogies. Therefore, a person’s ability to transfer knowledge, skills and behaviour to an analogous situation constitutes a horizontal learning transfer. When the new context is more dissimilar, as in a more complex or advanced context and the person successfully applies fundamental concepts in this new and more advanced situation, they instead exhibit a vertical learning transfer.

The role of Bloom’s taxonomy

Within the realm of subject-matter knowledge in the work-readiness hierarchy, Bloom’s taxonomy (Bloom, 1956) outlines a progression. This progression moves from basic knowledge, recalling facts and concepts, to more elaborate and in-depth knowledge. It achieves this through a series of stages: comprehension, application of central concepts in scenarios, analytical readiness, the ability to synthesize by combining different elements and finally, a capacity to assess the holistic value or quality of something based on criteria (Kelly, 2023; Krathwohl, 2002). In this discussion, we refer to the original Bloom’s taxonomy (Bloom,

WORK-READINESS HIERARCHY



Source(s): Authors’ own work

Figure 1.
The work-readiness hierarchy

1956), which outlines a hierarchical progression from basic knowledge to higher-order thinking skills. Thus, achieving the top levels of Bloom's taxonomy is essential for a person's work readiness and productivity. Putting Bloom's taxonomy in the context of learning transfer, horizontal transfer mostly aligns with the application level as students learn to apply their knowledge and understanding to solve problems or complete tasks that share similarities with the one where they originally learned the material. In other words, it is a straight application of learning in a similar setting. The top levels of Bloom's taxonomy—analysis, synthesis and evaluation—will involve more challenging higher-order thinking skills, where the context and situation are further removed. For this reason, the top levels of Bloom's taxonomy require a vertical learning transfer.

In reconciling the concepts of transversal skills, learning transfer and Bloom's taxonomy, it can be inferred that transversal skills imply a direction up the work-readiness hierarchy towards professional skills, enterprising attributes and behaviour, and soft skills. In other words, skills that are generically applicable in various work contexts and situations and point to a certain amount of versatility. Moreover, moving up Bloom's taxonomy signifies horizontal and vertical learning transfers, meaning that people acquire transversal subject-matter knowledge, an ability to apply that knowledge in more complex, novel and diverse ways. This ability implies drawing connections between different disciplines and using a multidisciplinary approach—and interdisciplinary lens—to solve complex problems. Therefore, this capacity implies that moving up Bloom's taxonomy involves the development of transversal subject-matter knowledge.

The importance of T-shaped graduates

In specifying the graduate type most closely aligned with work readiness, the T-shaped graduates are candidates (Bierema, 2019; Conley *et al.*, 2017). They possess expertise in a field—the vertical bar of the “T”—while having the ability to collaborate across disciplines and apply their knowledge in diverse contexts—the horizontal bar of the “T.” T-shaped graduates, therefore, exhibit work readiness via specialized knowledge paired with the ability to work effectively in interdisciplinary teams. They are equipped with the depth of expertise and the skills necessary to adapt to various work situations and collaborate with professionals from different backgrounds. In this way, they can be said to have transversal skills as they can seamlessly transfer their skills and knowledge across disciplines.

Large-scale teaching at a glance

Evolution of education massification

Education massification became prominent after the World War II, with the need to upgrade, educate and train citizens to rebuild their economies (Gumport *et al.*, 1997). However, this movement had already gained traction half a century earlier with correspondence courses that provided career-focused mass training and education to large cohorts (Simpson and Anderson, 2012). Examples of these “institutes” are Hermods in Sweden, Penn Foster and the International Correspondence Schools in the USA. Several traditional universities had already established “faculties of extensions”, “external programs” and forms of distance education and “extended” education via satellite campuses to cater to non-traditional students, notably the University of London, the University of Chicago and the University of Queensland. In the 1960s and 1970s, this growth continued with increased enrollments and a surge in pursuing higher education, driven by economic growth, increased demand for skilled labour and social movements to equalize educational opportunities. Several universities specializing in mass distance education, such as the Open University in the UK and Athabasca University in Canada, have emerged. The expansion of community colleges to

respond to increased requests for accessible education can also be seen as a form of education massification. In the late 20th century, with the advent of the internet and digital technologies, this movement accelerated further with the widespread availability of online courses, MOOCs, to students worldwide. Traditional post-secondary education has also changed in parallel by featuring larger classes and the use of technology and implementing hybrid modality to make these changes possible.

Key features of education massification

Several pervasive features characterise the massification of education. First, it offers wider access, broadening the reach of education to a more extensive and diverse population. Second, scalability allows education provision to accommodate more students without the need for physical classroom infrastructure. Additionally, this approach provides flexibility in terms of when and where students can learn. Another significant aspect is the reduction of traditional barriers to higher education, such as geography and commuting. Finally, it offers affordability, making education accessible to a broader socioeconomic spectrum. Overall, these core features of education massification have democratised education access. However, at the heart of the matter lies the issue of how this educational paradigm will develop high-quality graduates with both subject-matter knowledge and transversal skills to reach the apex of the work-readiness hierarchy.

Imminent large-scale teaching challenges

Large-scale teaching democratises access to education. However, the tradeoff is the diminishing per-student access to faculty members and personalised instruction and the challenges with effective integration of teaching for work readiness. These challenges become focal points as institutions implement key performance indicators (KPIs) to illustrate quality education with outcomes of graduate employability and salaries and where these KPIs become crucial in the institution's ability to attract future students.

A primary challenge in large-scale teaching is sustaining student engagement (Rissanen, 2018). Smaller educational settings afford educators the luxury of gauging individual student reactions promptly, adjusting pedagogical approaches in real time and fostering interactive learning environments. However, in a large-scale educational setting, personalised attention becomes challenging, potentially resulting in feelings of anonymity and detachment amongst students. The absence of a personal connection can obstruct the cultivation of critical soft skills such as active listening and participation, qualities in high demand in the professional sphere and essential for workplace productivity. As the learning scale increases, so does the challenge of preserving consistent educational quality (Hornsby and Osman, 2014). With large cohorts, the class will likely rely on several tutors or lecturers with distinct teaching styles, varying experience levels or dissimilar curriculum approaches. Standardisation, coordination and debriefing amongst the involved instructors can remedy some of these problems. Even so, the possibility of variability in standards and pedagogical outlooks within a course can result in disparities in the learning experience, with some students potentially benefiting from a more enriched learning environment.

In large-scale teaching, the distribution of backgrounds, aptitudes, study techniques and prior knowledge amongst the students presents an obstacle to personalised learning (Maringe and Sing, 2014). While technology can offer some remedies to personalised learning, the sheer scale makes accommodating individual needs demanding, potentially leaving some students behind. Another challenge with personalized learning in large classes is the logistical puzzle of providing timely, constructive, and idiosyncratic feedback to students to improve upon their work. The absence of regular personalized feedback can hinder students'

comprehension of their strengths and areas requiring improvement—vital aspects of their professional preparedness (Lim *et al.*, 2020).

Developing students with higher levels of work readiness requires educational approaches that incentivize students' active learning (Mantai and Huber, 2021). These techniques involve enterprise education, experiential learning, action learning and applied and problem-based learning. Examples of educational components needed are collaborative projects, group discussions and peer interaction. Finding ways of embedding these components in large-scale settings can pose challenges (Mantai and Huber, 2021). While digital pedagogies offer innovative solutions, excessive dependence on technology can sometimes detract from the human aspect of learning. Cultivating interpersonal skills, interpreting non-verbal cues and establishing real-world connections constitute aspects that technology cannot entirely replicate. While addressing these challenges, it is also crucial to consider emerging strategies in large-scale teaching. Recent literature, including Bryant (2023), generally underscores the importance of addressing social isolation in large and scattered student cohorts and advocates for connected learning environments and a sense of belonging, aligning with the need for educational approaches that foster student engagement and active learning.

Seizing opportunities in large-scale teaching

Large-scale teaching presents unique challenges and opportunities for both educators and students. As class sizes continue to grow in many institutions, it becomes increasingly important to identify and implement effective teaching strategies that cater to the needs of students while maintaining high-quality education and student outcomes. Here, insights from the literature are presented to explore large-scale teaching approaches spanning a range of educational contexts.

The theory of experiential learning is central to understanding and leveraging these large-scale teaching approaches. This theory underscores the importance of interactive and practical learning experiences, particularly crucial in large class settings where the risk of student disengagement is higher (Rissanen, 2018). Primarily attributed to the work of David Kolb, experiential learning posits that knowledge is constructed through direct experiences and reflections on those experiences. Kolb's experiential learning model (Enstroem and Schmaltz, 2023; Kolb, 1984) emphasizes a cyclical learning process consisting of four stages: concrete experience, reflective observation, abstract conceptualization and active experimentation. This model implies that effective learning occurs when students actively engage in learning—experiencing, reflecting, conceptualizing and applying information.

In exploring strategies for enhancing large-scale teaching, insights from recent literature offer valuable context. Bryant (2023) emphasises the need for connected learning environments to address social isolation in large cohorts. Huber *et al.* (2022) discuss the transformative potential of connected learning in large classes, while Mantai and Huber (2021) highlight the shift in the educator's role from a directive role to a facilitative one in large-scale settings. These perspectives underscore the importance of adopting innovative, student-centric approaches, enhancing connectedness and engagement in large-scale education.

Personalised learning pathways

Artificial intelligence (AI)-driven platforms can facilitate personalised learning pathways, which is effective in large-scale lectures (Al-Badi *et al.*, 2022). These platforms can provide resources, quizzes and collaborative projects tailored to individual student performance. This

approach may help educators meet student's learning needs, regardless of class size, and has been linked to improved adaptability and problem-solving skills (Ferguson and Aitken, 2019). Adaptive learning systems represent a form of these pathways, adjusting the content and pace of instruction according to individual student performance (Kulik and Fletcher, 2016).

Hands-on market simulations

In business education, hands-on market simulations are valuable tools for teaching large classes (e.g. Gundala and Singh, 2016). Students can form teams, conceptualise products, strategise marketing and immerse themselves in a simulated market environment. Despite the scale of the classes, this approach can provide students with practical insights into business dynamics, helping them better prepare to be job-ready upon graduation (Chernikova *et al.*, 2020; Stephen *et al.*, 2002). In a hybrid or flipped classroom, case studies can supplement this type of simulation and allow students to analyse real-world business scenarios and develop problem-solving skills which they could bring to the simulation exercise in the classroom (Herreid and Schiller, 2013).

Peer networking events

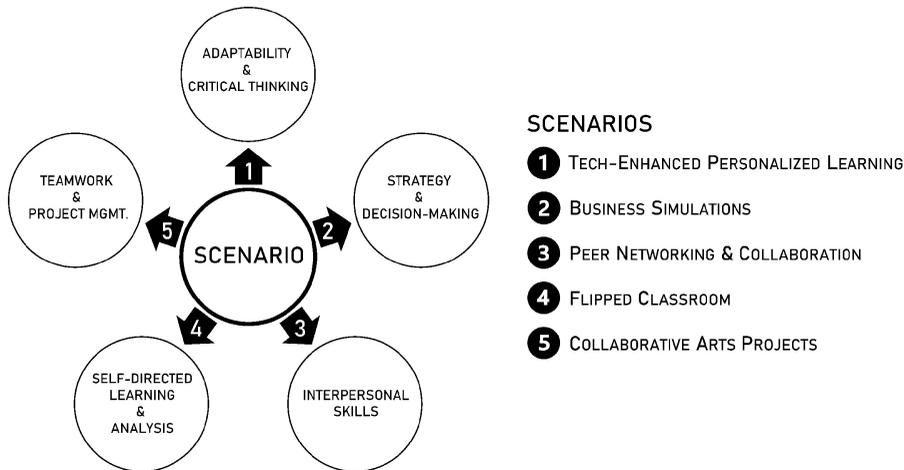
Educators can capitalise on diverse student populations and incorporate peer networking events into their curriculum (Whillans *et al.*, 2018). These events can simulate professional networking scenarios, enabling students to collaborate, share experiences and build peer connections. Teaching students how to network in a business environment involves helping them develop skills and strategies to build professional relationships. One approach is introducing the concept of personal learning networks (PLNs), which are connections made with other professionals, individuals or organizations that can inspire new ideas, provide resources and support professional growth (Rajagopal *et al.*, 2012). Organising networking events, both in-person and virtual, can give the students opportunities to practice their networking skills in a structured and engaging environment. Another approach to peer networking events is the implementation of mentorship programs, which pair students with experienced professionals or alumni to provide guidance and support (Eby *et al.*, 2008). Mentorship programs have been shown to enhance student outcomes, particularly in large-scale educational settings (Allen *et al.*, 2004).

Large-scale collaborative projects

Large-scale collaborative projects can mimic the industry's collaborative nature (Lim *et al.*, 2020). Such collaborative learning environments provide students with technical skills and expose them to the dynamics of team-based work, akin to what they would experience in professional settings (Laal and Ghodsi, 2012). Being part of a large team and having the ability to collaborate with a diverse group of people provides students with tangible skills that will translate to many business environments. Hackathons serve as such collaborative endeavours, allowing students from different disciplines to address real-world challenges and craft innovative solutions (Nandi and Mandernach, 2016). Figure 2 presents an overview of large-scale teaching scenarios with the skills emphasised.

While presenting challenges, large-scale teaching provides a unique avenue to equip students with a holistic skill set. By embracing diversity, leveraging technology, fostering peer networks, adopting innovative pedagogies, simulating real-world scenarios, sharing resources and nurturing resilience and adaptability, institutions can prepare graduates for success in the dynamic job market. Figure 3 presents an itemised overview of the inherent challenges and opportunities of large-scale teaching.

LARGE-SCALE TEACHING SCENARIOS & SKILLS HONED



SCENARIOS

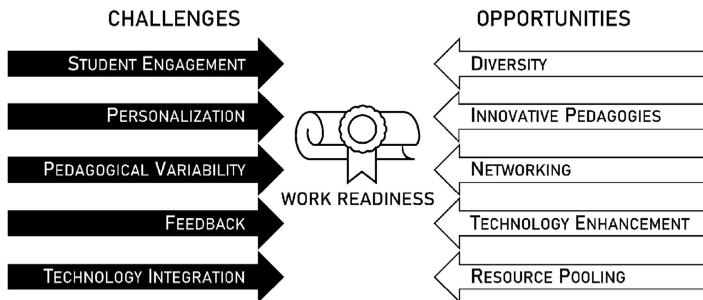
- 1 TECH-ENHANCED PERSONALIZED LEARNING
- 2 BUSINESS SIMULATIONS
- 3 PEER NETWORKING & COLLABORATION
- 4 FLIPPED CLASSROOM
- 5 COLLABORATIVE ARTS PROJECTS

Note(s): While each scenario highlights specific skills, All experiential teaching scenarios contribute to a comprehensive skill set

Source(s): Authors' own work

Figure 2.
Overview of large-scale
teaching scenarios for
work readiness

LARGE-SCALE TEACHING: CHALLENGES & OPPORTUNITIES



Source(s): Authors' own work

Figure 3.
Challenges and
opportunities of large-
scale teaching

Bridging academia and industry for enhanced work readiness

Feedback loop: fostering industry-academia collaboration

The rapidly evolving professional landscape and technological progress necessitate real-time adaptation in education. Establishing a robust feedback loop with industry partners is crucial for harmonising educational offerings with the dynamic job market demands. This ongoing dialogue ensures students acquire skills and knowledge aligned with current industry needs, enhancing their employability. Embedding collaborative projects co-designed by academia and industry immerses students in real-world challenges, enriching their learning with the latest industry scenarios, tools and methodologies.

Inviting industry professionals and alumni to share insights through guest lectures and workshops informed by this feedback loop, addresses specific industry trends and challenges

and provides students with valuable perspectives and role modelling. The feedback loop also influences tailored internship and placement programs, effectively preparing students for real-world experiences. This feedback loop remains instrumental post-graduation, with institutions offering continuous professional development to keep alumni at the forefront of their fields. Strategic insights from industry advisory boards and alumni networks further refine educational programs to prepare students consistently for the job market.

Skills gap analysis: addressing discrepancies in large-scale teaching

The transition from academia to the professional sphere often reveals a misalignment between students' skills and employer expectations, a challenge exacerbated in large-scale teaching contexts. Such classes can inadvertently create disparities between the skills students acquire and job market demands, particularly in developing essential soft skills like critical thinking, teamwork and communication. Despite imparting technical or domain-specific knowledge, the lecture-centric nature of large classes may limit practical applications. Institutions must adopt multichannel strategies to bridge this skills gap, including collaborations with industry partners, integrating real-world projects into the curriculum, leveraging technology for personalised learning and cultivating environments prioritising soft skills development. Successfully aligning educational methods with employer expectations in this dynamic landscape is an ongoing imperative to ensure that the classroom meets the workforce's evolving demands.

Discussion

Evolving skills in the job market

Our research underscores the increasing importance of soft skills, adaptability, growth mindset, technical skills and domain-specific knowledge. This paper presents a work readiness hierarchy, ascending from subject-matter knowledge and applied skills to professional skills, enterprising attributes and behaviours and soft skills. A key finding is the crucial role of transversal skills that enhance versatility, resilience and productivity across various functional areas and in collaborative settings.

The rise of large-scale teaching

As post-secondary institutions face the realities of rising costs and tighter budgets, large-scale teaching is poised to become more prevalent. In this landscape, small-scale, individualised teaching may emerge as a unique selling proposition (USP) for certain institutions, distinguishing them from their peers. Despite these challenges, institutions must strive to maintain and improve graduate employability, meeting evolving employer expectations while innovating pedagogical approaches within large-scale teaching frameworks.

In the "rise of large-scale teaching" context, the insights from [Bryant \(2023\)](#), [Huber et al. \(2022\)](#) and [Mantai and Huber \(2021\)](#) not only highlight the challenges of large-scale teaching but also illuminate pathways for innovation and improvement. The emphasis on mitigating social isolation resonates with the necessity of fostering an inclusive and connected learning environment, a challenge that is often amplified in large-scale settings. This perspective aligns with our findings that large classes can inadvertently create barriers to student engagement and personalisation, aspects crucial for developing work-ready graduates.

The discussion on the transformative potential of connected learning ([Huber et al., 2022](#)) addresses the importance of integrating technology and pedagogical innovation in large classes. However, while technology can address some aspects of personalised learning, it also brings the challenge of maintaining the human element in education. This balancing act

between technology and personal touch in teaching is critical for maintaining the quality and effectiveness of education for work readiness.

Lastly, the shift in the educator's role from directive to facilitative, as highlighted by [Mantai and Huber \(2021\)](#), underscores a paradigm shift in large-scale teaching. It suggests a move towards more collaborative and student-centred approaches, which aligns with our recommendation for experiential and problem-based learning methods. These insights underscore the need to re-evaluate large-scale teaching with a more holistic, inclusive and adaptive approach to education, aligning with evolving student expectations and the labour market.

Enhancing learning through experiential techniques

We advocate for experiential learning techniques to offset the disadvantages of large-scale teaching; these techniques, including project-based group work, facilitate knowledge application and critical thinking and foster soft skills such as communication, teamwork and emotional intelligence. Simple yet effective strategies to bridge the gap between academia and the real world include increasing industry presence on campus and facilitating student-industry interactions off-campus.

The significance of co-creation in education

It is essential to acknowledge the role of formal and informal co-creation in learning outcomes ([Bovill, 2020](#)). Beyond structured educational activities, students' engagement in sense-making activities post-lectures, such as revising notes or participating in study groups, constitutes a significant part of the learning process. Institutions should encourage and support these activities, recognising their value in deepening understanding and enhancing communication skills.

Aligning student attitudes with career objectives

Student attitudes towards their education and the working world are pivotal. Many students enter programs with unclear career goals, often underestimating the importance of professional skills compared to technical knowledge ([Byrne et al., 2020](#)). Therefore, educational systems must embed work-readiness skills within academic curricula, nurturing the right mindset for successful job market integration.

In large-scale teaching settings, the challenge lies in sustaining individualised attention and personal investment in learning, which is vital for shaping positive career and world views. The scale of teaching can limit opportunities for personalized engagement, impacting students' preparedness and confidence. Educational institutions should, therefore, integrate real-world scenarios into the curriculum and facilitate student-industry interactions, enabling students to align their academic experiences with career aspirations.

Moreover, large classes expose students to diverse perspectives, preparing them for the global workforce. However, this necessitates curricular designs that effectively integrate these perspectives into a comprehensive professional outlook. Consequently, large-scale teaching plays a critical role in imparting technical knowledge and shaping students' broader attitudes towards their future professional and societal roles.

Feedback loops and future directions in education

Experiential learning theory underpins the feedback loops between academia and industry, emphasising learning through experiences, reflection and application. This approach is instrumental in addressing skill gaps and aligning theoretical knowledge with practical application. Future research should focus on strategies to boost student engagement and

co-creation in large-scale teaching and investigate the long-term impacts of these methods on career success and fulfillment.

Broader implications on workforce readiness

In discussing the evolving skills in the job market, it is crucial to consider workforce readiness challenges from organisational and individual perspectives. Organisations today confront a significant readiness gap, with Deloitte revealing that only 8% feel adequately prepared for workforce strategies despite 71% acknowledging their importance (Deloitte, 2020). The Institute for Corporate Productivity echoes this, noting that merely 30% of organizations believe their workforce has the necessary skills for future strategic advancement, with a lack of clear definition of workforce readiness being a primary barrier (Institute for Corporate Productivity, 2021).

On the individual level, there is a noticeable disconnect between graduates' perceptions of their preparedness and actual workforce demands. The McGraw-Hill Future Workforce Survey (2018) highlights that only 41% of U.S. college students feel well-prepared for their future careers. This sentiment is further echoed in the Mary Christie Institute survey, where nearly 40% of recent graduates felt inadequately prepared for the emotional or behavioural aspects of transitioning to the workplace (Mary Christie Institute, 2023). Moreover, the Go1 survey underscores that nearly half of the workers believe that their higher education did not adequately prepare them for their current jobs (Wire Business, 2023).

These findings underscore the importance of a balanced approach in large-scale teaching that addresses both the organisational needs and the individual perceptions of work readiness. It is imperative to align educational outcomes with industry needs while considering graduates' readiness and perceptions. The convergence of organisational and individual readiness perspectives is a critical indicator of the effectiveness of current educational strategies. It highlights areas for potential enhancement and innovation in large-scale teaching.

Conclusions

Our research into large-scale teaching reveals its dual nature: presenting significant challenges, particularly in sustaining student engagement and personalisation, while offering unique opportunities to develop a holistic skill set in students. To navigate these complexities, we propose experiential learning techniques to augment the core delivery of material, such as personalised learning pathways, hands-on market simulations, peer networking events and collaborative projects. These approaches enhance adaptability and problem-solving skills and foster soft skills.

Creating continuous feedback loops between academia and industry ensures that educational outcomes align with evolving industry needs. This process necessitates an ongoing curriculum review, active industry engagement and the effective use of technological advancements. Our study underscores the importance of a balanced approach in large-scale teaching that harmonises scalability with personalised learning, ensuring that students emerge as well-rounded professionals with technical prowess and essential soft skills.

As we look to the future, it becomes evident that strategic approaches in large-scale teaching are vital to preparing graduates for a dynamic job market. This approach involves imparting knowledge and instilling the right mindset and attitudes essential for successful integration into the professional world. Potential areas for further research include exploring innovative strategies to enhance student engagement and investigating the long-term impacts of these teaching methods on career success and fulfillment. In conclusion, the journey towards effective large-scale teaching is a collaborative and evolving process.

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Corresponding author

Rickard Enstroem can be contacted at: enstroemr@macewan.ca