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Transcultural Journal for Humanities and Social Sciences (TJHSS) is a journal committed to disseminate a new range of interdisciplinary and transcultural topics in Humanities and social sciences. It is an open access, peer reviewed and refereed journal, published by Badr University in Cairo, BUC, to provide original and updated knowledge platform of international scholars interested in multi-inter disciplinary researches in all languages and from the widest range of world cultures. It's an online academic journal that offers print on demand services.

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To promote interdisciplinary studies in the fields of Languages, Humanities and Social Sciences and provide a reliable academically trusted and approved venue of publishing Language and culture research.

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تحية طيبة وبعد ،،،

تتقدم إليكم جامعة بدر بالقاهرة بالشكر على ما تبذلونه من جهد مادي ومعنوي لإصدار المجلة، فتميزكم المشهود خير قدوة، ممتنين لعملكم الدؤوب وتفوقكم الباهر، ونتمنى لكم المزيد من النجاحات المستقبلية.

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Embracing Diversity and Inclusion in the Age of Digital Humanity

The Third International Conference hosted by the School of Linguistics and Translation at Badr University in Cairo, titled "Diversity and Inclusion in the Age of Digital Humanity", marked a significant milestone in the ongoing dialogue about the intersection of technology, language, and humanistic values. Held on October 26–27, 2024, the conference brought together scholars, researchers, and activists from around the world to explore how digital advancements can foster inclusivity while addressing the challenges posed by rapid technological evolution.

The Digital Transformation of Humanities

One of the central themes of the conference was the imperative for digital transformation in humanities disciplines. Keynote speaker Professor Ruslan Mitkov's presentation, "Language and Translation Technologies in the Artificial Intelligence Era", underscored the transformative potential of Natural Language Processing (NLP) and AI in translation and linguistics. Mitkov highlighted the evolution from rule-based systems to generative AI, emphasizing both the capabilities and limitations of Large Language Models (LLMs). His insights reinforced the idea that while AI can enhance efficiency, human expertise remains indispensable in navigating linguistic nuances, ambiguity, and cultural context.

The conference also addressed the need for integrating computational linguistics into academic curricula. Recommendations included developing undergraduate and postgraduate programs in digital humanities, equipping students with skills for emerging roles like AI translators and prompt engineers, and promoting bias-free AI technologies. These measures are critical to preparing future generations for a labor market increasingly shaped by AI.

Diversity and Inclusion in Digital Spaces

Another focal point was the role of digital platforms in promoting diversity and inclusion. Discussions highlighted the importance of creating safe digital environments for marginalized groups and minorities, as well as the ethical responsibilities of AI developers to mitigate biases in data and algorithms. Professor Sameh El Ansary's presentation on corpus-based language teaching exemplified how empirical approaches, such as using real-life language data, can bridge gaps in traditional pedagogy and foster more inclusive learning experiences.

The participation of researchers from diverse linguistic and cultural backgrounds—with 57 papers presented in multiple languages, most of them published in this issue—further demonstrated the conference's commitment to inclusivity. The inclusion of voices like Italian poet Domenico Pisana (we publish in this issue his valuable lecture), and scholars specializing in underrepresented languages underscored the value of cultural and linguistic diversity in academic discourse.

Charting a Path Forward:

The conference concluded with a call for continuous monitoring of AI developments, ethical AI practices, and interdisciplinary collaboration to ensure technology's role as a tool for empowerment. Professor Zain A. Hady's article, "The Internet from the Age of Innocence to the Age of Decadence: A Study in the Digital Postcolonialism," furthered the discussion on the societal impacts of digital evolution. The imperative to safeguard humanistic values while embracing AI's potential was underscored.

The insights from this conference serve as a crucial reminder that the digital age must be guided by principles of diversity, inclusion, and human oversight. By aligning technological advancements with equity, we can build a future that authentically reflects the richness of our global community. The success of this conference reaffirms academia's vital role in shaping inclusive digital landscapes, urging us to carry forward its lessons and ensure technological progress aligns with understanding, respect, and inclusion.

The Editorial Board

Teaching the Digital Natives: Examining the Learning Needs and Preferences of Gen Z Learners in Higher Education

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Abstract: Generation Z (Gen Z), those born between 1997 and 2012, are currently studying at the universities. As "digital natives," they have distinct characteristics compared to the previous Millennial Generation known as Generation Y (1981 - 1996). Research indicates that Gen Z are different in terms of creativity, verbal abilities, attention to others and the environment, motivation and the frequent usage of internet. In addition, studies have identified both positive and alarming changes in their behavior, attitude and lifestyle. In education, Generation Z learners' ability to access and transmit information quickly has significantly impacted their preferred mode of learning. Their learning is defined by speed, nonlinear processing, effective use of technology, multitasking, individualism, and personalized performance. Although they are digital natives, Gen Z learners may lack strategic skills to maximize technology for career planning. It is a challenge for teachers, who are digital immigrants and mostly from Gen X or Y, to instruct and motivate them. This study aims to investigate the characteristics, learning preferences of first-year Gen Z students at a private university in Egypt regardless of their specialization. Through surveys and quantitative and qualitative analysis of both students' and faculty members' perspectives, the study seeks to examine the unique learning characteristics of Gen Z students and identify the teaching practices that optimize their engagement and academic success. The findings would provide valuable guidance to educators in higher education by investigating how technology and learning environments affect students' learning.

Keywords: Generation Z, Characteristics, Learning Preference, Teaching Methods, Higher Education.

1. Introduction

In recent years, higher education has begun to experience a significant shift in its approach. The introduction of digital learning into the traditional educational settings across various institution levels has prompted changes in how teachers engage with students. As an increasing number of prospective students base their choices on graduation rates and job readiness, universities and colleges are reassessing the structure and delivery of their undergraduate programmes. It is essential to pinpoint the primary challenges that higher education is currently encountering, as well as those that may arise in the future with a growing population of Generation Z students entering the academic sphere. This paper examines the

general traits of Generation Z, alongside their learning preferences. It aims to provide understanding into the perspectives and drives of Generation Z individuals and suggests strategies for colleges to effectively meet their needs.

2. 1. Generational Theory.

Generational theory suggests that cohorts defined by birth years can be categorized according to common experiences that foster shared meanings and expected behaviors and attitudes (Dries et al., 2008). In his influential publication, *The Problem of Generations* (1952), Karl Mannheim established two essential criteria for identifying generational cohorts: members must occupy the same temporal space, and they must construct a collective understanding of events and experiences. This results in a cultural identity formed by birth-year cohorts that uphold similar values, attitudes, and exhibit predictable behaviors. Such an identity is embraced by individuals within the cohort, irrespective of race, gender, or social class, and persists throughout the lifetime of the generation (Alwin & McCammon, 2003). Nevertheless, not every individual within a cohort experiences events in the same way, leading to variations influenced by regional, cultural, and personal factors (Lyons & Kuron, 2014).

Typically, when discussing generations, five are highlighted (Fig.1): the Traditional Generation (between 1928 and 1945), the Baby Boom generation (between 1946 and 1964), Generation X (between 1965 and 1980), Generation Y or the Millennials (between 1981 and 1996) and Generation Z (between 1997 and 2012) (Geiger, 2019). Generation Z or Gen Z is so called different names: “internet kids,” “digital generation,” and “crystal generation.”

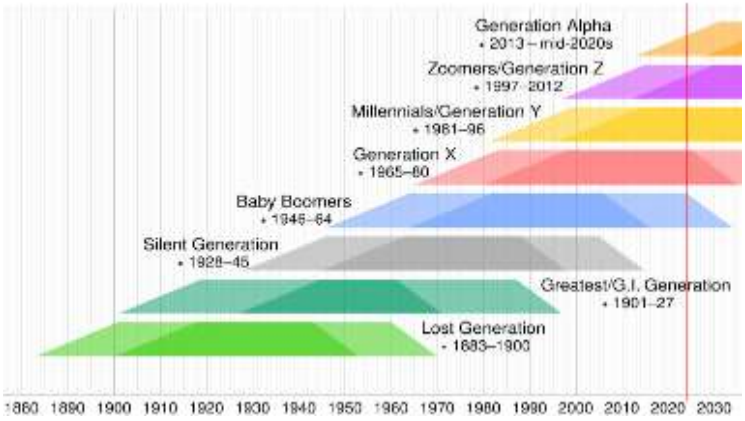

Fig.1: Timeline of generations in the Western world according to the Pew Research Center

Technology, especially the rapid changes in communication and interaction, plays a crucial role in shaping generations. Baby Boomers experienced significant lifestyle changes as television became widespread. Generation X witnessed the rise of computers, while Millennials came of age during the internet boom. What sets Generation Z apart is that they have been surrounded by all these technologies from the beginning. The iPhone was released in 2007, when the oldest members of Generation Z were just 10 years old. By their teenage years, mobile devices, Wi-Fi, and high-speed cellular service became the primary ways they accessed the internet. While Millennials adapted to social media, constant connectivity, and on-demand entertainment, these features are simply part of life for those born after 1996 (Housand, 2016). The effects of growing up in a constantly connected technological environment are just beginning to be understood. Recent studies indicate significant changes in the behaviors,

attitudes, and lifestyles of this cohort, revealing both positive and concerning trends. Observing this generation over time will be crucial to determine whether these traits are enduring characteristics or merely phases of adolescence that will fade in adulthood (Dimock, 2019).

2.2. Generation Z influencing factors:

According to generational theory, each generation is shaped by the global, economic, social, and cultural factors relevant to its group. Generation Z is the first cohort to grow up with the internet and mobile digital technology, earning them the label "digital natives" (Prensky, 2010). Moreover, this generation has experienced economic challenges, the COVID-19 pandemic, social justice movements, and significant uncertainty, wars, and change. Key issues for this group include declining birth and reproductive rates, physical inactivity, and increased time spent online (Hernandez-de-Menendez et al., 2020). These factors have influenced their perspectives on education, often leading to a mix of uncertainty and ambition, as a result, Generation Z has different priorities about their educational goals.

3. Research Questions

This paper aims to answer the following questions:

1. What are the main characteristics of Generation Z college students?
2. What are the learning preferences of Generation Z first year students at the selected private university in Egypt?
3. What teaching and learning strategies can teachers adapt to accommodate these preferences?

4. Literature Review

4.1. General Characteristics, Values and Attitudes.

Growing up in the age of smartphones and social media, Generation Z sees technology as an integral part of their lives, shaping how they communicate, maintain friendships, consume information, and learn. For them, instant access to facts and resources has been a fundamental aspect of childhood (Thomas, 2011). They are adept at filtering vast amounts of information, multitasking, and seizing opportunities to make their mark on the world. While they are socially connected, their interactions often take place through social media, leading to a diverse range of connections. This generation spends more time online and embraces a wider variety of experiences than previous cohorts (Andrea et al., 2016). However, they are also aware of online threats such as identity theft, cyberbullying, and phishing. These challenges have taught them the importance of privacy in their digital lives, and they may require more support for personal development compared to earlier generations (Selingo, 2018). Generation Z sees technology and creativity as important and intersecting aspects of their identities and wants more focus on creativity in their studies (Adobe, 2016). In terms of education, Generation Z expects a high-tech learning environment and campus experience, but they also value real-world interactions and do not want to be confined to a virtual existence (Seemiller & Grace, 2016).

4.2. Similarities and Differences Between Generation Z and Other Generations

This generation shares some traits with Millennials. While Generation Z is influenced by technology like their Millennial counterparts, they have never experienced a world without internet access (Andrea et al., 2016). Thanks to smartphones and broadband internet at home or school, they have had access to more information than any previous generation at their age. In addition, Generation Z is seen as more open-minded and adaptable, having grown up in a world that constantly challenges them. However, there are concerns that they may face social difficulties in their professional lives and struggle to take on responsibilities when interacting with older generations (Andrea et al., 2016). On a positive note, as more Generation Z individuals enter the workforce, there can be an increase in digital screens, fewer regulations, reduced paper waste, and a flexible working-hours system. There is also a growing emphasis on creating a workplace where gender equality is prioritized (Kapil & Roy, 2014).

As the children of mostly Generation X parents, Generation Z is believed to have embraced more traditional values. They place a strong emphasis on family, like their Generation X predecessors (Seemiller & Grace, 2016). Like their parents, when they encounter a problem, they actively seek solutions, and they are quick to seize opportunities for improvement. Generation Z is particularly financially pragmatic (Lanier, 2017). They understand that jobs are not guaranteed as many of Generation Y members suffer unemployment. They recognize that success requires more than hard work (Lanier, 2017). As a result, they are often viewed as highly entrepreneurial, preferring to create their own paths rather than pursue traditional employment. Many in this generation have generated income through self-employment such as selling handmade products and offering services, instead of relying on the conventional jobs that previous generations typically held (The Center for Generational Kinetics, 2018).

While Generation Y was engaged in many critical social issues, Generation Z pays more attention to equality, particularly concerning gender, economic, and racial issues (Schroth, 2019). Members of Generation Z actively advocate for those who face unfair treatment. Like Millennials, they aspire to positively impact the world (Loveland, 2017). However, this generation is more proactive in their advocacy efforts. Whereas Generation Y supported businesses involved in social causes such as fair trade, humanitarian initiatives, and fair labor practices, Generation Z is taking direct action by leading marches, influencing policies, and seeking concrete solutions.

4.3. Learning Habits and Preferences

Generation Z has grown up in quite a different world compared to many of their teachers, particularly regarding access to information and life experiences. This shift has significantly influenced how they search, access, learn, and engage with information (Thomas, 2011). They tend to expect quick results, answers, and rewards (Cilliers, 2017; Vikhrova, 2017) and often have a short attention span (Opriș & Cenușă, 2017). With information readily available, they anticipate instant results and may not take the time to verify the credibility or reliability of their sources. They also seek constant feedback and prefer personalized learning tasks that are

engaging and allow them to progress at their own pace (Shatto & Erwin, 2016). Due to their exposure to a constant flow of brief information segments, their attention span has noticeably reduced. According to Shatto and Erwin (2016) students read less than 20% of a text and spend only 4.4 seconds on every 100 words. This shift away from reading linear texts has altered their reading habits, often leading to difficulties with traditional gap-filling exercises. Therefore, one effective way for Generation Z to learn is through "chunking" information rather than enduring lengthy lectures.

Generation Z has shown enhanced cognitive abilities in visual learning. Their brains are increasingly adjusted to complex visual imagery, leading to a more developed area responsible for visual processing, which makes visual learning methods more effective (Rothman, 2016). A study by Fesol et al. (2016), which used Neil Fleming's learning style model and involved 184 respondents from a public university in Malaysia, found that 72.8% of participants favored visual and visual-related learning styles. Additionally, Generation Z students tend to be keen observers; they prefer to watch others complete tasks before attempting them themselves. This preference is evident in their inclination to seek information through video. According to a Pearson study (2018), 59% of Generation Z individuals prefer learning via YouTube videos, and 55% believe that YouTube has positively impacted their education and personal development (Shorey et al., 2021; Cameron & Pagnattaro, 2017). Consequently, this generation generally dislikes traditional auditory learning methods, such as lectures and discussions, while they enjoy interactive games, collaborative projects, and hands-on challenges (Rothman, 2016). Many studies suggest that Generation Z expects educational environments to reflect their virtual experiences (Cilliers, 2017). A systematic review analyzing gamification as a motivational tool for Generation Z in higher education, which examined 29 articles, concluded that "games may enhance learners' motivation and engagement, enriching their educational experiences in the classroom" (Saxena & Mishra, 2021).

Generation Z is far from being passive learners. A report from Barnes and Noble College (2018) indicates that they primarily learn through active engagement and prefer hands-on learning environments. When entering college, Generation Z is focused on acquiring the skills needed for their future careers. Findings from Northeastern University's Innovation Survey reveal that these students favor experiential learning opportunities where they can apply their knowledge in real-world scenarios. Similarly, a study by Seemiller and Grace (2016) found that 79% of Generation Z students prefer practical experiences, such as projects and internships, as a means of learning. They value project-based learning and undergraduate research that develop essential, marketable skills for life after graduation (Selingo, 2018). Additionally, they are in search of a practical education that equips them to tackle real-world problems (Loveland, 2017).

Generation Z students tend to prefer intrapersonal learning. The individualistic nature of technology has made them comfortable with independent learning, often without the need for interpersonal interaction. A study by Seemiller and Grace (2017) found that they appreciate this approach because it allows them to focus, set their own pace, and understand their learning before

sharing it with others. This intrapersonal style contrasts sharply with the collaborative, teamwork-focused approach of Millennials, as noted by Schofield and Honore (2011). However, this preference for intrapersonal learning does not mean they avoid collaborative group work; instead, Generation Z values input from peers and teachers after they have had time to think through concepts or projects independently. Research indicates they also place significant importance on face-to-face interactions and group learning, both online and offline. According to Pearson (2018), 57% of Generation Z students prefer in-person activities with their classmates. Additionally, Zimmer (2015) found that eight out of ten Generation Z students enjoy studying with friends, often utilizing interactive multimedia in virtual settings. Ultimately, they seek an education that they can apply in real life. They favor a blend of learning environments and activities led by professors, while also having the freedom to mix independent study with group projects and experiential opportunities. They particularly value project-based learning and undergraduate research that develop essential skills for post-college life (Selingo, 2018). Shorey et al., (2021) highlights that the most effective learning tools for Generation Z, in order of preference, include class discussions, problem-solving sessions, study guides, textbooks, test review sessions, small group work, and online access to homework and notes.

Educating Generation Z is challenging, as teachers need to move away from traditional teaching methods and adopt diverse strategies to engage their aspiration, interests, and understanding (Nicholas, 2020). The aim of the current study is to investigate the characteristics and learning preferences of first-year Generation Z students at a private university in Egypt regardless of their specialization as perceived by both students and teachers. The study also aims to explore the current teaching practices and how far they are aligned with the needs of Generation Z learners, explore the challenges faced by the students and the opportunities they possess, and provide actionable recommendations for educators to improve teaching methodologies and curriculum design.

The study's focus on a specific private university allows for a more understanding of how institutional culture affects Generation Z learning preferences. Focusing on students regardless of their major helps to minimize biases that could arise from the inherent characteristics of specific fields (e.g., the analytical nature of STEM vs. the creativity in arts). Moreover, findings from a diverse student population can be more easily generalized to other similar institutions or contexts, making the research more relevant to a wider audience. Further, surveying both students and teachers provides a dual perspective, revealing potential discrepancies between student preferences and faculty perceptions, which fewer studies addressed. The practical applications of the findings can provide concrete strategies for educators, which may be less emphasized in previous research that mostly focused on identifying the unique traits of this generation.

5. Methodology and Research Design

The study employs a mixed-methods approach, combining quantitative and qualitative analyses. The primary data collection tools are two structured surveys: one designed for students and the other for teachers. The surveys obtained the required approval of the university ethics committees. The target population of this research includes Generation Z first year students across the various disciplines at the selected university and the staff members who taught them. The university has different disciplines: medical (pharmacy, dentistry, and nursing) law, engineering, computer science, mass communication, and humanities including languages and psychology.

The student survey includes 31 questions organized into four sections. The first section gathers demographic information such as age, gender, year in college, and field of study. The second section explores students' self-perceptions, values, and differences compared to older generations, using both multiple-choice and open-ended formats. The third part examines learning preferences: learning styles, use of technology, preferred learning materials, and multimedia, among others. The final part investigates students' motivation to seek college, preparedness for the future, and their view of the current educational system. The teachers' survey comprises 20 questions, similarly structured from the student survey. Further, it focuses on the perceptions related to Generation Z students with regard to their creativity, advantages, and challenges; assessment of teaching methodology and technology use; and also the effectiveness of different pedagogical approaches. The final section deals with teachers' views about the motivation of students, preparedness for employment, and developments in teaching methodologies.

The quantitative data collected from the surveys will be analyzed using statistical software to identify trends, correlations, and significant differences between student and teacher responses, with descriptive statistics summarizing the findings. In parallel, open-ended questions from both surveys will undergo thematic analysis to identify recurring themes and insights. This qualitative data will provide deeper context to the quantitative findings.

6. Results

The online surveys yielded responses from 139 students and 29 teachers. The next section of the study shows the results of the students' and teachers' surveys. Several questions are common in the two surveys; therefore, the results will be discussed by comparing the responses of the two target participants.

6.1. Main Characteristics of Generation Z

One focus of this paper is how students and teachers perceive the characteristics of Generation Z. A notable similarity is the acknowledgment of their intellectual capabilities, with 18% of students and 14% of teachers describing Generation Z as smart (Fig.2). However, differences arise in a significant gap in expectations regarding persistence; while 13% of students see themselves as hardworking, only 2% of the teachers agree. Additionally, 16% of the teachers observed a tendency toward laziness compared to 13% of students who acknowledge it. Interestingly, both teachers and students agree that Generation Z members are not good team players which may reflect Generation Z's intrapersonal communication preference. The lowest percentages reflect a lack of identification of Generation Z as being initiative; both groups show minimal recognition (1%) of this trait. On the other hand, teachers view Generation Z as more "bored by the past" (13%) compared to just 3% of students, correcting a general societal misperception about Generation Z. Another discrepancy is the students' selection of being closed/reserved. While 7% of students identify themselves as closed or reserved, only 1% of teachers share this view, suggesting that students may be more self-aware of their introverted tendencies or reluctance to engage openly, whereas teachers perceive them as more open and communicative.

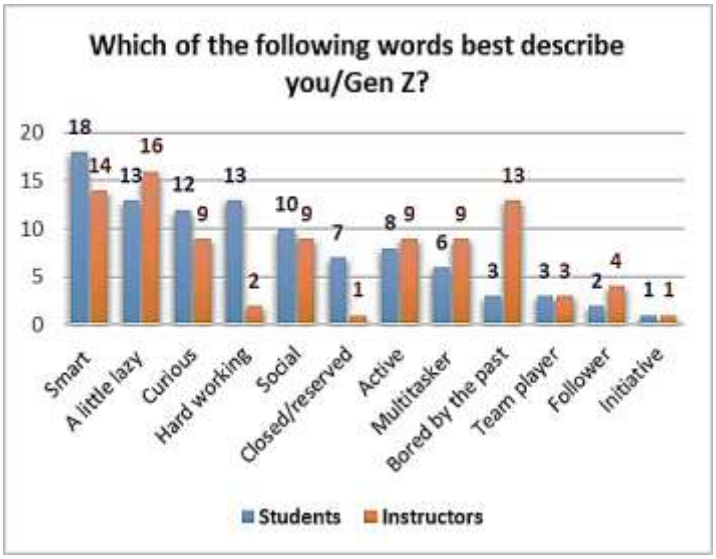

Fig.2: Which of the following words best describe Gen Z?

Similar to how students and teachers described the characteristics of Generation Z, the analysis of the personality traits reveals similarities and differences. A significant similarity is observed in the acknowledgment of stress and anxiety (Fig.3), with 14% of students and 13% of teachers recognizing this trait, indicating a shared understanding of the pressures faced by this generation. In terms of creativity, students rate themselves higher at 16% compared to 10% of teachers, suggesting a self-perception of greater creative potential among students. On the other hand, teachers perceive Generation Z as more impatient and easily distracted, with 26% identifying this trait compared to only 11% of students. This discrepancy highlights differing views on attention spans and focus. Another difference is seen in the perception of analytical skills; while 13% of students describe themselves as analytical, only 1% of teachers share this view, underscoring a potential gap in evaluating Generation Z's logical thinking abilities. Additionally, the lowest percentages reflect a lack of identification with traits like being balanced or adaptable, with no teachers recognizing this quality at all. Interestingly, while only 2% of students describe themselves as tech-savvy, a substantial 22% of teachers view them this way, signifying a belief among teachers in the technical competencies of their students that students may not fully recognize.

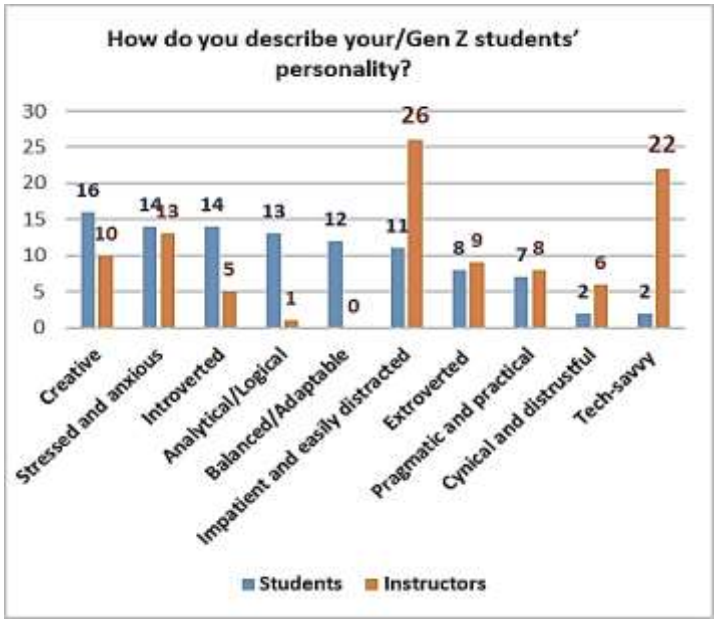

Fig.3: How do you describe Gen Z students' personality?

6.1.2. Digital Native Not Tech-savvy

The students' survey results reveal that most of Generation Z students, 53%, consider themselves digital natives, indicating that they have grown up with technology and find it to be second nature (Fig.4). Additionally, 46% of students describe themselves as somewhat comfortable with technology but not experts. The strong self-identification underscores the deep integration of digital tools and platforms in their daily lives. This may seem to contradict the students' inclination to describe their personality as tech-savvy in the

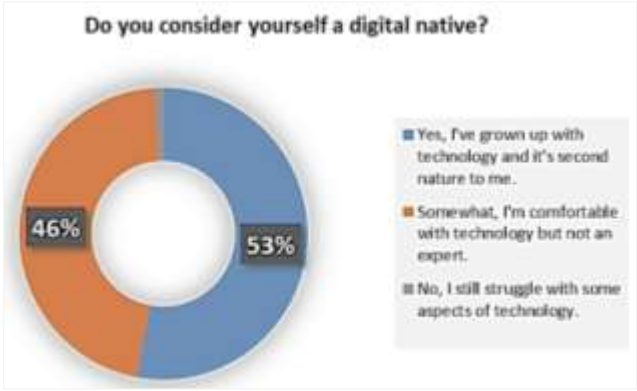

Fig. 4: Do you consider yourself a digital native?

previous question. However, being born in a total digital era or being comfortable with using technology does not mean being tech-savvy and an expert.

6.1.3. Creativity

Students' and teachers' perceptions of Generation Z's creativity relative to older generations is positive. Both groups view Generation Z as more creative, with 60% of students and 59% of teachers expressing this belief, indicating a strong consensus on the innovative capabilities of this generation (Fig.5). Additionally, a sizable portion of both groups, 26% of students and 34% of teachers, believe that Generation Z is equally as creative as older generations, further highlighting a shared appreciation for their creative potential. However, there is a noticeable difference in the perception of less creativity; 14% of students think Generation Z is less creative, compared to only 7% of teachers who share this view. This suggests that students may be more critical of their generation's creative output than teachers, who maintain a more favorable assessment.

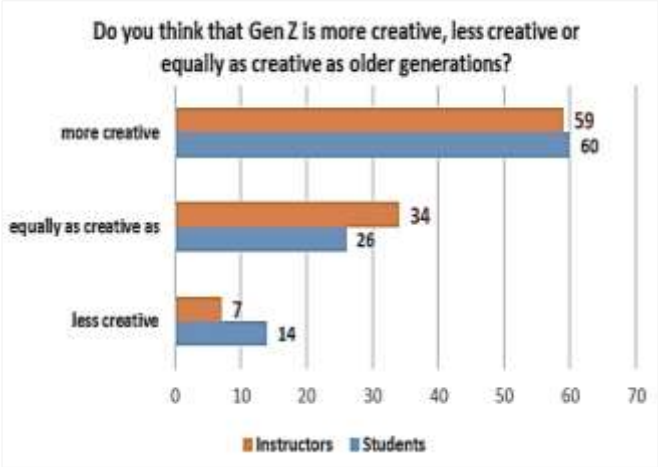

Fig.5: Do you think that Gen Z is more creative, less creative or equally as creative as older generations?

6.1.4. Making A Difference in The World

Most of Generation Z students value social impact and aim to make a difference in the world, with 35% stating that it is a top priority for them. This highlights a strong commitment to social responsibility (Fig.6). Additionally, 29% of the students report that they somewhat incorporate social impact into their work when possible, suggesting a willingness to engage with social issues. Furthermore, 22% of students express that their engagement with social issues depends on the situation and opportunity. Only 14% of students indicate that they are primarily focused on their own careers and goals, which reflects a relatively low emphasis on individualism.

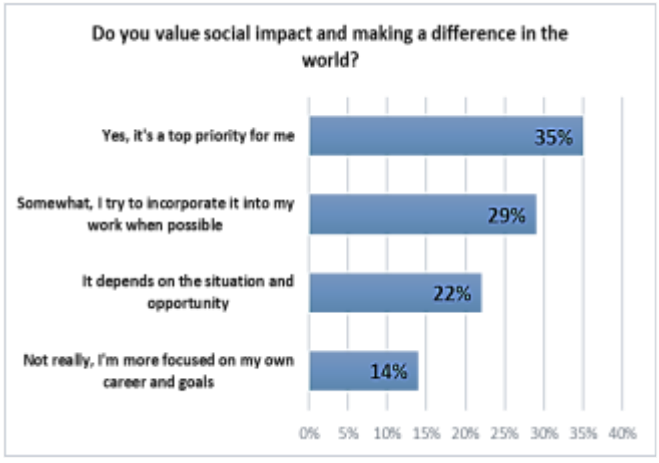

Fig. 6: Do you value social impact and making a difference in the world?

6.1.5. Primary Motivations for Pursuing Higher Education

The survey results disclose that 33% of Generation Z students are primarily motivated to pursue higher education by the desire to gain knowledge and develop their intellectual abilities (Fig.7). Closely following, 29% of students are motivated by the desire to improve their job prospects and earnings potential, indicating a practical consideration of how education can directly impact their future career opportunities. Moreover, 23% pursue higher education to follow a specific career or professional path, reflecting a goal-oriented mindset among students. Only 12% of respondents are motivated by the desire to contribute to society and make a positive impact, suggesting that while social responsibility is valued, it may not be the primary driver for most students.

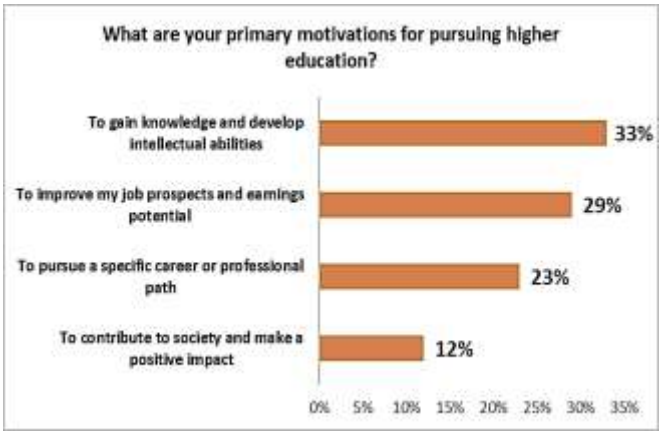

Fig. 7: What are your primary motivations for pursuing higher education?

6.1.6. Attention Span and Ability to Focus

The data regarding the attention span and focus of Generation Z presents differing perspectives among students and teachers (Fig.8). A significant 35% of students believe they have a moderate attention span suitable for short tasks, while only 24% of teachers share this view. In contrast, teachers are more likely to perceive Generation Z as struggling with focus, with 38% indicating they get easily distracted, compared to 23% of students. Interestingly, both groups agree that attention span varies by task and environment, with 26% of students and 34% of teachers acknowledging this. The contrast in views is evident in the high percentage of students (17%) who feel they have excellent focus, compared to a mere 3% of teachers who share this sentiment.

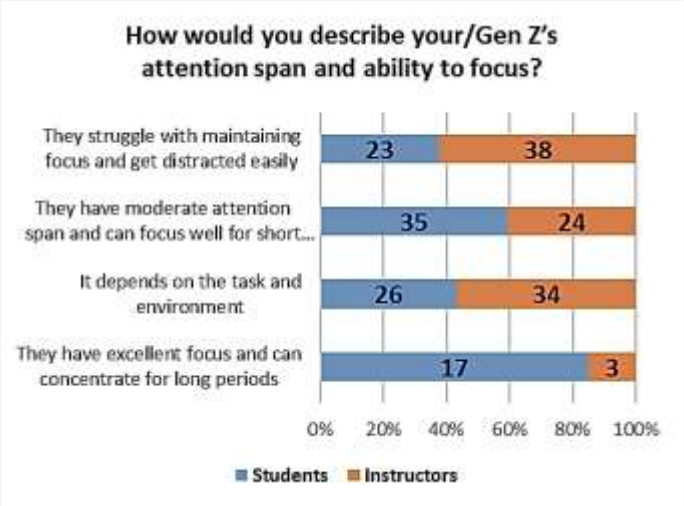

Fig. 8: How would you describe Gen Z's attention span and ability to focus?

6.1.7. Advantages Generation Z Has Compared to Older Generations

The perspectives of Generation Z students and their teachers when asked about the advantages this generation has compared to older generations are characterized by their access to technology, better educational opportunities, creativity, global awareness, and social consciousness. A primary area of consensus is the significance of technological access. Students

asserted that their "privilege to have had access to technology from a young age" has been vital in their development. Another student stated, “I learn things about technology faster. I also think I'm more flexible to learn new things/change mindset,” reflecting how this access enables them to adapt quickly to new concepts and skills. These comments confirm the quantitative results with 53% of students considering themselves digital natives and an additional 46% describing themselves as somewhat comfortable with technology. Teachers echo this sentiment, noting that Generation Z is "very familiar with technology and easily adapt to its advancement." Another teacher remarked, “They have access to remote learning and online work,” which can significantly broaden their educational and career prospects.

Additionally, the theme of creativity was mentioned prominently in both perspectives. Students expressed that technology not only facilitates communication but also fosters creativity. One student pointed out, “We are highly proficient with digital tools such as social media and various platforms,” another noted, “I like to think of new things or even create new things that never existed before.” which allows for easy sharing of ideas and creativity. A student concluded, “We’ve been exposed to life experiences more which gives us an advantage to creativity and problem solving,” underlining their creativity and open-mindedness. Teachers’ answers supported this idea by pointing out that the “open access to a lot of opportunities/information online can lead to more creative inspiration.” The qualitative analysis supports the quantitative results that show that both groups view Generation Z as more creative than older generations, with 60% of students and 59% of teachers sharing this view.

Furthermore, teachers highlighted Generation Z's interest in social responsibility and activism as a significant advantage, with one teacher noting, "Gen Z is more socially conscious, environmentally sustainable, and equal." This reflects an awareness of societal issues that may not be as prominently featured in students’ responses. While students acknowledge an open-mindedness fostered by exposure to diverse perspectives—one student remarked, "I think as a generation we might be more open-minded merely as a result of greater exposure via globalization and interconnectivity"—we primarily focus on personal growth and adaptability.” Another student noted the importance of mental health awareness, stating, “I benefit from advanced technology, and I prioritize my mental health and wellbeing.”

6.1.8. Differences Generation Z Has Compared to Older Generations

The main differences between Generation Z and other generations are revealed in the qualitative analysis of the surveys' responses. Students and teachers pointed to technological proficiency as a major differentiator. Students agreed, "We have more technology now," emphasizing its pervasive presence in their life. This was supported by teachers, as they commented that even though "Gen Z has more access to a vast amount of information," they lack the wisdom to know how to access the needed knowledge. One teacher commented thus: "They can reach any information they want by a click of a button; how to use it is the big question." This contrast shows the generational gap in acquiring and using knowledge. Moreover, students expressed that they have a different worldview: "Gen Z is more set on giving themselves the best

life they can," whereas older generations were set on survival. A student also said, "Our generation tends to not rely as much on local and traditional customs," which signifies moving toward universal perspectives. This generation is more socially aware compared to the preceding generations. One student commented, "Gen Z are more aware of underlying issues." Another student said, "the world is now more open to abstract and controversial ideas." This openness brings its challenges, as another student noted, "Because of social media's open world, our lives have become more difficult and full of pointless comparisons."

Students also remarked that their ways of overcoming difficulties differ from those of earlier generations. As one student pointed out, "The brain of the older generation is fossilized with old ideas." Other students pointed to a preference for efficiency and convenience in handling difficulties, with one student saying, "We try to find easier and more convenient solutions if possible," and another added, "We try to actively change the world for good." This sentiment was then supported by the teachers: "They are more open to discussing critical issues," said one teacher, and another teacher described them by saying, "They look for an environment that celebrates differences and is inclusive." Another teacher then added, "They have the courage to speak themselves and express their opinions," showing that this generation is more willing to advocate for justice and equality.

Moreover, attention span and social skills were mentioned as challenges. Several teachers noted that this generation generally has shorter attention span due to the fast-moving pace on social media. One teacher said, "They are too focused on social media, which leads to reduced attention span and patience compared to older generations." This finding corresponds with the quantitative results that 38% of the teachers state that Generation Z students struggle with maintaining focus and 24% state that they have moderate attention span. Students realize this and admit that social media is detrimental when saying, "Older generations had less distracting them from their goals and they were more patient." Another issue was raised dealt with social skills/respect. One teacher noted, “The gap is too wide, and the level of self-respect and respecting others isn't particularly good.” This suggests a gap in traditional communication skills influenced by digital interactions. Moreover, concerns were expressed about attitudes. One teacher commented, "Their sense of commitment and ideals are different; they are less committed and do not respect the experience of older generations." This perception underlines generational differences in values and expectations. This analysis brings to light the complex interchange of advantages and differences defining the experiences of Generation Z in contrast to their predecessors.

6.1.9. Challenges Generation Z Has Compared to Older Generations

Regarding the challenges this generation has compared to the older generation, one main concerns mentioned by students and teachers is job insecurity. As many teachers commented, "they have less opportunities because their society is more competitive," which means it is hard to find a secured employment. Another teacher explained, "The increasing automation of different industries has created a sense of job insecurity and limited career prospects for this

younger generation." Students echoed this view, with one student saying, "less opportunities, way more economic and environmental crises," while another mentioned "inflation and the fall of our economy." Such comments reveal their awareness of the wider economic instability affecting their futures.

Other key concerns involve mental health challenges. The teachers underlined the role of social media in affecting Generation Z's mental health and education, with one stating, "Mental health challenges: pressure, social media anxiety, economic uncertainty-all contribute to poor mental health." One teacher remarked, "Everything is overwhelming now," reflecting the multitude of distractions in the daily lives of Generation Z. Another teacher added, "They are getting bored fast and easy; to do things, there must be something in return," which hints at a challenge in motivating them in classrooms. Also, the responses from students indicate an awareness of mental health concerns. As one student said, "More mental health problems and physical chronic illnesses are way more apparent in this generation." Students also expressed their struggles with "the pressure of social media." Students also noted that "Communication in real life is a significant challenge," which points to difficulties stemming from excessive online interaction. Besides, one student said, "Dealing with a lot of older people's stubbornness, arrogance and ignorance," reflecting the generational misunderstandings that complicate communication.

Additionally, societal expectations were mentioned as one of the specific challenges. Teachers cited the need for flexibility in adapting to a fast-moving world: "A world of very fast-paced changes requires them to be very flexible and adaptable." For the students, however, this pressure to meet higher standards was expressed, with one student stating, "The world has higher expectations from us." As another student explained this experience: "It is the constant comparison, never feeling like you're doing enough." A further comment underlined the feeling of being "under constant pressure of having to prove myself," which can lead to burnout and anxiety. This reveals a feeling of inadequacy and stress caused by digital culture.

6.2. The Learning Preferences of Generation Z Students

6.2.1. Frequency of Technology Use

The survey results disclose that most of Generation Z students, 74%, use technology constantly in their learning, indicating that digital tools such as laptops, smartphones, and apps are integral to their educational experience (Fig.9). This high percentage underscores the deep reliance on technology for accessing information, collaborating, and enhancing their learning processes. In addition, 22% of the students report using technology regularly while still

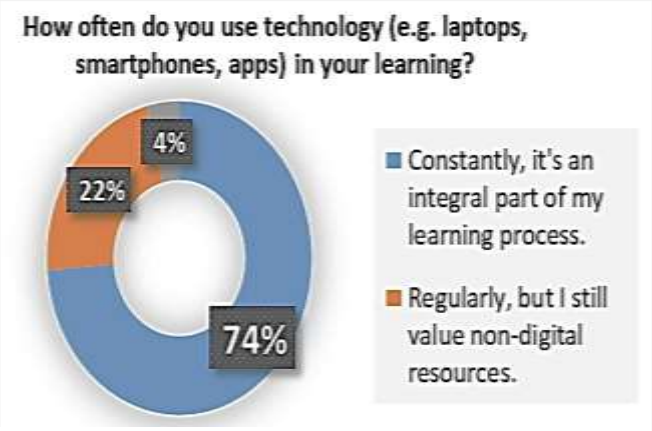

Fig. 9: How often do you use technology (e.g. laptops, smartphones, apps) in your learning?

valuing non-digital resources, suggesting a balanced approach that appreciates both digital and traditional learning methods. Only 4% of students indicate that they occasionally use technology and prefer to limit their usage, highlighting that educators may need to consider integrating more digital tools and resources to align with this preference.

6.2.3. Multimedia Elements

The results indicate that multimedia elements, such as videos, animations, and infographics, play a crucial role in the learning process for Generation Z students, with 50% rating them as extremely important for enhancing their understanding (Fig.10). Moreover, 29% of students consider multimedia to be moderately important, suggesting that while they appreciate these tools, they do not see them as essential for every learning scenario. In contrast, only 9% of students find multimedia elements not particularly important, indicating a preference for traditional text-based materials, while 12% state that the importance of multimedia depends on the subject and learning objectives. This distribution highlights a general trend among students towards valuing interactive and visually stimulating resources.

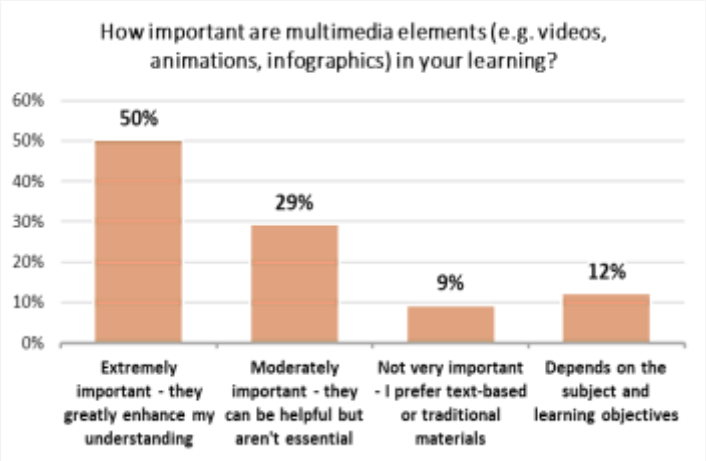

Fig. 10: How important are multimedia elements (e.g. videos, animations, infographics) in your learning?

6.2.4. Learn Independently or Collaboratively

Generation Z students have a strong preference for a balanced approach to learning, with 42% stating they enjoy a mix of both independent and collaborative work (Fig.11). This suggests that while they value the flexibility and self-directed nature of independent learning, they also recognize the benefits of group activities and peer interactions. The most significant group, comprising 36% of students, prefers to learn independently, highlighting a desire for autonomy and the ability to work at their own pace. In contrast, only 10% of students express a preference for collaborative learning in group settings, indicating that fewer students prioritize this approach. Also, 12% show that their preference varies depending on the subject and task. These findings suggest that while Generation Z students appreciate independent learning, they also see value in collaboration.

Fig.11: Do you prefer to learn independently or collaboratively?

6.2.5. Feedback

As per the survey results, Generation Z students overwhelmingly prefer detailed, constructive feedback on their work, with 59% favoring this approach (Fig.12). This preference suggests that students value specific guidance that enables them to understand their strengths and areas for improvement. In addition, 27% of students appreciate a combination of positive and constructive feedback. Only 9% of students prefer high-level, encouraging feedback focused solely on the positives, and a mere 5% opt for minimal feedback, indicating that very few students are comfortable with a more hands-off approach to assessment.

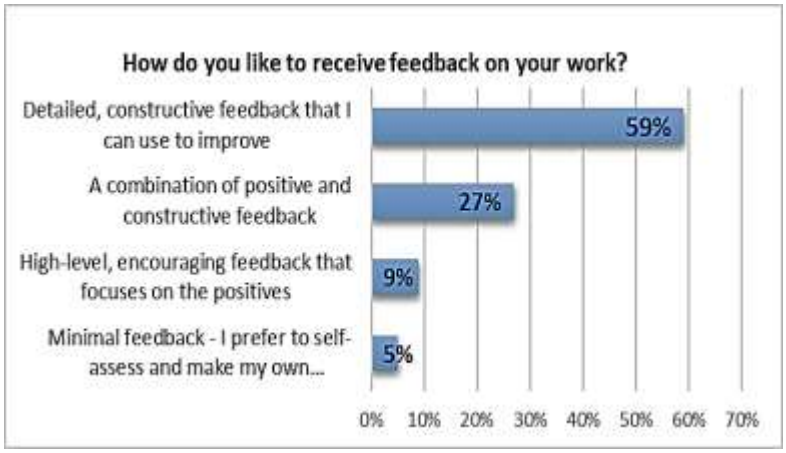

Fig.12: How do you like to receive feedback on your work?

6.2.6. A Need for Creativity

Generation Z students show a strong desire for more emphasis on creativity within their classes and curriculum, with 62.6% strongly agreeing with this statement (Fig.13). This substantial majority reflects a clear recognition of the importance of creative thinking and expression in their educational experience. Additionally, 37.4% of students somewhat agree. The minimal disagreement implied by these results indicates that students feel the current curricula may not adequately support their creative development.

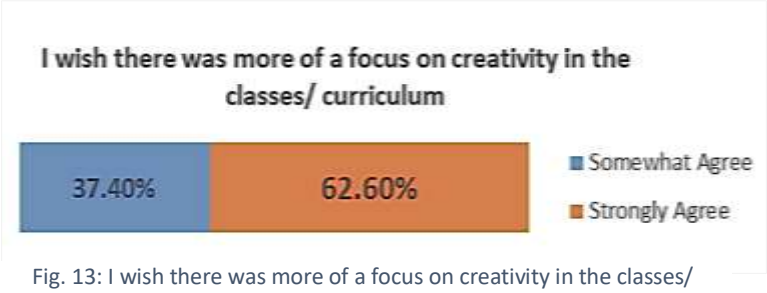

Fig. 13: I wish there was more of a focus on creativity in the classes/ curriculum

6.2.7. Digital or Physical Learning Materials

The results reveal that Generation Z students overwhelmingly prefer a combination of digital and physical learning materials, with 60% indicating they utilize both types of resources (Fig.14). This preference highlights the flexibility and adaptability of students in integrating various formats to enhance their learning experiences. In contrast, 20% of students favor physical materials, such as printed textbooks and handwritten notes, which suggests that traditional resources still hold value for a segment of this generation. Meanwhile, only 16% prefer digital materials like e-books and online resources, indicating that while digital tools are important, they are not the sole focus for most students. Notably, a mere 4% report having no strong preference and adapt to the available materials, suggesting that flexibility is a common trait among students.

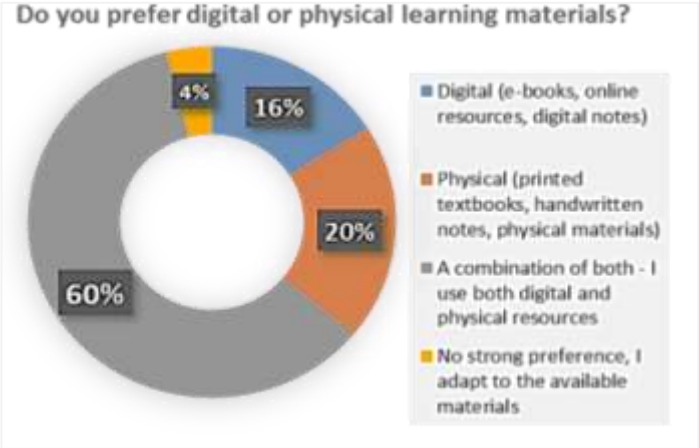

Fig.14: Do you prefer digital or physical learning materials?

6.2.8. Best Learning Method

There are similarities and differences in learning preferences between students and teachers regarding how Generation Z learns best in classwork. Both groups show a preference for visual and interactive methods, with 17% of students and 23% of teachers favoring "watching" as a learning approach, indicating a shared recognition of the effectiveness of visual content (Fig.15). Similarly, "doing/creating" is favored by 17% of students and 23% of teachers, suggesting a mutual appreciation for hands-on learning experiences. However, notable differences emerge in other areas: while only 2% of teachers choose "reading" and "writing" as effective learning methods, 11% and 13% of students, respectively, indicate these as their preferred approaches. Additionally, 12% of students prefer "researching online," compared to 17% of teachers, showing that teachers might place a higher value on independent research. Interestingly, students demonstrate a broader range of preferences, particularly for traditional learning styles.

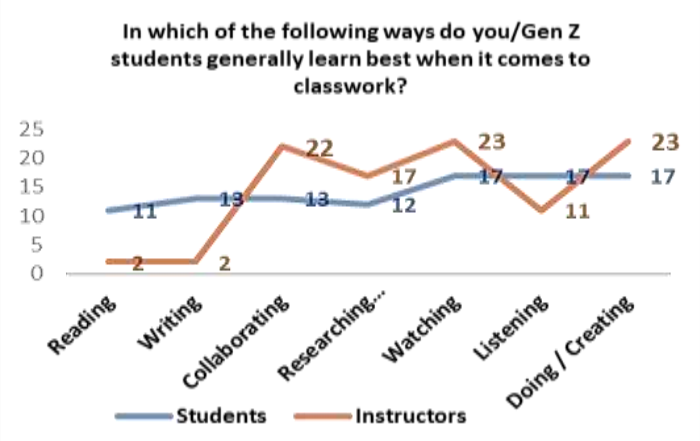

Fig. 15: In which of the following ways do Gen Z students generally learn best when it comes to classwork?

6.2.9. Frequency of Learning Methods

When students and teachers are asked about how often Generation Z students engage in various learning methods in the classroom, the highest percentage for both groups are for "watching," with 6% of students and 7% of teachers indicating they frequently learn and apply this way, suggesting a shared recognition of visual learning's role in education (Fig.16). However, the overall frequency of engagement in these methods is unusually low across the board. For instance, "listening" is reported by 7% of students and 4% of teachers, indicating a slightly greater opportunity for students to engage in auditory learning. In contrast, "writing" and "reading" have the lowest reported frequencies, with only 2% of students and 1% of teachers for writing, and 3% of students and 2% of teachers for reading, highlighting a general lack of emphasis on these traditional methods. Additionally, "researching online" is least frequently experienced by students (1%) but more recognized by teachers (5%), suggesting that teachers may perceive online research as more integrated into learning than students do. Overall, the data indicates some notable differences in how these methods are perceived by students and teachers.

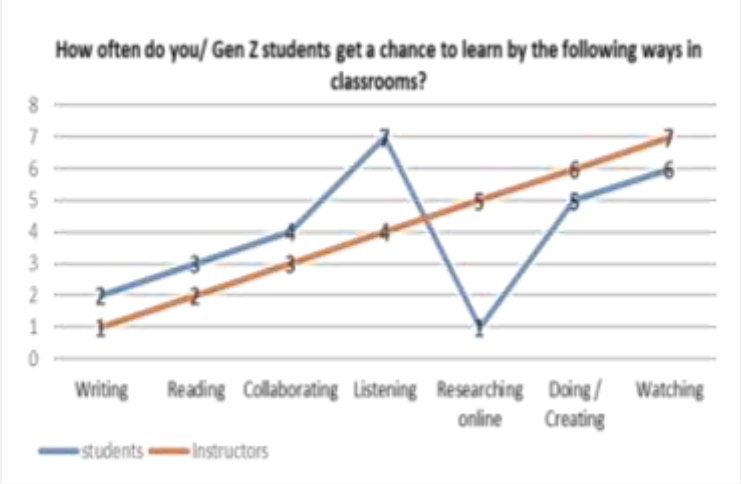

Fig. 16: How often do Gen Z students get a chance to learn by the following ways in classrooms?

6.3. Teaching Strategies to Accommodate Generation Z Learning Preferences

6.3.1. The Importance of Various Educational Aspects

Concerning the perceptions of the importance of various educational aspects for Generation Z students, most of both students and teachers place high importance on developing critical thinking skills, with 88.5% of students and 96.6% of teachers agreeing on its significance, indicating a strong consensus on this foundational skill (Fig.17). Moreover, both groups recognize the value of learning through hands-on experience, with 82.7% of students and 89.7% of teachers supporting this method.

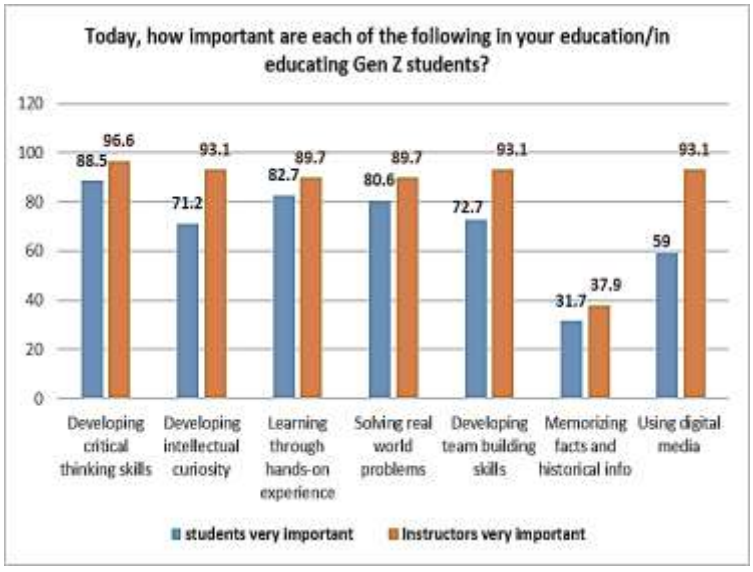

Fig.17: Today, how important are each of the following in educating Gen Z students?

However, teachers consistently rate the importance of other educational elements higher than students do. For instance, 93.1% of teachers emphasize the importance of developing intellectual curiosity, compared to 71.2% of students. Similarly, a high percentage of teachers 93.1% put emphasis on building teamwork skills, compared to 72.7% of the students which again reflects the students' preference for intrapersonal communication and their closed and reserved nature. On the lower end, memorizing facts and historical information is viewed as important by only 31.7% of students and 37.9% of teachers, suggesting a shared belief that rote learning is less relevant in modern education. The main contrast appears in the high percentage of teachers (93.1%) who consider using digital media very important compared to 59% of students which reflects differing priorities, with teachers perhaps recognizing the growing role of technology in education more acutely.

6.3.2. Teachers' Perception on How Technology Has Influenced Teaching Methods

The teachers' responses to the question on how technology has changed the way they approach education of Generation Z reveal a focus on interactivity, access to resources, personalized learning, and enhanced collaboration. Most teachers agreed that technology enables more interactive and engaging lessons. One teacher stated, "Technology is transforming teaching of Generation Z by enabling interactive digital tools." Another teacher stated, "I have to integrate audio-visual material in my lectures and use mobile applications more," emphasizing the need for brief and engaging content since students tend to lose attention quickly. Teachers also indicated that technology expands access to resources and material. One teacher explained, "Gen Z students benefit from the variety of technological tools and platforms that enhance their learning experience." This ease of access to information supports personalized learning, as explained by another teacher: "Personalized Learning: I can tailor content to individual student needs and learning styles," signifying a shift from one-size-fits-all education. Several teachers mentioned that with technology, information is easily accessed more quickly. One teacher explained saying, "It helps them find the information and get the knowledge faster," which in turn challenges educators in teaching the knowledge in a much more interesting way. Engaging content is also suggested in the comment, "The material has to be always engaging," which reflects the changing expectations among students and teachers alike. Another method used by the teachers is creating interactive sessions and hands-on experiences. One teacher said, "Include more interactive sessions and allow students to use specific tools in order to design scientific graphs/diagrams." This approach fosters creativity and engagement, with another teacher noting, "It gives them all the sources they need for creativity."

6.3.3. Teachers' Perception on Preparing Generation Z for The Future

There is a strong belief among teachers that Generation Z students will pursue careers that are currently unimaginable, with 72.4% of teachers strongly agreeing with this statement (Fig.18). Additionally, 27.6% of

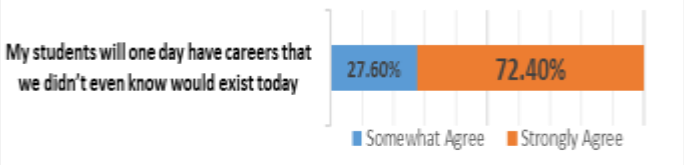

Fig.18: My students will one day have careers that we didn't even know would exist today

teachers somewhat agree. This overwhelming majority reflects a recognition of the rapid advancements in technology and changing job settings, emphasizing the uncertainty and dynamism of future career paths.

When teachers are asked to select the strategies that could help better prepare Generation Z for the future workforce, the highest percentage 31% selected "having more opportunities for hands-on learning," indicating a strong belief in the value of experiential education and practical skills in preparing students for real-world challenges (Fig.19). Following closely, 25% of the teachers advocate for "evolving the teaching curriculum," suggesting a recognition of the need for educational content that adapts to the changing demands of the workforce. Equally, 24% of the teachers support "letting students follow their curiosities," reflecting an understanding of the importance of fostering intrinsic motivation and engagement in learning. Interestingly, the lowest percentage, 20%, favors "using more technology in the classroom," which, while still significant, suggests that some teachers may view technology as a tool that is already endorsed by this generation and could not be their priority compared to hands-on experiences and a dynamic curriculum.

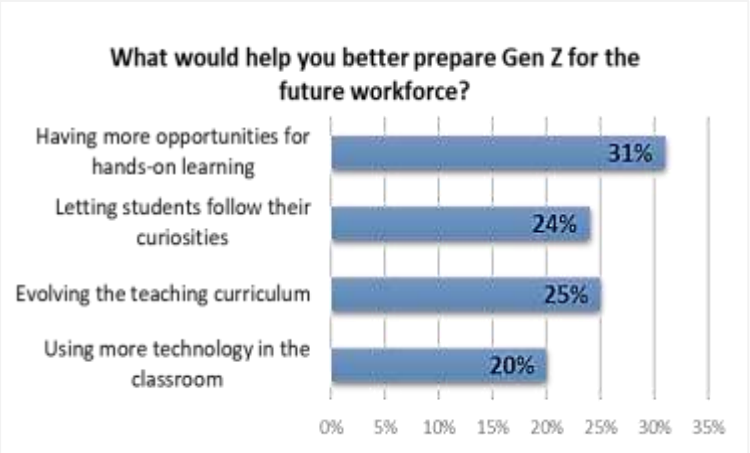

Fig. 19: What would help you better prepare Gen Z for the future workforce?

Furthermore, when asked regarding their need for improved tools to better prepare Generation Z for the future workforce, a 62.1% of teachers indicate a strong recognition of the inadequacies in current resources and a commitment to enhancing their teaching effectiveness (Fig.20). Additionally, 37.9% somewhat agree, further underscoring a general acknowledgment of the necessity for better support and tools.

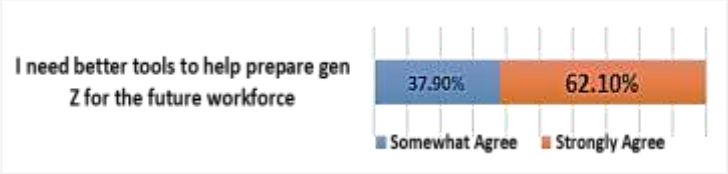

Fig. 20: I need better tools to help prepare gen Z for the future

6.3.4. Future Preparation After College

A notable 51% of students feel somewhat prepared, while an overwhelming 83% of teachers share this view, indicating a consensus on the notion of partial readiness but highlighting a significant gap in confidence (Fig.21). In contrast, only 22% of students consider themselves well prepared, compared to just 14% of teachers, suggesting that while both groups identify some level of preparedness, students are slightly more optimistic about their readiness. On the other end of the spectrum, 27% of students feel unprepared for their future, a stark contrast to only 3% of teachers who share this view. This disparity underscores the difference in how each group perceives the effectiveness of college in equipping students for post-graduation challenges. The surveys ask the students and teachers who selected the choice “unprepared” to state the reasons for this choice. Some students expressed feelings of unpreparedness, primarily due to a lack of clarity about career paths and practical experience. One student said, “I don’t know what career path I want to take up, and I don’t have any practical experience in the field yet.” This feeling is supported by others who noted, "I don't have enough experience in the working field, and I have not taken extracurricular like some of my peers," highlighting insufficient skills compared to their peers. The unpredictability of the job market was repeatedly mentioned as a source of stress, with one student saying, "The market is unpredictable and relentless. I find the process of job-hunting to be very challenging and scary." Another student pointed out, "There are many people graduating from the same faculty around," underlining the oversaturation of the job market. There are also internal struggles contributing to their overall sense of unpreparedness. One of the students commented, "I fear working in a mundane and routine 9-to-5 office job." Another student noted, "I am interested in too many things, so that it is hard to choose only one."

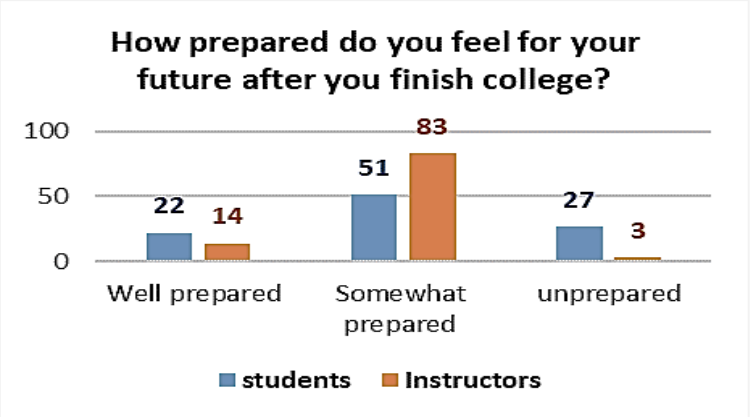

Fig. 21: How prepared do you feel for your future after you finish college?

For teachers, the continuance of support and effective teaching was paramount to help the students in their educational journeys. As one teacher shared, "Though a head start perhaps from Generation Z technological proficiency, the effective teaching remains very much necessary." They also emphasized difficulties regarding the motivation of students, where one teacher commented, "They are struggling to put in effort." Another teacher remarked, “It requires long hours of dedication to master practical skills, and the teaching team can only try to motivate students as much as they can,” suggesting that a lack of engagement may hinder students’ ability to develop necessary competencies.

6.3.5. Current Teaching System Effectiveness

In the same vein, the responses to the question regarding the effectiveness of the current teaching system in preparing Generation Z for future careers show varying perceptions between students and teachers. A notable similarity lies in the acknowledgment of satisfactory preparation, with 34% of students and a higher 52% of teachers feeling this way (Fig.22). However, significant differences emerge in the other categories. For instance, 30% of students believe the system prepares them to some extent, compared to only 24% of teachers who share this sentiment. Additionally, while 13% of students feel they are very well prepared, this figure drops to just 3% among teachers. The absence of uncertainty among teachers, who provided definitive views, contrasts with the 12% of students who are unsure, suggesting a more critical and perhaps experienced perspective from teachers on the current educational framework.

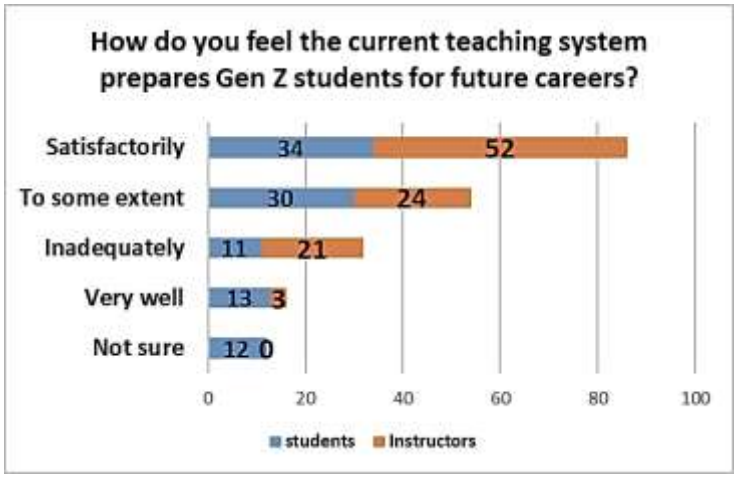

Fig. 22: How do you feel the current teaching system prepares Gen Z students for future careers?

7. Discussion

This study aims to explore the characteristics, learning preferences of first-year Generation Z students at a private university in Egypt, and the best teaching methods to accommodate these preferences. The results of the study agree in many respects with studies that discussed Generation Z's traits and education. As for the first research question which aims to investigate the characteristics of Generation Z college students, the surveys' results show that students and teachers describe Generation Z members as smart, curious, a bit lazy, social, active, multitasker, creative, stressed and anxious and pragmatic and practical. This finding is aligned with the findings of Adobe's (2016) report that surveyed the characteristics of Generation Z from the perspectives of students and teachers in USA. Meanwhile, there are discrepancies between teachers and students in the identification of some traits. For example, students see themselves as hardworking, and identify themselves as introverted and reserved, adaptable and analytical while teachers do not share this view as evident in the analysis. Meanwhile, many teachers view Generation Z as impatient and easily distracted, tech-savvy, and bored by the past, contrary to students' perception. The findings re the characteristics and personality of Generation Z highlight a complex relationship in perceptions, emphasizing the need for more communication.

Interestingly, Generation Z students consider themselves digital natives, not tech-savvy. They consider technology second nature as they were born in the internet era, but they do not see themselves as experts. This emphasizes Generation Z's awareness of how technology is

shaping their experience and identities. This view is supported by the study of Kapil and Roy (2014) which argues that Generation Z is not necessarily technically professional. They say that this generation is particularly interested in technology that is easy to use and solves their problems, helps them coordinate activities and provides relevant people and information. Moreover, the results are in line with the findings of Schroth's study (2019) re describing Generation Z members as social advocates and having a strong commitment to social responsibility. The current study shows that Generation Z recognizes the value of contributing to societal change and aims to make a difference in the world with most students either considers it a top priority or incorporates social impact into their work when possible.

As for Generation Z's primary motivation for pursuing higher education, the results disclose that Generation Z students are motivated by the desire to gain knowledge and develop their intellectual abilities, the desire to improve their job prospects and earnings potential, and the pursuit of a specific career or professional path, respectively. This finding is in line with Schwabel's (2014) study that the three most important career motivators for Generation Z are opportunities for advancement, more money, and meaningful work. Another finding that is also in line with other studies regarding Generation Z characteristics is related to their attention span. Most students and teachers acknowledge that Generation Z has a moderate attention span suitable for short tasks and it varies by task and environment. Teachers are more likely to perceive Generation Z as struggling with focus, indicating they get easily distracted. This finding is aligned with the findings of Shatto and Erwin (2016) study and the experimental study of Opriș and Cenușă (2017) that aimed to gather data on Generation Z's responses to different stimuli.

To further investigate the characteristics of Generation Z, the surveys enclosed questions about the advantages and differences Generation Z members have compared to older generations as well as the challenges they face. The advantages as explained by the students and teachers are related to their access to technology, better educational opportunities, creativity, global awareness, and social consciousness. Such findings are supported by Andrea et al., (2016) who investigated the characteristics, behaviors, and preferences of Generation Y (Millennials) and Generation Z in workplace settings. In addition, the analysis shows significant differences between Generation Z and older generations. Students and teachers highlighted technological proficiency and access to information as major differentiators. This is also consistent with the concept of "Digital Natives" investigated by Thomas (2011), focusing on how Generation Z engages with technology in educational and social contexts. Another difference emphasized by the students is their preference for more efficient and convenient ways of tackling challenges, indicating their pragmatic and action-oriented approach. This corresponds to Seemiller and Grace's (2016) findings that Generation Z members are more socially and politically engaged than previous generations, with a strong focus on social justice and activism. Moreover, concerns about attention span, communication skills and attitude, influenced by the fast-paced nature of social media, are among the differences described by both groups. These concerns are also highlighted by Andrea et al., (2016) who maintained that Generation Z always communicates virtually, and other forms of socialization are difficult for them. Regarding the significant

challenges, Generation Z students and their teachers identified job insecurity as a primary concern compared to older generations. They also identified some difficulties due to the excessive use of technology and social media which negatively impacted students' mental health and communication skills besides the pressure of societal expectations.

As for the second research question which aims to investigate Generation Z's learning preferences, the survey results disclose that a substantial majority of Generation Z students use technology constantly in their learning, indicating that digital tools such as laptops, smartphones, and apps are integral to their learning process. Some students reported that they use technology regularly but do not underestimate non-digital resources; this implies a balanced approach whereby both digital and traditional learning methods are valued. The results also show that multimedia tools, like videos, animations, and infographics, are important for Generation Z students, with half of them consider them extremely important to enhance their understanding. These findings correspond with Shorey et al. (2021) study that focused on the study of learning styles, and needs of Generation Z healthcare students.

Moreover, Generation Z students prefer both digital and physical learning materials. Most of them reported using both types of resources. The findings, thus, highlight the need for a range of learning resources that enable students to select the best for their learning. Similarly, Generation Z students prefer a balanced approach of both independent and collaborative work. These findings correspond with other research like Pearson (2018), Zimmer (2015), and Moore et al. (2017) which identified that the students of Generation Z prefer learning individually, in collaboration with classmates and at their own pace.

Furthermore, the analysis shows that students of Generation Z request more creativity-centered classes and curricula, a need that was also confirmed in Adobe's report (2016). This reflects a clear appreciation of the role that thinking and creative expression in their experience. Furthermore, Generation Z students prefer substantial constructive feedback about their work, which suggests that students value detailed guidance enabling them to recognize their strengths and areas for improvement. This need also highlighted in Bíró (2014) and Borys and Laskowski (2013) findings about Generation Z students' expectations for constant quick personalized feedback.

Both students and teachers show a preference for visual and interactive methods such as watching and doing/creating, suggesting a mutual appreciation for hands-on learning experiences. This is similar to the findings of other studies such as Rothman's (2016) which highlighted that interactive games, collaborative projects, advance organizers, challenges, and anything that they can try and see are appreciated by this generation. Concerning the frequency of how often Generation Z students engage in various learning methods in the classroom, both students and teachers mentioned that the most frequently used methods are watching and doing/creating, again suggesting a shared recognition of visual learning's role in education. The results also show an agreement among teachers on the frequency of utilizing the various teaching

methods ranging from watching, doing, and researching as the most used ones to reading and writing as the least used, indicating a less focus on traditional methods.

Concerning the third research question aiming to identify the teaching and learning strategies that teachers can adapt to accommodate Generation Z learning preferences, teachers acknowledged that technology has significantly changed the way they approach education for Generation Z. With a focus on interactivity, access to resources, personalized learning, and enhanced collaboration, teachers are adapting their methods to meet the demands of the digital generation. Most of the students and teachers place high importance on developing critical thinking skills, intellectual curiosity, learning through hands-on experience, solving real world problems, and using digital media. Teachers put more emphasis on building teamwork skills, compared to students, specifying the students' preference for intrapersonal communication due to their reserved nature. Memorization is viewed as the least important by students and teachers, suggesting a shared belief that it is less applicable in modern education.

There is a strong belief among teachers that Generation Z students will pursue careers that are currently non-existent, suggesting that teachers are not only aware of these changes but are also likely motivated to adjust their teaching strategies accordingly. Many teachers suggested "having more opportunities for hands-on learning" as the best strategy to better prepare Generation Z for the future workforce, indicating a strong belief in the value of experiential education. More strategies are selected by the teachers such as "evolving the teaching curriculum" and "letting students follow their curiosities." The teachers' insights emphasize a preference for practical, adaptable learning methods over solely technological solutions. The findings are in line with the recommendations of Chicca and Shellenbarger (2019) and Henriksen, et al. (2017) that educators should focus on learning that is self-directed, individualized, or project based and design critical thinking tasks that are focused on solutions rather than problems to provide a creative, modern approach to teaching.

The perspectives of students and teachers regarding college preparedness for the future are optimistic with a small percentage of students who think they are unprepared. Among the reasons for this thought are a lack of clarity about career paths and practical experience, the unpredictability of the job market and other personal reasons related to their fear of the future and lack of focus. The teachers see the unpreparedness may result from some students' lack of motivation and stamina. However, there is a notable acknowledgment by both groups that the current teaching system satisfactorily prepares Generation Z students for future careers.

8. Recommended Strategies for Effectively Engaging Generation Z

The current study recommends the following strategies which resonate with Generation Z's unique learning preferences and values. One is to adopt a more student-centered methodology, which emphasizes the development of skills, individuality, and personal inspiration. Another approach is aligning course content and activities with relevant fields, real-life applications, and personal interests while facilitating internship connections by offering on-campus and off-campus opportunities to link knowledge to real-world application. Additionally, endorsing video-based learning is crucial, as

Generation Z tends to learn best through observation. To modernize assessment methods and align with contemporary learning preferences, it is proposed that the traditional essay paper be replaced with multimodal virtual essay. This approach allows students to articulate their ideas through various visual formats and videos. Moreover, incorporating intrapersonal learning within group projects can significantly enhance individual understanding and contribution. This can be done through breaking projects into structured "checkpoints," and using techniques such as Think-Pair-Share, wherein students first contemplate information independently, then engage in dialogue with a partner, and ultimately share their insights with the larger group. This technique effectively aligns with flipped classroom models that promote pre-class reflection.

9. Conclusion

The study results offer several insights for educators in higher education to rethink how technology use and learning environments should change to influence current students' learning. The study can serve as a benchmark for future research by providing a comparative framework that other studies can build upon, particularly those interested in specific disciplines or study majors or specific classes such as English language classes. More research can be conducted on Generation Z students in other private or public universities to reach a comprehensive understanding of the traits and learning patterns of this generation in different educational contexts. One limitation of this study is the number of respondents, which concluded 139 students and 29 teachers from various majors. While the goal was to gather responses from a larger group, the number of responses and the diverse insights provided in the open-ended questions make the findings representative and applicable to a broader context.

The key takeaway from this research and experience with Generation Z students is that this generation has distinct perspectives, needs, and aspirations compared to previous cohorts. Educators must continually develop materials that utilize technology in a multimodal and personalized way, stay ahead of trends and adapt their teaching methods accordingly. Finally, higher education can either embrace practices that empower Generation Z to face global challenges or risk missing the chance to make a significant impact on this generation's minds.

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Appendices:

A. Teachers' survey questions & responses link
https://livebueedumy.sharepoint.com/:b:/g/personal/hala_shaker_bue_edu_eg/ESuKQCDqYOhBkiAmHVTgylEBA1z-eKzRUeOgf_WXJL6LFw?e=09mTj0

B. Students' survey questions & responses link

students responses Teaching the Digital Natives Examining the Learning Needs and Preferences of Gen Z Learners in Higher Education.pdf