Technology and Transformation: Redefining Higher Education for Generations Z and Alpha

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Abstract

This paper examines the transformative impact of technology on higher education in the post-pandemic era, with a focus on the learning needs of Generation Z and Generation Alpha as digital natives. The COVID-19 pandemic accelerated the adoption of online and blended learning, prompting institutions to rapidly integrate technologies such as learning management systems, collaboration platforms, video tools, gamification, digital libraries, and artificial intelligence (AI). Drawing on faculty experiences, institutional practices, and a targeted literature review, this study explores how these technologies reshape teaching, learning, and student engagement. Findings indicate that while technology enhances flexibility, accessibility, and personalization, it also introduces challenges related to faculty adaptation, student engagement, and mental health. The paper highlights the need for continuous faculty development, intentional integration of technology, and institutional support systems that address both pedagogical effectiveness and well-being. It concludes that a balanced approach—combining technological innovation with human-centered teaching—is essential to meeting the evolving needs of emerging student generations and sustaining effective higher education in a rapidly changing environment.

Keywords: Generation Alpha, Generation Z, strategies, technology

Introduction

This paper considers the effects on education of the changing demographics of our student body, which is largely made up of digital natives, bridging the gap between the digital native's student body and faculties made up of digital immigrants and digital natives, and the fast-moving integration of technology in our institutions.

Today's higher education students are predominantly members of Generation Z (born approximately 1995–2010), with Generation Alpha (born 2010 onward) soon entering universities in increasing numbers. These cohorts are widely characterized as digital natives, having grown immersed in technology, mobile devices, and constant connectivity. As a result, they exhibit distinct learning preferences, including a preference for interactive, technology-enabled, and experiential learning environments, as well as expectations for immediacy, personalization, and flexibility. At the same time, these generations face unique challenges, including shorter attention spans, increased reliance on digital tools, and rising concerns related to mental health and well-being. Understanding these generational characteristics is essential for rethinking how higher education institutions design learning experiences, integrate technology, and support both students and faculty in a rapidly evolving educational landscape.

It also describes the technology experience gap between materials and engage in virtual discussions at their convenience the digital native student body and faculty, who are from later generations including Gen X, and Baby Boomers. These faculty are referred to as digital immigrants, people who were born prior to the digital age and learned technology later in life. Finally, the paper explores how rapidly evolving technology and the changing student demographics of Generations Z and Alpha are reshaping the future of higher education.

Background

COVID-19 and the Need to Move Education Online

The COVID-19 pandemic disrupted every facet of society, and the field of education was certainly one that was significantly impacted. Colleges and universities worldwide have faced unprecedented challenges in delivering courses, leading to a change in basic assumptions in educational practices (Iglesias-Pradas et al., 2021; Raza, et al., 2021). The pandemic expedited the need for change in educational delivery and technology played an instrumental role in facilitating these transformations.

According to Iglesias-Pradas et al. (2021), COVID-19's impact on the delivery of college and post-college courses cannot be underestimated. With the closure of campuses and the necessity of physical distancing, traditional face-to-face instruction was effectively non-existent (Yusuf et al., 2022). Institutions quickly adopted remote learning methods. This sudden shift prompted a reassessment of existing educational models and the identification of areas in dire need of improvement. The pandemic underscored the importance of flexibility and accessibility in educational delivery. Online learning platforms and tools emerged as viable alternatives to traditional classrooms, enabling students to access course materials and engage in virtual

discussions at their convenience (Flynn-Wilson & Reynolds, 2020). As a result, educational institutions leveraged their existing online infrastructure and resources, so that students could continue their education uninterrupted, regardless of their physical location or personal circumstances.

The pandemic heightened the necessity to create engaging and interactive learning experiences online. As remote learning became the norm during that period, educators turned to technology-enabled solutions such as video conferencing, virtual labs, and multimedia content to replicate the benefits of face-to-face interactions (Malik et al., 2017). These innovative approaches have demonstrated the potential for technology to enhance student engagement, foster collaboration, and cater to diverse learning styles post pandemic whether in face-to-face classrooms, blended modalities, or online

Technology Played a Pivotal Role in Education During COVID-19

Traditionally, professors have updated their courses to reflect current trends, knowledge, and the student population. In recent years, learning science and interdisciplinary instructional methodologies along with the proliferation of online education have affected how courses are developed. Many institutions have a learning center, or instructional development team that is comprised of instructional designers, IT professionals, and subject matter experts. Institutions now know much more about how learning works, and there are more tools available to deliver education effectively in all delivery modes (Selingo, 2018)

Learning management systems have provided the traditional classrooms, enabling students to access course infrastructure for educational institutions to deliver content, facilitate assessments, and monitor student progress remotely Finally, technology has expanded access to educational (Iglesias-Pradas et al., 2021). These platforms have not only enabled seamless communication between students and instructors but also facilitated the integration of multimedia resources and interactive elements to enhance the learning experience.

Additionally, technology may potentially facilitate personalized learning experiences. Adaptive learning systems, data analytics, and AI algorithms may empower educators to tailor instruction to individual students' needs and track their progress more effectively. Going forward, by leveraging these tools, instructors can provide targeted feedback, identify areas for improvement, and optimize learning processes (Winstone & Boud, 2022).

How will this change in the coming years with AI? In the next 2-3 years, AI will have a major impact on higher education by enabling personalized learning experiences, where algorithms analyze student performance data to tailor coursework and learning materials to individual learning styles and paces, fostering a more effective and engaging educational journey (Chiu, 2024). Moreover, AI-driven advancements will transform academic research and knowledge discovery into higher education, automating data analysis and hypothesis generation, thereby accelerating scientific breakthroughs, and enabling students and faculty to focus on higher-level conceptual understanding and innovation. Finally, the integration of AI in higher education will significantly streamline administrative processes, from admissions and enrollment

to grading and feedback, freeing up valuable resources and time for educators and administrators to focus on student engagement and quality teaching (Hannan & Liu, 2023)

Finally, technology has expanded access to educational resources and opportunities beyond traditional colleges and universities. Massive Open Online Courses (MOOCs) and virtual conferences have gained traction, offering learners worldwide the chance to access high-quality education from renowned institutions and experts (Al-Rahmi et al., 2019). This broadly widened knowledge availability can bridge educational gaps between generations promoting the ideas of lifelong learning.

The Case at City University During COVID-19

As education institutions found themselves in an unprecedented time during the COVID-19 pandemic, we all scrambled to go virtual – remote – online to continue to deliver education. Some schools were in a better position than others to make the emergency transition. Institutions that were already offering online and blended education had the tools in place to make a rapid transition. Our own institution, City University, already had a robust online program offering degrees in several disciplines with delivery modes including traditional classroom, strictly online, and blended classes. Additionally, the university had forged many partnerships with schools in other countries; we had a mix of faculty with varied education; we had some faculty and administrators who were used to working remotely; we had a learning management system with a well-developed set of online courses. And we went virtual offering what had been traditional classroom courses via video conferencing, while we also continued with the fully online program.

It might seem like we were well prepared to make the transition seamlessly. We were well prepared, but as faculty, we started to encounter unexpected student behaviors, managing virtual classrooms when we could not see what the COVID-19 pandemic, with particular attention to the needs of students were doing, and adapting online and in-class teaching materials to deliver video-synchronously. For example, one faculty member shared that while she was teaching online, a student appeared to be smoking drugs on camera; another faculty member shared that she held a virtual meeting with a student who showed up on camera wearing a towel and shower cap, and several faculty members encountered students lying in bed while attending virtual classes. Assumptions that students would behave in the same professional manner expected in the physical classroom when they attended virtually proved not to be the case. Faculty found it unnerving to be talking to groups of students that they couldn't see when they shared their screens or because students refused to turn on their cameras, and faculty who previously taught on campus felt unfamiliar and uncomfortable with the online delivery mode. These unexpected challenges led to a series of faculty roundups that some of us affectionately referred to as "a support group for pandemic faculty."

We helped each other cope, and we coped the best we could, and it turned out well considering the momentous situation. Now the pandemic has subsided, and technology has continued to innovate at a rapid pace, leaving us with a variety of questions.

Methods

This study adopts a qualitative exploratory case study approach to examine how higher education institutions adapted Generations Z and Alpha.

The research draws on three primary sources of insight. First, it incorporates institutional experience from a university that transitioned to video-synchronous and blended learning at scale during the pandemic. Second, it analyzes observations and themes emerging from a series of faculty development workshops ("Quarterly Roundups"), conducted between 2020 and 2022, which focused on supporting faculty through technological, pedagogical, and student engagement challenges. Third, the study integrates a targeted literature review to contextualize these experiences within broader trends in educational technology, generational learning preferences, and post-pandemic teaching practices.

Rather than employing formal hypothesis testing, this study uses an interpretive, practice-informed approach, synthesizing faculty experiences, institutional responses, and existing research to identify patterns, challenges, and emerging best practices. This approach is appropriate given the rapidly evolving nature of the post-pandemic educational landscape and the need to generate actionable insights grounded in real world application.

The analysis is guided by the following research questions:

- How is the student demographic changing?
- How can institutions effectively engage current and future students and faculty using technology? to rapid technological transformation during and after the
- How can the generational gap between faculty and students be bridged?
- How can institutions safeguard the mental health and well-being of both faculty and students in a post-pandemic environment?

Literature Review

The Changing Student Demographic

A generational cohort is a group of individuals who grow up and experience the same world events during the same time. They develop similar characteristics based on common history.

Today's students are Generation Z, and they make up most of the current college and university student body now and will be the prevalent generation at colleges and universities until 2035. They are followed by Generation Alpha, born between 2010 and 2025. Both Generation Z and Generation Alpha are called Digital Natives because they were born into technology.

Generation Z

Generation Z is made up of individuals born between 1995 and 2010. Events that have affected this generation are declining job markets, an uncertain economy, global warming, and increasing student debt (Schaberg, 2022).

This generation is also the most diverse generational cohort; half of them are members of racial or ethnic minorities (Shatto & Erwin, 2017; University of Massachusetts Global, 2020). According to Seemiller and Grace (2017a), the top five-character strengths of Generation Z are honesty, kindness, humor, fairness, and judgement.

Generation Z is tech savvy, and they think in 4 D (Rothman, 2016). Humans normally think in 3 dimensions, but the first Digital Natives, born into a world of technology, Generation Z is known to have developed different brain structures than previous generations due to processing more complex imagery from technology (Rothman, 2016). Four-dimensional thinking correlates with time and space differently. “Gen Z has always known how to Zoom, pinch and swipe. They have grown up with hi-def, surround sound, 3D and now 4D – 360-degree photography and film are their normal. Ultra slow motion and hi-speed video is their standard (Sparks & Honey, 2012).

Due to their immersion in technology, Generation Z individuals have shorter attention spans. In the last few years, the average attention span has decreased from 12 minutes to 5 (Seemiller & Grace, 2017a). Gen Z is used to getting immediate answers from Google, so when they wait for a response, such as a reply to an email or a website to load, they get impatient. They are known to have acquired attention deficit disorder (AADD). In addition to impatience and short attention spans, they also lack the skills of creativity, critical thinking, and analytical thinking (David, n.d; Schwom & Snyder, 2018).

Generation Z individuals also have a high frequency of mental illness including depression and anxiety (University of Massachusetts Global, 2020). According to Seemiller and Grace (2017a), 64% of college students feel stressed at least once a week, and 95% often feel overwhelmed by their workloads. Many of this generation suffer from obesity as they prefer to stay connected to technology over physical exercise (David, n.d).

Generation Alpha

Generation Alpha is the first generation of the 21st century. They are born between 2010 and 2025 and are still in K-12 school today. They will start to reach colleges and is not the “sage on the stage,” the saying goes, but the “guide universities around 2028. Their world revolves around technology. By the age of 2, this generation can use touchscreens and various smart phone apps (Turk, 2017).

According to Jha (n.d.), their parents are Millennials, and the lifestyle pattern of the Millennial parent/Gen Alpha children, families have changed significantly from the lifestyles of previous generations. Family relationships and gender roles and the nature of jobs have evolved to include tele-work, flextime, and working remotely, so that the boundaries between personal

and professional life are less defined. In this generation, both parents are likely to have careers, leading to more financially stable families and higher standards of living, resulting in more consumerism and materialism (Jha, n.d.). From an early age, Generation Alpha has been influenced by marketing, technology, travel, and priorities of their millennial parents. Like Generation Z, this generation has also been exposed to more screen time and has shorter attention spans than previous generations.

Technology in the Classroom

How Digital Natives Want to Learn

The goal of Generation Z is to gain the necessary skills for their aspired careers. Northeastern University undertook an Innovation Survey, in which they found that Generation Z prefers hands-on learning activities that teach them practical skills and knowledge that they can apply to real life (Seemiller & Grace, 2017b).

Generation Z is comfortable learning from technology, and they can use technology to learn without an instructor's on the side (Rahayu, 2020). In an active-learning environment, the instructor is not the "sage on the stage," the saying goes, but the "guide on the side" (Selingo, 2018, p. 27). Therefore, hybrid class delivery is ideal for Generation Z. They want a mix of learning activities and delivery modes. They prefer to be engaged by a combination of instructor-led activities, videos and apps, and group work.

Miller and Mills (2019) studied Millennial and Generation Z students to define "the importance of caring for student engagement" (p. 78). They found that "students value approachability and relatability as traits in a caring professor" (p. 78). Further, they found that Generation Z students perceive teaching practices as "caring" when they help to engage students in the classroom and improve students' success.

Like Generation Z, Generation Alpha was also locked down during COVID and schooled at home either online or by their parents (Ziatdinov & Cilliers, 2021). The predominant learning style of Generation Alpha is dependent on technology. Generation Alpha will be engaged by experiential learning, learning by doing and reflecting, accessing, and interpreting information. They can be engaged by app-based play (Ziatdinov & Cilliers, 2021). Rather than the teacher disseminating information, the teacher will create a classroom atmosphere in which teacher and student co-create knowledge assisted by technology (Ziatdinov & Cilliers, 2021). This is consistent with Selingo's (2018) description of the role of the instructor for Generation Z as "the guide on the side" (p. 27).

While Generation Alpha students can learn on their own and are adept at technology use, they will need to be schooled in social competencies, entrepreneurial skills, strength and coordination, financial literacy, innovation, and resourcefulness (McCrindle & Fell, 2020). Generation Alpha will need to be taught soft skills, such presence (Rahayu, 2020). In an active-learning environment, the instructor as critical thinking, problem-solving, teamwork, and

communication, which are crucial for success in the business Overall, learning management systems use technology to help world (Ziatdinov & Cilliers, 2021).

The Internet provides ample access to videos, articles, and other online resources (Rahayu, 2020). The flipped classroom model, in which students engage with content in the form of online materials or videos before coming to class, is particularly suited to the digital native generations. The Harris Poll/Pearson survey (Selingo, 2018) showed that 20% of a 2500 sample of students between 14 and 40 responded that YouTube is their top way to learn. When they get to the classroom, the learning can be intensified by activities and exercises led by the instructor. Twenty-eight percent of students surveyed selected in-person activities with classmates, and 21% of them selected in-person lectures as their top way to learn. Students do not want to learn exclusively from digital devices. They want to learn from a mixture of learning activities that include both in-person and online delivery (Miller & Mills, 2019; Selingo, 2018).

What are the Critical Technologies That Enable Generations of Z & Alpha Optimized Learning?

Learning Management Systems (LMS). A learning management system (LMS) allows teachers and students to chat even when they are not in the same place or time zone. Students can read feedback when it suits them, think about their work, and ask for help if they need it. And with features like online discussions and tools for working together, students can learn from each other too. While learning management systems are integral to delivering online education, they are also useful as a tool for instructors and teachers and students connect better, give personalized feedback, and make learning in higher education more engaging and effective.

LMS platforms help untangle assessment and feedback by facilitating faster feedback on assignments and tests in one principal place. This means students receive timely feedback that shows them what they did well and where they can improve, and it keeps them engaged in their learning. LMS systems also let teachers personalize feedback for each student, making the learning experience more personal and effective.

As technology continues to advance, LMS platforms are becoming more intuitive, adaptive, and interconnected, offering seamless integration with various educational tools and resources. AI-driven features can provide personalized learning pathways, tailored content recommendations, and real-time performance analytics. Furthermore, LMSs not only facilitate in-person learning but will increasingly facilitate collaborative and interactive learning experiences through virtual classrooms, immersive simulations, and augmented reality applications. As education evolves, the LMS of tomorrow is expected to play a pivotal role in fostering accessible, engaging, and adaptable learning environments that cater to the diverse needs of learners across different contexts (Raza et al., 2021).

Collaboration Technology. Employers have identified that digital natives are graduating unprepared in the areas of critical thinking, teamwork, and communication skills [18]. Therefore, education students to interact between traditional classroom meetings. needs to focus on developing these skills to make students better prepared for the workplace. In the landscape of

modern communication skills, as face-to-face interactions become less education, collaboration technologies have emerged as vital tools for addressing these challenges. There are many collaboration tools available for instructors to integrate into classes including Slack, Smartsheet, Zoom, Microsoft Teams, WhatsApp, OneDrive, and others that offer a range of functionalities crucial for enhancing learning experiences. They facilitate real-time communication, project management, content sharing, and interactive engagement, which are instrumental in honing critical thinking, creativity, teamwork, and communication skills.

Additionally, many learning management systems also have collaboration tools to enhance team communications and collaboration. Some learning management systems are more sophisticated than others when it comes to group facilitation tools. Such platforms enable students to collaborate irrespective of geographical or cultural barriers, fostering a more inclusive and diverse learning environment. This is particularly significant in preparing students for a globalized workforce where cross-cultural collaboration is the norm.

However, the integration of these technologies in educational settings is not without its challenges. While they offer unprecedented opportunities for interactive and collaborative learning, there are concerns regarding their impact on students' abilities to engage in deep, reflective thinking. The instant nature of communication and the abundance of information available can sometimes lead to surface-level engagement rather than in-depth analysis, which is a critical component of critical thinking. Moreover, frequent. Therefore, educators face the task of striking a balance—leveraging these technologies to enhance collaborative learning while ensuring that students are also developing the ability to think critically and communicate effectively in various settings. This delicate balancing act is essential for preparing digital natives to excel in their academic pursuits and thrive in their professional careers post-graduation.

Collaboration technologies, such as Zoom, Slack, and Microsoft Teams, primarily focus on facilitating real-time communication and teamwork, offering a dynamic, interactive platform that mirrors the fast-paced digital environment familiar to Gen Z and Alpha. In contrast, Learning Management Systems (LMS) are more structured and comprehensive, providing a centralized hub for course content, assessments, and administrative functions, but often lacking the immediacy and social interactivity of collaboration tools. While LMSs serve as the backbone for course delivery and management, collaboration technologies complement them by fostering a more engaging, social, and responsive learning experience, closely aligning with the preferences and digital fluency of younger generations (Raza et al., 2021). Some learning management systems integrate third-party collaboration technologies, which provides an ideal solution to collaboration in the classroom.

Videos. Video technology has emerged as a preferred learning medium for Generation Z, resonating with their digital-first approach to information consumption and interaction. overreliance on digital tools can also impact interpersonal According to Talmon (2019), this demographic extensively utilizes smart devices, engaging with digital content for approximately 9 technology in education for Generation Z and Alpha presents a hours daily, with a significant preference for video. Video platforms, particularly YouTube, have become central to their

learning experience, with 95% of Generation Z watching YouTube and 29% considering it their top learning resource (Rahayu, 2020; Selingo, 2018). This preference is underscored by the fact that an average Gen Z individual watches around 70 videos per day, often for instructional purposes (Talmon, 2019).

The effectiveness of video education stems from its ability to provide visual and auditory stimulation, which enhances understanding and retention. Seemiller and Grace (2017b) highlighted that Generation Z learners prefer learning by observation, making videos an ideal tool for demonstrating tasks, explaining concepts, or even introducing motivational content like TED talks. Videos cater to various learning styles, offering visual learners particularly rich and engaging content. However, there are challenges. While videos can make learning more interesting and engaging (Rahayu, 2020), they require guidance from instructors to ensure appropriate content selection and to avoid the risk of superficial engagement.

Moreover, the interactive and creative aspects of video technology are being harnessed in educational settings. Reference (Talmon, 2019) notes that half of Generation Z students create and post their own videos, suggesting an opportunity for educators to integrate video production into assignments. This approach not only caters to their preference for 'snackable' and engaging content but also encourages active learning and creativity. Such activities can be incorporated into flipped classroom models, where students produce and share videos on blend of opportunities and challenges requiring a balanced approach to maximizing its benefits while addressing its limitations.

Game Based Learning and Gamification. Game-Based Learning (GBL) and gamification represent an evolving paradigm in educational methodologies and are well suited to digital natives. As Editorial Board (2013) defines, GBL integrates subject matter with gameplay, creating an immersive learning experience with clear learning outcomes. This approach aligns well with the preferences of today's students, who are increasingly seeking interactive and engaging learning methods. Dong et al. (2017) and Attila et al. (2021) highlight the benefits of GBL, including increased motivation, enhanced teamwork, improved communication, and a safe environment for experimentation and learning from mistakes. They also found that GBL surpasses traditional learning methods in effectiveness and is more favored by students.

The effectiveness of GBL is further demonstrated in a study by Dong et al. (2017) in a finance class where students participated in an online stock trading game. The results showed that students found the game-based approach more engaging and easier for understanding complex concepts compared to conventional teaching methods. This engagement is not limited to digital games; historically, games like chess have been used for teaching strategic thinking, and corporations like IBM have utilized customized board games for skill development (Grand Canyon University, 2021).

In GBL environments, students' progress through assigned concepts. In conclusion, the integration of video various levels or challenges that are linked to learning objectives. Examples include flight simulators for pilot training engage Gen Z and Alpha learners, they must be integrated and Minecraft for collaborative problem-solving and project completion. These

platforms provide immersive experiences that are both educational and entertaining, catering to the learning styles of digital natives. Generation Z is deeply engaged with gaming, with 81% playing games in the last six months, spending more time gaming than on other media activities (Brune, 2021; Social.com, 2023). For them, gaming extends beyond play; it is a platform for socializing and community engagement, with a sizable portion of watching game-related videos and streams and discussing games with friends and family.

Gamification, as Kapp (2013) explains, involves incorporating game elements, mechanics, and thinking into learning activities. It does not necessarily involve playing a full game but includes game-like elements such as points, challenges, and badges. Kapp (2013) categorizes game elements into engagement, autonomy, mastery, and progression, with rules providing structure and boundaries. Saxena and Mishra (2021) argue that gamification revitalizes learning environments by infusing fun, promoting meaningful interaction, and leading to effective problem-solving and mutually beneficial outcomes.

However, the use of GBL and gamification in education also poses challenges. While it increases engagement, there is a risk of focusing more on the gaming aspect than learning objectives. It requires careful design to ensure that the gaming elements reinforce the educational content without overshadowing it. Additionally, not all students might be equally receptive to game-based learning, requiring educators to balance this approach with other instructional strategies. thoughtfully into the broader educational framework.

Digital Libraries. Digital libraries, a pivotal evolution in information accessibility, serve a similar purpose to traditional brick-and mortar libraries by storing, preserving, and making accessible many resources such as books, journals, maps, and more. Emerging in the 1990s, digital libraries have become increasingly integral to higher education. As Pavani (n.d.) notes, one of their critical roles is the preservation of graduate research work, which often remains unpublished in conventional journals. Hosting this research in digital libraries facilitates wider access to this valuable knowledge for researchers worldwide.

The convenience of digital libraries is particularly pronounced in the current era where online learning and remote access to educational resources have become commonplace. As Pavani (n.d.) points out, the digital format of these libraries allows students and faculty who may not visit physical campuses to access a broad range of resources from anywhere, at any time. This accessibility extends to a more diverse array of readings, resources, and research materials than what might be physically available in a traditional library setting. For students, digital format means easier access to materials without the physical limitations of carrying heavy books, allowing them to select resources based solely on their relevance and not on logistical constraints.

However, the shift towards digital libraries also presents certain challenges. While they offer unparalleled convenience Thus, while GBL and gamification offer innovative ways to and access, there can be issues related to digital divide and access to reliable internet, which could limit the reach of these students might have equal access to AI resources, potentially resources. Moreover, the sheer volume of available information can sometimes be overwhelming for

students, necessitating effective digital literacy skills to navigate and utilize these vast resources efficiently. The volume and availability of digital information can also provide temptations for plagiarism. Additionally, the experience of browsing through physical books and tactile engagement with materials in a traditional library setting is lost in digital libraries, which might affect the learning experience for some students. Despite these challenges, digital libraries represent a significant advancement in making educational resources more accessible and align with the digital habits of Generation Z and Alpha students.

AI in Higher Education. AI is impacting the domain of higher education, introducing innovative capabilities that may redefine traditional teaching and learning methodologies. As noted by Adiguzel et al. (2023). AI technologies are beginning to be instrumental in transforming educational practices through enhanced productivity, individualized instruction, instant feedback, and elevated student engagement. This shift is characterized by the implementation of intelligent tutoring systems, automated assessment tools, and customized learning platforms, each promising to elevate academic performance and enable educators to offer more personalized guidance and support.

Despite some of the initial benefits AI may bring to education, its integration is not without challenges, including ethical and practical considerations. A primary concern is the widening the gap between different socio-economic groups. Furthermore, the algorithms powering AI can exhibit biases, potentially leading to unequal outcomes across diverse demographics. As Adiguzel et al. (2023) emphasizes, effective AI integration in education requires comprehensive teacher training, covering both technical and ethical aspects, to ensure equitable and responsible use.

Recent developments in AI, particularly in chatbots and advanced systems like ChatGPT, have opened new avenues for personalized education. These AI tools, as identified by Adiguzel et al. (2023) provide tailored learning experiences, such as language instruction customized to individual needs and real-time feedback on assignments. However, these advancements also bring ethical concerns, including the risks of AI-generated misinformation (hallucinations), heightened issues related to plagiarism, and privacy issues related to data collection. To navigate these challenges and maximize the potential of AI in education, a collaborative effort among educators, researchers, and policymakers is crucial. This collaboration aims to establish guidelines that uphold fairness, transparency, and inclusivity, ensuring that AI's role in education not only enhances learning experiences but also adheres to ethical standards. By addressing these concerns, educational institutions can leverage AI to its fullest potential, making learning more effective, engaging, and accessible for Generation Z and Alpha students.

Analysis and Results

This section presents an integrated analysis of faculty experiences, workshop observations, and supporting literature, highlighting key themes and insights related to technology adoption, student engagement, and post pandemic instructional practices.

VSL Faculty Focus Group Experience

Faculty workshops (aka “City U Quarterly Roundups”) were conducted during the COVID-19 pandemic to support faculty who were struggling with three main issues associated with the transition to video-synchronous learning (VSL) : use of new technology, converting classroom or online teaching materials to blended learning materials suitable for video synchronous learning, and dealing with unexpected student behaviors.

Faculty members shared insights into fostering professionalism in virtual settings and engaging students through interactive strategies. Key themes included the need for flexible team dynamics, effective use of learning management systems, and VSL technology, addressing the unexpected student challenges that arose from the pandemic O’Farrel (2022).

The Winter 2021 workshop underscored the significance of fostering professionalism and empathy among students in a virtual environment in the transition to VSL. In preparation for this workshop, interviews with experienced faculty were conducted to reveal best practices, tips, and techniques to share with faculty to navigate pandemic-related challenges.

Some of these ideas included encouraging appropriate clear expectations, promote kindness, and accommodate challenges students were facing. Moreover, the workshop discussion also pointed out interactive strategies like small group activities, polls, and team projects to enrich the learning process to help with the transition to VSL.

The Spring 2021 workshop shared insights related to how students learn, especially in a VSD environment coupled with a discussion related to student and faculty mental health services and resources.

The Fall 2021 workshops shared ideas about facilitating online teams and activities for engaging students. The topics included exploring techniques to enhance teamwork dynamics, including sharing Tuckman's Model of Team Development with students to help them understand the team's process, and rotating student team leadership roles. Notably, the workshops highlighted the integration of peer evaluations and team agreements to stimulate student participation. The second segment spotlighted strategies to foster student engagement, spanning diverse activities, virtual tools, and interactive games. These insights collectively contributed to the success of the transition to VSL, emphasizing a dynamic and interactive learning environment that promoted teamwork, engagement, and enhanced instructional practices.

The Fall 2022 faculty workshop focused on the newly installed Learning Management System (LMS). Essential best practices were highlighted to guide educators in optimizing their use of the LMS. These included creating engaging digitally enabled course content, streamlining navigation via behavior, such as turning on cameras, and emphasizing the quick links throughout the courses, resolving content visibility issues for students, effectively inputting grades, fostering Research has also shown that employers perceive that collaborative learning through online discussion groups, coordinating due dates for assignments and discussion boards, and the potential of the LMS in shaping a dynamic and efficient higher education environment.

During each of the workshops, there were a variety of team building exercises that were conducted virtually and were designed to boost morale and develop strong interpersonal

relationships among faculty members who were isolated during the pandemic while also demonstrating ways to boost morale and relationships among students.

Literature Survey

In today's rapidly changing education scene, the impact of technology has truly taken center stage. It is reshaping how students learn, bringing personalized experiences and active participation to the forefront.

The literature review identified that Generation Z and Alpha students want to engage in technology in the classroom and they are comfortable doing so, but they also want to learn from an instructor who is caring and there to support them (Miller & Mills, 2019). They also prefer hands on learning and practical concepts that prepare them for their entrepreneurial career goals.

They are adept at using technology independently and receiving content via videos, games, simulations, interactive and experiential learning activities delivered by an LMS that is easy to use and able to deliver content in multiple formats and digital libraries that facilitate research. YouTube is the number 1 source of learning for Generations Z and Alpha according to Selingo (2018).

Research has also shown that employers perceive that students are less proficient at soft skills, such as critical thinking, teamwork and creative thinking than employers would like and graduates are also more confident about their mastery of these skills than they are proficient (Selingo, 2018). Therefore, curricula should focus on delivering content to support students in developing critical thinking, creative thinking, and teamwork.

Collaboration tools, such as MS Office and Zoom can help support students in learning to work with others and on teams. Creative assessments can help them develop critical thinking, problem solving, and creative thinking skills.

How We Bridge the Generational Gap Between Students and Faculty?

Bridging the gap between faculty (Digital Immigrants from Generation X and Baby Boomers) and students (Digital Natives from Generations Z and Alpha) requires a thoughtful and multifaceted approach. As Neuwirth et al. (2021) suggests, robust faculty support is crucial for the effective integration of technology in postgraduate course delivery. This support enables educators to not only adopt new curriculum designs that leverage technology but also to apply learning theories and practices more effectively. By doing so, educators can maximize the potential of technology in enhancing student engagement and learning outcomes.

Furthermore, comprehensive faculty support plays a pivotal role in narrowing the technological skills gap among educators. This involves integrating digital tools, such as Learning Management Systems, multimedia tools, and video synchronous delivery options, into teaching practices and courseware (Iglesias-Pradas et al., 2021). Such integration is essential for ensuring that “the pandemic has led to increases in students’ mental health faculty are comfortable and proficient with the technology that underpins modern educational delivery. Additionally, ongoing professional development is key, encompassing areas like compliance

training, ethics, privacy, and data usage awareness (Bilal et al., 2022). This not only assists faculty in keeping pace with the rapid evolution of technology in higher education but also fosters a culture of continuous learning and adaptation.

On the other side of the spectrum, students, Digital Natives, may be comfortable with technology, but they often face challenges in effectively utilizing it for academic purposes. Familiarity with technology does not automatically translate into an ability to engage deeply with academic content. As highlighted by Neuwirth et al. (2021), there is a necessity for training students to move beyond casual technology to a more focused, educational engagement. Therefore, the challenge is twofold: enhancing faculty's ability to deliver education through seamlessly integrated technological tools and guiding students to differentiate and transition from general technology usage to its application in educational contexts (Keengwe et al., 2009; Neuwirth et al., 2021). Addressing these dual aspects is essential for creating a cohesive, effective educational environment that bridges the technological and generational divide between faculty and students.

How do we safeguard the Mental Health Effects of both Faculty and Students?

In the evolving post-pandemic educational landscape, where a shift from classroom to online learning is increasingly prevalent, the mental health and well-being of both students and faculty across generations—Gen Z, Gen Alpha, Gen X, and Baby Boomers – remains a critical concern. According to Chirkov et al. (2020), "the pandemic has led to increases in students' mental health disorders compared to previous years. In fact, the prevalence of major depressive disorder among graduate and professional students is two times higher in 2020 compared to 2019 and the prevalence of generalized anxiety disorder is 1.5 times higher than in 2019" (abstract). Yusuf et al. (2022) notes that the fluctuating dynamics of learning environments, which include online, in person, and VSL formats, have the potential to heighten stress and anxiety among all members of the academic community. This situation underscores the need for ongoing support mechanisms to address these mental health challenges effectively.

The post-pandemic transition back to in-person instruction, while a necessary step towards normalcy, introduces its own set of psychological challenges. For students, particularly those from international backgrounds, this shift can exacerbate feelings of isolation and amplify social reintegration stress. Flynn-Wilson & Reynolds (2020) observed that students from a Chinese university displayed a greater inclination towards participation in online discussions, experiencing less apprehension compared to face-to-face settings. This suggests comfort with the online environment that may not easily translate to physical classroom interactions.

For faculty members, especially those from Gen X and Baby Boomer generations, adapting to the rapid technological changes in teaching methods and tools can also be a source of stress. This is compounded by the challenge of connecting with students from younger generations, who have different learning styles and preferences. The mental health impact on faculty involves navigating these technological changes alongside adapting to the evolving expectations and needs of their students.

Addressing these mental health needs requires a multifaceted approach. Educational institutions should invest in comprehensive mental health support programs that cater to the diverse needs of their community. These could include counseling services, stress management workshops, peer support groups, and training programs aimed at improving digital literacy for faculty and improving information literacy for students. Such initiatives can help in easing the transition for students and faculty alike.

Furthermore, creating a culture of openness and inclusivity is essential. Encouraging dialogue between generations and across cultural backgrounds can foster understanding and support. By integrating these elements, educational institutions can guide their community to navigate the transition from online to in-person learning while also ensuring a supportive environment conducive to the well-being and success of both students and faculty across generations.

Recommendations

In recreating higher education in 2024 and beyond, several key recommendations emerge from the exploration of technology's role in this evolving landscape. First, institutions must continue to harness and integrate a range of technological tools—such as learning management systems, collaboration technologies, video platforms, gamification, digital libraries, and AI These tools cater to the diverse learning styles of Generations Z and Alpha and support faculty instructional enhances student engagement, and fosters a deeper understanding of course material.

Second, there is a critical need for ongoing professional development and support for faculty, particularly those who are less familiar with these digital tools. This support should focus on the technical aspects of these technologies and pedagogical strategies to integrate them effectively into teaching practices. Continuous professional development will help faculty from Generation X and Baby Boomers to become more comfortable and proficient in using technology tools, thus enhancing the overall quality of education delivered.

The oldest members of Generation Y (Millennials) are now in their forties and are joining university faculties. Generation Y are also considered digital natives, so they may not need support for technology tools, but they share many of the same strengths and weaknesses of Generation Z, so they may need support in soft skills and teaching pedagogy.

Last, the mental health and well-being of both students and faculty must be a priority. The fluctuating and diverse modes of learning environments—online, in-person, and blended—can be a source of stress and anxiety. Institutions should invest in comprehensive mental health support systems, including counseling services, stress management programs, and peer support groups. These resources should be accessible and tailored to meet the needs of all generational cohorts within the academic community. Furthermore, fostering an environment of open dialogue and inclusivity will be crucial to ensuring the mental well-being of both students and faculty as needs. The goal is to create a dynamic, inclusive, and flexible they navigate the complexities of modern higher education. By implementing these recommendations, educational

their approach to integrating these technologies, ensuring they institutions can effectively meet the challenges of the post pandemic era, leveraging technology to enhance learning experiences while supporting the diverse needs of their academic community.

By implementing these recommendations, educational institutions can effectively meet the challenges of the post-pandemic era, leveraging technology to enhance learning experiences while supporting the diverse needs of their academic community.

Conclusion

In conclusion, the journey through the dynamic and rapidly evolving landscape of higher education in the post pandemic era reveals a multifaceted and complex environment. This exploration has highlighted the crucial role of technology in shaping the future of education, addressing the distinct learning styles of Generations Z and Alpha, and catering to the instructional approaches of Digital Immigrants from Generation X and Baby Boomers. The integration of advanced technologies such as Learning Management Systems, collaboration tools, video platforms, gamification, digital libraries, and AI has opened new horizons for innovative teaching and learning practices. These technologies have not only facilitated a more engaging and interactive learning experience but have also bridged the gap between different generational cohorts within the academic community.

However, this technological integration comes with its own set of challenges, including the need for ongoing faculty development and support, and the imperative to address mental health concerns of both students and faculty. The shift in educational delivery methods has underscored the importance of continuous adaptation, flexibility, and support to ensure the effectiveness and inclusivity of the learning environment. Educational institutions must remain vigilant and proactive in their approach to integrating these technologies, ensuring they enhance rather than complicate the learning process.

The future of higher education, therefore, lies in the ability of institutions to balance the adoption of innovative technology with the human aspects of teaching and learning. It involves creating a supportive and inclusive environment that acknowledges and addresses the diverse needs of its community members. By doing so, educational institutions can navigate the challenges of the present while also paving the way for a more resilient, adaptive, and innovative future in higher education. This future will be characterized by a commitment to continuous learning, inclusivity, and a comprehensive approach to the well-being of all involved in the educational journey.

Next Steps

Further Research on Generation Alpha

Continued research is essential to understand the unique learning preferences, behaviors, and developmental needs of Generation Alpha. This research should focus on their cognitive and

social development in a tech-saturated environment, and how educational strategies can be adapted to foster their holistic growth.

Staying Current with Student Engagement in Technology

It is imperative to constantly monitor and analyze emerging trends and shifts in how students engage with technology. This includes understanding their preferences for new platforms and digital tools, and their impact on their learning experiences and outcomes.

Understanding the Role of AI in Education

Further research to understand the role that AI can play in education, including understanding its capabilities, applications, and ethical issues, is required.

Importance of the Human Touch in Higher Education

Despite the increasing reliance on technology, it remains crucial to maintain and emphasize the human aspects of higher education. This includes providing robust counseling services, developing strategies for motivating students and faculty, and creating opportunities for personal interactions and connections, which are fundamental for mental well-being and the development of soft skills. It also means continuing to adapt to teaching and developing ways to increase students' perceptions about whether a professor cares about them. Further studies about what students believe is evidence of caring is required.

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