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Knowledge Obsolescence and Under-Enrolment: Implications for Higher Education Policy and Sustainability

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Abstract

The rapid pace of technological advancement and shifting labour market demands have intensified concerns about knowledge obsolescence in higher education, posing significant challenges to university enrolment and sustainability. This concept paper explored the relationship between outdated curricula, faculty knowledge obsolescence, and declining enrolment trends, particularly in the context of rising tuition costs and the growing preference for alternative educational pathways such as online courses, micro-credentials, and skills-based certifications. Drawing on data from North America and Europe, the study highlighted a decline in traditional undergraduate enrolment, contrasted with a surge in international and online student enrolment. The paper argued that the disconnect between academic content and industry needs has led to student disengagement and skepticism about the value of traditional degrees. Institutional responses, including curriculum reform, technological integration, and lifelong learning initiatives, were examined as potential solutions to mitigate these challenges. Policy recommendations provided directional guidelines that align educational offerings with market requirements, fostering industry-academia collaborations, and addressing demographic shifts to sustain enrolment. The study concluded that proactive adaptation to knowledge renewal and evolving student preferences are essential for higher education institutions to achieve sustainability and remain competitive in an evolving global landscape. Future research was recommended to explore the correlation between faculty knowledge obsolescence and enrolment trends, using quantitative models to inform strategic interventions.

Keywords: knowledge obsolescence, higher education enrolment, curriculum reform, lifelong learning, technological integration, policy implications.

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6 INTRODUCTION

The relationship between knowledge obsolescence in higher education and its impact on university enrolment has emerged as a critical area of study in an era characterized by rapid technological advancement and shifting job market demands. Knowledge obsolescence refers to the decline in relevance and applicability of skills and information acquired during formal education, necessitating continuous updates to curricula and teaching methods to meet the evolving needs of students, emerging entrepreneurs, and employers (Bilimoria & Kim, 2020). As the landscape of available knowledge changes, prospective students increasingly prioritize vocational training and certification programs over traditional degree pathways, prompting universities to reassess their educational offerings to maintain relevance and competitiveness.

This phenomenon has significant implications for university enrolment rates. Research indicates (Dempsey & Smith, 2019) that many students perceive a disconnect between what is taught in universities and the practical skills sought by employers, contributing to declining enrolment figures in traditional higher education institutions This perception of outdated academic content can lead to student disengagement and diminished interest in pursuing a degree.

The urgency for universities to adopt real-time content updates and innovative educational strategies has intensified, with many educators advocating for the incorporation of lifelong learning as a central component of academic programs (Gallagher & Robinson, 2020). Prominent controversies surrounding this topic include the debate over the value of traditional degrees versus alternative educational pathways, such as online courses and skill-based certifications, as well as the role of universities in preparing graduates for an increasingly dynamic workforce. Critics argue that without a proactive approach to addressing knowledge obsolescence, higher education institutions risk losing their status as primary sources of knowledge and skill development, which could have long-lasting repercussions for both student outcomes and institutional viability.

Ultimately, understanding the relationship between knowledge obsolescence and university enrolment is essential for educational institutions striving to adapt to contemporary challenges. By embracing innovative approaches and ensuring their curricula remain aligned with industry demands, universities can enhance student engagement, improve employability and entrepreneurial outcomes, and sustain enrolment in an increasingly competitive educational landscape.

6.1 Knowledge Obsolescence in Higher Education

The phenomenon of knowledge obsolescence has become increasingly significant in higher education, impacting both the curriculum and the value of a college degree. As technology evolves at a rapid pace, many educational materials, including textbooks and course content, often lag behind current knowledge and practices. This issue is further exacerbated by societal shifts and the changes in industry demands (Bilimora & Kim, 2020). This disconnect leaves students feeling disengaged and frustrated with a consequential impact on learning experiences. (Siphiwe, 2024).

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6.2 Enrolment and Higher Education Policy

Using the definition of knowledge obsolescence advanced by Bilimoria & Kim, 2020; a linear model was developed to establish linkages between enrolment, knowledge obsolescence, higher education current responses, and the development of policies that may address the issues in the linear relationship. Figure 1 shows the relationship between enrolment and higher education policy.

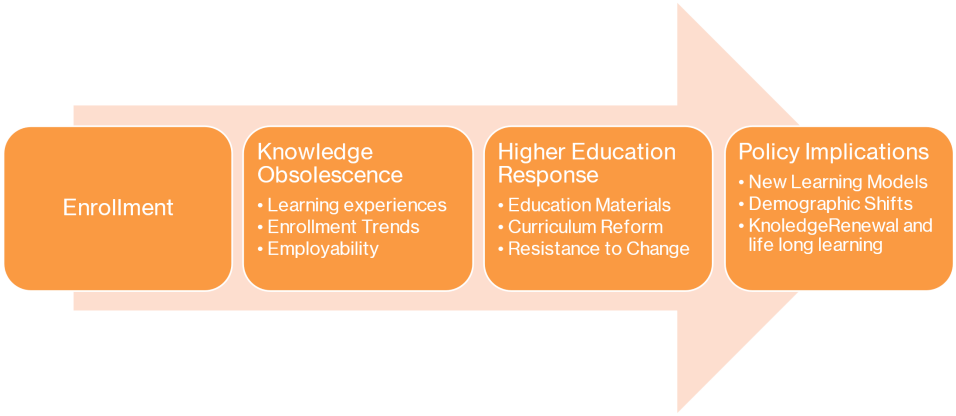

Figure 1: Linear model - Enrolment and higher education policy

6.3 Impact on Learning Experiences

Outdated educational materials can profoundly affect students' learning experiences. When learners encounter content that does not align with their lived experiences or current societal contexts, learners may struggle to connect with the material. This disconnect often leads to apathy and disinterest in the subject matter, hindering students' ability to engage fully and grasp essential concepts. Moreover, the reliance on obsolete knowledge can create confusion, leading to misconceptions that impede a deeper understanding of critical subjects (Siphiwe, 2024)

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6.4 Shift in Higher Education Paradigms

The shift towards skills-based hiring and the increased demand for competency credentialing have intensified the scrutiny of higher education's relevance. Students and parents are questioning the value of a college degree in employment that increasingly favors practical skills over traditional academic qualifications. The rising tuition costs coupled with the challenges posed by outdated curricula have spurred a reevaluation of the university's role and mission in the modern economy (Anderson, 2024; Dickinson, 2024).

As noted by Hal Varian, chief economist at Google, there is a pressing need for universities to focus more on "how to learn" rather than merely imparting knowledge,

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highlighting the importance of adaptability in education to prepare students for a rapidly evolving job market (Anderson, 2024). While the paradigm of "how to learn" might be the directional way forward the rapid pace of technology has inherently brought its challenges to the learning spaces.

6.5 Technological Advancements and Their Challenges

Advancements in technology have offered new possibilities for educational institutions, allowing professors to create and disseminate their course materials more efficiently. However, these developments also present challenges, as universities must navigate the balance between adopting new technologies and ensuring that the content remains relevant and effective ("The State of Higher Ed," 2025)

There is little doubt that technological change has altered instructional delivery. Over the years this change has transitioned from chemical to electronic processes, industrial to a new knowledge age, manual to automated labour, analog to digital, and artificial intelligence to deep learning systems. As the technological revolution accelerates at high speeds, university faculty will have to make related adjustments to instructional delivery format, new ways of student engagement, and educational measurements.

The shift to online learning platforms during the pandemic further underscored the inadequacy of traditional learning environments, prompting institutions to demonstrate their value to in-person students and adapt to modern educational demands (Dickinson, 2024). The fundamental issue is not about the inevitability of change but rather the pace of change and the agility of higher education institutions to respond to these changes. Any shortcomings in response times by institutions may impact university enrolment.

6.6 Impact on University Enrolment

Is there a relationship between knowledge obsolescence and university enrolment? If there is, perhaps an examination of demographic and technology shifts, economic pressures, and evolving student expectations that shape the higher education landscape may provide some indicators. Recent trends (Chaudhry, 2024) indicate a complex interplay of challenges and opportunities that significantly affect enrolment figures across institutions.

Following disruptions caused by the pandemic, undergraduate enrolment at U.S. universities showed a modest increase of 1.2% in recent years, with a notable preference for four-year degree programs, where 45.1% of students are now enrolled (Blankenship & Blankenship, 2024; Chaudhry, 2024). This growth is also reflected in the rising numbers of dual-enrolled high school students, which increased by 10% for the third consecutive year, highlighting a strong interest in gaining early college experience.

The trend of returning to education is further illustrated by a 6.3% increase in freshman enrolment among students aged 21 and older, while a lower (5.3%) for a younger demographic. The higher number of relatively older students suggests that many adults are pursuing further education to reskill or shift careers (Guerra, 2024). The fundamental issue remains; are these reskilling and career shifts a function of the changing work landscape and whether or not the reskilling competency programmes at universities rising to meet these challenges?

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6.7 New and Emerging Enrolment Choices

Despite these indicators, the overall landscape is marked by a decline in traditional undergraduate enrolments, with first-time freshman numbers dropping approximately 5% in the 2023-2024 academic year. Public and private nonprofit institutions have reported even steeper declines of 8.5% and 6.5%, respectively, particularly in regions like the US Midwest (*The State of Higher Ed: Enrolment Research Insights, Projections, and Winning Strategies*, 2025)

These changes can be attributed to several factors, including reduced high school graduation rates and a growing skepticism about the value of traditional degree programs amidst rising educational costs (Chaudhry, 2024). The traditional value proposition of a university degree is shifting, as employers increasingly prioritize demonstrated competencies over academic credentials.

While a degree traditionally signaled a commitment to learning and a foundation of knowledge, the accelerated pace of technological change and the changing demands from industry and employers have necessitated a re-evaluation of its significance. Employers are increasingly seeking candidates with specific, in-demand skills such as critical thinking, problem-solving, digital literacy, and adaptability (World Economic Forum, 2020). These skills, often acquired through practical experience, online courses, and certifications, can be more valuable in the modern workplace than a generic degree.

This shift has led to a growing emphasis on competency-based hiring, where employers focus on assessing an individual's skills and abilities through assessments, portfolios, and work samples, rather than solely relying on academic transcripts. This approach recognizes that individuals can acquire valuable skills through various pathways, including self-directed learning, online courses, apprenticeships, and on-the-job training. The question remains – Does the traditional academic dispensation cater to these emerging trends and is this a manifestation of declining enrolment rates?

However, it is crucial to acknowledge that a traditional degree still offers valuable benefits. It provides a structured learning environment, fosters critical thinking and research skills, and cultivates a broader understanding of complex issues. Furthermore, a degree can serve as a valuable credential in certain fields and can enhance an individual's earning potential over the long term (OECD, 2021). The key lies in finding a balance between traditional academic learning and the development of in-demand skills, ensuring that higher education prepares graduates for the realities of the modern workforce while maintaining its commitment to intellectual growth and critical inquiry.

6.8 International and Online Student Enrolment

Key factors have impacted global student enrolment; these include issues of knowledge renewal and obsolescence, the student perceptions of lack of relevance and skill-based learning in universities, the demand for new learning experiences, and the technological advancements in emerging learning spaces.

In the United States, university enrolment declined by 14.4% from 2010 to 2021. The sharpest drop being during the COVID-19 pandemic (NSCRC, 2021). In Canada, enrolment grew by 25% but this increase is largely due to a fairly liberal international student admissions policy. Excluding international student admissions, national student admissions have been relatively flat and expected to decline in the foreseeable future.

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Recent shifts in US and Canadian immigration policies have had a significant impact on international student enrolment. In the US, stricter visa regulations and a more restrictive immigration climate have reduced international students from enrolling in higher education institutions in North America. The Institute of International Education (2023) reported a decline in international student enrolment in the US from 2019 to 2020, marking the first decline in over a decade. This decline has been attributed to increased visa application fees, stricter visa interview processes, and a perceived hostile environment for international students (IIE, 2023).

Similarly, recent policy changes in Canada, such as stricter eligibility criteria for study permits and increased scrutiny of international student applications, have also impacted enrolment numbers. While Canada continues to attract many international students, data from Immigration, Refugees and Citizenship Canada (2024) indicates an increase in visa processing times and a higher rejection rate for certain categories of student applications.

These policy changes have created uncertainty and increased processing times for visa applications, potentially discouraging some prospective students from applying (IRCC, 2024). These policy shifts not only affect individual students but also have broader implications for the economic and social fabric of both countries, impacting university revenues, cultural exchange, and the global competitiveness of their higher education systems. Similar enrolment declines in Italy by over 20% (OECD, 2021) have been reported with reasons reflecting demographic and economic challenges. Table 1 below shows university enrolment in the US, Canada, Germany, and Italy. There were declines in the US and Italy, almost flat growth in Canada, and moderate growth in Germany.

Table 1 University Enrolment Trends 2010-2021

Year	U.S.[1] Enrolment (Millions)	Canada[2] Enrolment (Millions)	Germany[3] Enrolment (Millions)	Italy[4] Enrolment (Millions)
2010	18.1	1.2	2.5	2.0
2011	18.0	1.2	2.6	1.9
2012	17.9	1.3	2.6	1.9
2013	17.8	1.3	2.7	1.8
2014	17.7	1.3	2.7	1.8
2015	17.5	1.3	2.7	1.8
2016	17.3	1.4	2.8	1.7
2017	17.1	1.4	2.8	1.7
2018	16.9	1.4	2.9	1.7
2019	16.6	1.4	2.9	1.7
2020	16.0	1.4	3.0	1.6
2021	15.5	1.5	3.0	1.6

Note: [1]NSCRC, 2021
[2]ICEF Monitor, 2021
[3]DAAD, 2021
[4]OECD, 2021

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Additionally, the acceptance of online learning formats has become widespread, with enrolment rates for online courses among undergraduates (54.4%) and graduate students (53.5%) reflecting a growing preference for digital education options (Blankenship & Blankenship, 2024). This shift highlights a significant adaptation to the evolving educational landscape, as institutions strive to accommodate diverse student needs and preferences.

6.9 Implications of Knowledge Obsolescence

The ongoing demand for advanced degrees and professional development underscores the importance of higher education in a competitive job market (Blankenship & Blankenship, 2024). However, the decline in traditional enrolment raises concerns about higher education institutions' sustainability, prompting these institutions to adapt their offerings in response to job market demands, particularly in high-growth fields such as computer science and health sciences. Institutions are encouraged to streamline their enrolment processes and diversify their recruitment strategies to align with these trends, aiming to optimize the overall student experience and grow enrolment figures (Guerra, 2024).

Knowledge obsolescence may pose a significant threat to higher education enrolment. As the pace of technological advancement accelerates, the knowledge and skills acquired during a traditional degree program can quickly become outdated, leaving graduates ill-prepared for the demands of the modern workforce (Bilimoria & Kim, 2020). This can lead to a perception among prospective students that a university education is no longer a valuable investment, as they may question the relevance of the knowledge and skills they are acquiring. A study by Dempsey and Smith (2019) found that many students perceive a disconnect between the skills they acquire in higher education and the skills employers seek. This can lead to a decline in student interest in pursuing traditional degree programs.

Furthermore, the increasing availability of other learning pathways, such as online courses, micro-credentials, and industry certifications, provides students with more options for acquiring in-demand skills. These alternative pathways can be more appealing to some students than traditional degree programs, as they offer greater flexibility, faster completion times, and a more direct path to employment. This shift in student preferences can significantly impact university enrolment, as students may opt for these alternative pathways instead of pursuing a traditional degree.

The consequences of knowledge obsolescence for university enrolment can be significant. Declining enrolment rates can lead to reduced tuition revenue, budget cuts, and program closures. Moreover, it can damage the reputation of higher education institutions and erode public trust in their ability to provide students with the necessary skills and knowledge to succeed in the 21st-century workforce. To address these challenges, universities must proactively adapt their curricula, teaching methods, and educational offerings to ensure that they remain relevant and responsive to the evolving needs of students and the job market. How have higher education institutions responded to these paradigm shifts in this new and emerging educational landscape?

7 INSTITUTIONAL RESPONSES TO KNOWLEDGE OBSOLESCENCE

7.1 Importance of Updating Educational Materials

Educational institutions face the challenge of knowledge obsolescence, which significantly impacts their curricula and the relevance of their educational materials.

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Updating these resources is crucial for ensuring that students receive high-quality, relevant information that reflects current standards and practices in their respective fields (McNaughton, 2024). The traditional textbook as a major reference point for knowledge may be irrelevant given the time to publication. The half-life of knowledge is approximately three years and may even be shorter in some fields of study e.g., digital technology, machine learning, and artificial intelligence. Regular evaluation and a systematic approach to revising educational materials can help institutions remain competitive and effective in their teaching methods. This process often includes just-in-time content, establishing schedules for periodic reviews, setting evaluation criteria, and soliciting feedback from various stakeholders, including students, faculty, and industry experts.

7.2 Identifying and Addressing Outdated Resources

One of the first steps in responding to knowledge obsolescence is the identification of outdated educational materials. This can be achieved through a critical examination of course content for inaccuracies and obsolete references. Further, perspectives that no longer align with contemporary knowledge and societal norms can be reexamined for relevance and pragmatism. Collaboration among faculty, regular curriculum assessments, and engagement with feedback from students and industry-specific professionals can provide insights into which materials require updating. (*The Case for Curriculum: A Nation at Risk +40*, n.d.).

Once outdated resources are identified, institutions can implement strategies for revision. These may include sourcing newer editions of textbooks or real-time digital content, integrating multimedia resources, and prioritizing diverse and inclusive content selections. Such efforts ensure that learning experiences are both relevant and engaging, better preparing students for success in a rapidly evolving world (*Obsolescence of Higher Education - Review of Economics and Finance*, 2023).

7.3 Curriculum Alignment and Employability

Curriculum reform is a key strategy that institutions can adopt to combat knowledge obsolescence. The curriculum reform agenda must be time-sensitive, industry-relevant, and promote employability and entrepreneurship. While broad consultations are necessary, reforms must not yield an output after prolonged deliberations. Knowledge has become time-sensitive and its relevance is related to the renewal rate. Curriculum reform at best, in this context, must be done in real-time if employers and budding entrepreneurs are to derive the benefits from a reformed curriculum.

How can curriculum reform be aligned with employment and entrepreneurship? The global employment disruption (job creation and elimination) forecast for 2025 to 2030 is estimated at 22% of total jobs. The Future of Jobs Report 2025, indicated new job equivalents are expected to be 14% of the total employment (approximately 170 million jobs) while job displacement/elimination is estimated at eight percent (approximately 78 million jobs). Curriculum reform deliberations must include the issues of both job elimination and addition. Content and competencies related to job addition must be added while those associated with job elimination must be avoided. This measure will narrow the knowledge obsolescence and sustain relevance and enrolment. Some of the growth areas in frontline jobs include construction workers, care economy jobs, counseling professionals, and personal care aides. In technology, the World Economic Forum survey (The Future of Jobs Report 2025, 2025)

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suggest job growth in big data specialists, fintech engineers, AI and machine learning specialists, autonomous and electric vehicle specialists, and environmental and renewable energy engineers.

Similarly, jobs that are in decline or facing elimination are clerical and secretarial workers, cashiers, and ticket clerks. On the corporate front, businesses are expected to see huge declines in executive secretaries, postal service clerks, bank tellers, and data entry clerks.

In the 2025-2030 period, it is estimated that 39% of the existing workforce skill set will require upskilling or become obsolete ((The Future of Jobs Report 2025, 2025). The curriculum reform agenda must include a comprehensive assessment and competency gap analysis (see Fig 1) for each job addition with the outcome being a new data curriculum (DACUM) relevant to the industry projections.

A focus on high-quality instructional materials and effective training for educators can significantly improve the academic experience for students. Reform efforts should be comprehensive, addressing both the content delivered and the methods of instruction employed. As educational demands continue to evolve, institutions need to be adaptable and proactive in their approaches to curriculum design, allowing them to meet the needs of new and emerging student personas (Nguyen, 2021).

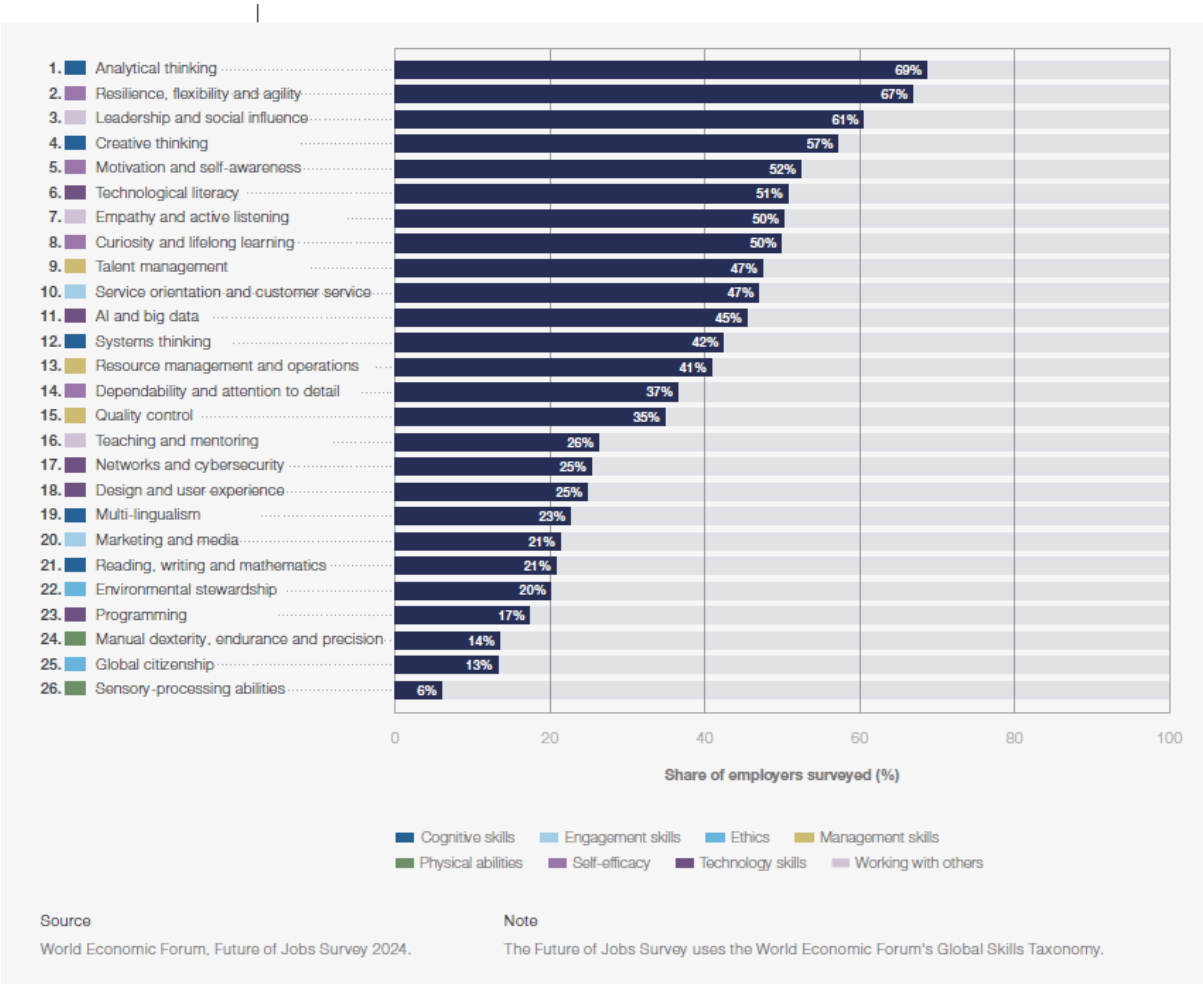

Figure 2: Core Skills in 2025

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7.4 Challenges and Perspectives on Change

Despite the recognized need for change, many higher education institutions struggle with inertia and resistance to reform. Factors such as the entrenched nature of traditional educational practices and the challenges of adapting to new pedagogical models hinder progress. Respondents in educational discussions have noted the slow pace of change in academia, indicating a disconnect between the evolving societal landscape and the curriculum offered (Anderson, 2024). Therefore, fostering an environment that encourages innovation and flexibility in curriculum design is essential for addressing knowledge obsolescence effectively (Integrating Discovery-Based Research into the Undergraduate Curriculum, 2015). By remaining vigilant and committed to continuous improvement, educational institutions can ensure that they equip students with the necessary tools and knowledge to thrive in an increasingly complex and dynamic world.

8 POLICY IMPLICATIONS

The landscape of higher education is rapidly changing, driven by changes in technology and shifting societal needs. As institutions become more agile to these changes, several policy implications for the future of university enrolment and knowledge renewal emerge.

8.1 Technological Integration and Student Engagement

The successful integration of technology in higher education requires a multi-polar approach that addresses pedagogical and infrastructural challenges. Policy implications must be agile to the development of a robust digital infrastructure, including reliable internet access, technology resources, and adequate technical support for faculty and students. Technology integration requires significant investment in technology infrastructure within institutions and ensuring greater access for all students, regardless of their socioeconomic or cultural background.

The integration of advanced technologies such as artificial intelligence, predictive analytics, and digital transformation is expected to enhance educational practices and student engagement in the coming years. In 2023, experts predicted a critical need for universities to shift their cybersecurity culture in response to persistent threats, suggesting that institutions must prioritize not only technological advancements but also the safeguarding of student and institutional data (14 Technology Predictions for Higher Education in 2023 – Campus Technology, 2023), (Adapting to Change: The Top Higher Education Trends for 2024, n.d.). This emphasis on secure and effective technology use may play a significant role in shaping student perceptions of higher education, potentially impacting enrolment numbers. Table 2 provides five specific policy guidelines for technology integration and student engagement. See Appendix I for policy details.

Table 12: Policy guidelines: technology integration and student engagement

No	Policy - technology integration and student engagement	Policy Focus

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1	Category: Bring Your Device (BYOD) Policy	Encourage student use of personal devices while providing institutional support.
2	Category: Digital Badges and Micro-credentials Policy	Recognize and reward the development of specific skills and competencies.
3	Category: Personalized Learning Pathways Policy	Focus: Customize learning experiences to individual student needs, pre-knowledge levels and learning styles
4	Category: Data-Driven Decision Making Policy	Focus: Utilize data to improve teaching and learning outcomes.
5	Category: Digital Equity and Inclusion Policy	Focus: Ensure equitable access to technology and digital resources for all students.

Furthermore, policies should encourage and support faculty development in the practical use of educational technology. This may involve providing training on various educational technologies, such as learning management systems, online collaboration tools, and data analytics platforms. Additionally, policies should incentivize the development and adoption of innovative teaching methods that leverage technology to enhance student engagement. Technology integration may include blended learning, online learning, and the use of interactive simulations and virtual reality. By creating a culture of intellectual growth and innovation, and supporting the continuous professional development of faculty, institutions can ensure that technology is effectively integrated into the teaching and learning process.

8.2 Enrolment and Evolving Learning Models

Institutions are increasingly focusing on improving online and hybrid learning models, which cater to a diverse array of learner needs. With the use of flexible educational options, universities can promote accessibility and inclusivity and attract non-traditional students and those who may have been deterred by rigid learning formats.

Apart from a frequent knowledge renewal policy, other factors such as student debt and high tuition can sub-optimize enrolment in higher education institutions. Policy initiatives that address the reduction in student financial burden, flexible admissions policy e.g., skills-based admissions, guaranteed job placement, and business incubation for entrepreneurs can boost enrolment statistics. Table 3 outlines policy initiatives for enhancing enrolment. See Appendix II for policy details.

Table 13: Policy guidelines: learning and enrolment

No	Policy – initiatives for enhanced enrolment	Policy Focus
1	Income-Share Agreements (ISAs) Policy	Reduce the financial burden of higher education and incentivize enrolment.

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2	Skills-Based Admissions Policy	Broaden access to higher education beyond traditional academic measures.
3	Guaranteed Job Placement Programs Policy	Increase student confidence and attract prospective students by offering employment guarantees.
4	Micro-Credentialing and Stackable Credentials Policy	Offer flexible and affordable pathways to higher education and enhance employability.
5	Personalized Enrolment Counseling Policy	Provide individualized guidance and support to prospective students.

The commitment to developing dynamic, learner-centric environments is essential in orienting students for the challenges of the next century, thereby potentially boosting enrolment in the long term (2024 Higher Education Trend Watch, n.d.).

8.3 Demographic Shifts and Market Demand

Sustaining growth in student enrolment requires proactive and adaptable policy interventions especially when significant demographic shifts in current and prospective student populations are observed. Some of the key demographic student trends include (a) Aging populations perhaps leading to a smaller pool of traditional university-age students; (b) Increased diversity requiring universities to adopt more inclusive marketing strategies and support services; and (c) Changing family dynamics in family structures and economic backgrounds.

The impact of these demographic shifts may influence students' demand and choice of both programme and institution. Mitigating and adequately responding to evolving market demands requires close collaboration with industry and employers. Policies should incentivize the development of programs in high-demand fields, such as STEM, healthcare, and technology while ensuring that graduates possess the entrepreneurial and essential skills and competencies employers value. Some specific policy guidelines to address the evolving demographic shifts and student market demands are outlined in Table 4 below.

Table 14: Policy guidelines for demographic shifts and student market demands

No	Policy – Demographic Shifting & Market Demands	Policy Focus
1	Higher Education Data Analytics Policy	Establish a centralized system for collecting and analyzing data related to student demographics, enrolment trends, program completion rates,

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		graduate outcomes, and labor market demands.
2	Access and Equity Grant Policy	Create need-based grants and scholarships specifically for underrepresented student populations (e.g., low-income students, students with disabilities).
3	Flexible Pathways to Degree Completion Policy	Expand online, hybrid, and blended learning knowledge products to offer greater options for students with work, family, or other commitments.
4	Industry-Academia Collaboration Policy	Establish formal partnerships with employers to identify skills gaps and develop programs that meet industry needs.

As institutions adapt to demographic shifts and declining traditional undergraduate enrolments, higher learning institutions are encouraged to expand offerings in high-demand areas. By aligning educational programs with industry and employer needs, universities can become more attractive to prospective students, ensuring that enrolment remains robust in an increasingly competitive landscape.

8.4 Knowledge Renewal and Lifelong Learning

The notion of lifelong learning is becoming more prevalent, with institutions recognizing the importance of catering to adult learners seeking to upskill or transition into new careers. Lifelong learning not only addresses the knowledge gaps that may exist among students, but life-long learning also caters to faculty knowledge renewal. By offering more programs aimed at continuous education, and self-directed knowledge renewal for faculty, universities can attract a broader demographic, thereby mitigating the impact of declining traditional enrolment figures. This shift not only addresses knowledge obsolescence but also promotes a culture of continuous personal and professional development among faculty and graduates. Table 5 highlights some specific policy guidelines for knowledge renewal and lifelong learning.

Table 15: Policy guidelines for knowledge renewal and life-long learning.

No	Knowledge Renewal and Lifelong Learning Policy	Policy Focus
1	Curriculum Renewal Fund Policy	Allocate dedicated funding for regular curriculum reviews and updates.
2	Industry-Academia Partnerships for Knowledge Exchange Policy	Develop industry-sponsored fellowships and internships for faculty to gain practical experience and stay abreast of industry developments.

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3	Micro-credentialing for Faculty Policy	Encourage continuous professional development and knowledge acquisition among faculty.
4	Centers for Innovation in Teaching and Learning Policy	Create dedicated centers to support faculty in adopting innovative teaching methods and integrating new technologies.

9 CONCLUSION AND FUTURE RESEARCH

This concept paper provided preliminary linkages between the factors affecting university enrolment. These factors included economic issues e.g., tuition, technology, skill acquisition, demographic shifts, and changing student personas. Several policy guidelines were suggested to address enrolment, technology integration, knowledge obsolescence, demographic shifts, and life-long learning.

Knowledge renewal and obsolescence among faculty were introduced as a possible factor impacting enrolment. Rising student perceptions about the relevance and value of investment in university education may have contributed to under-enrolment. Prospective students now demand a skills-based approach to higher education and question the observable disconnect between the content received and the skills required from employers (Dempsey and Smith (2019). Knowledge renewal and obsolescence with the slow pace of curriculum reform may have contributed to this dilemma.

Further research is required to establish the nature and strength of the correlations between faculty knowledge renewal and enrolment trends. A multivariable regression model with at least one independent variable being faculty knowledge renewal and the dependent variable being university enrolment might be a recommendation for developing quantitative models.

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Appendix 1: POLICY GUIDELINES FOR TECHNOLOGY INTEGRATION AND STUDENT ENGAGEMENT

Table 16: Policy guideline details for technology integration and student engagement

1. Category: Bring Your Device (BYOD) Policy
Focus: Encourage student use of personal devices while providing institutional support.
Policy Details
a. Mandate that all students have access to a reliable device (laptop, tablet) meeting minimum specifications. b. Offer financial assistance or device rental programs for students who cannot afford their own devices. c. Provide secure and reliable Wi-Fi access across campus. d. Implement robust cybersecurity measures to protect student data. e. Offer workshops and support services for students and faculty on BYOD best practices and troubleshooting.
2. Category: Digital Badges and Micro-credentials Policy
Focus: Recognize and reward the development of specific skills and competencies.
Policy Details
a. Establish a system for awarding digital badges and micro-credentials to students who demonstrate proficiency in specific skills (e.g., coding, data analysis, critical thinking). b. Allow students to accumulate digital badges and micro-credentials across different courses and institutions. c. Partner with employers to recognize and value these digital credentials in hiring and promotion decisions.
3. Category: Personalized Learning Pathways Policy
Focus: Tailor learning experiences to individual student needs and learning styles
Policy Details
a. Invest in learning management systems (LMS) that support personalized learning pathways, such as adaptive learning platforms and personalized learning plans. b. Encourage faculty to utilize a variety of teaching methods, including online learning modules, flipped classrooms, and project-based learning. c. Provide students with access to personalized learning resources, such as online tutoring, academic coaching, and study skills workshops.
4. Category: Data-Driven Decision Making Policy

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Focus: Utilize data to improve teaching and learning outcomes.

Policy Details
a. Collect and analyze student data (e.g., grades, attendance, engagement data) to identify areas for improvement in teaching and learning. b. Provide faculty with training and support in data analysis and interpretation. c. Use data to inform curricular decisions, resource allocation, and the development of targeted interventions for struggling students.

5. Category: Digital Equity and Inclusion Policy

Focus: Ensure equitable access to technology and digital resources for all students.

Policy Details
a. Provide dedicated support for students with disabilities to ensure they have the necessary assistive technologies and accommodations. b. Address the digital divide by providing low-cost internet access and computer labs for students with limited access to technology. **c.** Implement training programs to address digital literacy disparities among students and faculty.

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APPENDIX II: POLICY GUIDELINES FOR ENROLMENT

Table 17: Policy guideline details for enrolment

1. Category: Income-Share Agreements (ISAs) Policy
Focus: Reduce the financial burden of higher education and incentivize enrolment.
Policy Details
a. Offer ISAs as an alternative to traditional student loans. b. ISAs involve agreements where students pay a percentage of their future income for a set period after graduation. c. This reduces upfront costs for students and aligns repayment with future earning potential.
2. Category: Skills-Based Admissions Policy
Focus: Broaden access to higher education beyond traditional academic measures.
Policy Details
a. Implement holistic admissions processes that consider a wider range of factors beyond standardized test scores and GPA. b. Evaluate applicants based on demonstrated skills, such as creativity, problem-solving, leadership, and community engagement. c. Offer pathways to enrolment for students who may not have traditional academic backgrounds but possess valuable skills and experiences.
3. Category: Guaranteed Job Placement Programs Policy
Focus: Increase student confidence and attract prospective students by offering employment guarantees.
Policy Details
a. Establish programs that guarantee employment or internships for graduates within a specific timeframe. b. Partner with employers to develop career pathways and provide students with valuable industry connections. c. Offer intensive career services and support, including resume and cover letter writing workshops, interview preparation, and job placement assistance.

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4. Category: Micro-Credentialing and Stackable Credentials Policy

Focus: Offer flexible and affordable pathways to higher education and enhance employability

Policy Details

a. Develop a system of micro-credentials and stackable credentials that allow students to earn recognized qualifications for specific skills and knowledge.
b. Offer a range of micro-credentials that can be combined to form pathways towards a degree or a recognized professional qualification.
c. Make micro-credentials accessible and affordable to a wider range of students, including those who may not be able to pursue a full degree program.

5. Category: Personalized Enrolment Counselling Policy

Focus: Provide individualized guidance and support to prospective students

Policy Details

a. Implement personalized enrolment counseling services that match prospective students with the programs and institutions that best fit their individual needs and goals.
b. Utilize data analytics to identify and address the unique needs and preferences of prospective students.
c. Provide comprehensive information and support throughout the application and enrolment process.