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EFFECTIVELY ENGAGING WITH GENERATION Z STUDENTS

Abstract:

Generation Z (born 1997-2012) is transforming the landscape of higher education through distinct cognitive, digital, and behavioural traits. Characterized by nonlinear information processing, immediacy-oriented learning, and deep integration of digital tools, Gen Z students are both technologically fluent and pedagogically demanding (Hammad, 2023; Nuttall, 2025). While highly familiar with generative AI, many Gen Z learners lack the metacognitive strategies needed to apply these tools critically (Chardonnens, 2025). The distinct characteristics of Generation Z—such as their need for instant access to information, preference for visual and interactive content, and high levels of digital multitasking—profoundly shape a learning style that values autonomy, personalization, and technology-integrated instruction.

This study addresses the central research question: How does increasing AI fluency among Gen Z students reshape their expectations toward instructional design and the role of educators in higher education?

Drawing on the Scholarship of Teaching and Learning (SoTL) principles, the paper analyses qualitative data from two student cohorts (2024 & 2025, N=63/56). The findings show a measurable increase in AI tool use and digital confidence, alongside a consistent desire for structured, human-centred learning. Project-Based Learning (PjBL) and Problem-Oriented Learning (POL) emerge as pedagogical formats particularly suited to Gen Z's values of collaboration, application, and feedback (Weimer, 2021; Hmelo-Silver & Barrows, 2020). Simultaneously, students report a continued need for structured learning environments and emotionally intelligent instruction.

Notably, the study highlights a role inversion: students often surpass instructors in AI fluency, creating a "digital competence gap" that challenges traditional hierarchies (Chan & Lee, 2023; Selwyn, 2023). Students increasingly view faculty not as content authorities, but as facilitators, tool mentors, and guides in reflective practice (Tang & Saade, 2023)

What distinguishes this study is its time-sensitive comparison across cohorts and its linkage of behavioural data with instructional design. It confirms earlier calls for AI-integrated, learner-centred ecosystems that balance autonomy with supportive structure (Zawacki-Richter et al., 2021; Chardonnens, 2025). The paper concludes with evidence-based recommendations for repositioning faculty, redesigning assessments, and aligning future-proof pedagogy with the cognitive and technological profile of Generation Z.

Keywords:

Learning Methods, GenZ Learner Profile, Digital Learning Habits, Higher Education, Education 4.0, ChatGPT, GenAI, AI, Academic Integrity, Project-Based Learning (PbL), Problem-Oriented Learning (PoL)

JEL Classification: I21, I23, D83

Introduction and Relevance

Generation Z students, born between 1997 and 2012, are widely recognized as the first true digital natives. They have grown up in an environment defined by constant digital connectivity, on-demand information access, and real-time interaction via mobile technologies and social platforms (Hammad, 2023; Nuttall, 2025). These conditions have shaped unique cognitive patterns, including nonlinear information processing, a preference for personalized content, and a tendency toward multitasking across screens (cf. McCoy, 2020). As a result, Gen Z students bring new expectations into higher education, demanding flexibility, immediacy, relevance, and technological integration into the learning process (Chardonnens, 2025).

One of the most disruptive elements influencing Gen Z's academic behavior is their widespread use of generative artificial intelligence (GenAI) tools, particularly ChatGPT. Recent studies indicate that a significant share of Gen Z students use AI tools to assist with summarizing texts, generating ideas, and clarifying academic content (Chan & Hu, 2023; Tang & Saade, 2023). While these tools can enhance learning efficiency and autonomy, they also introduce challenges related to critical thinking, academic integrity, and instructor-student dynamics (Selwyn, 2023).

This shift calls for a reassessment of traditional instructional design and assessment methods. Gen Z students tend to value applied, interactive, and socially meaningful learning experiences. Approaches such as Project-Based Learning (PjBL) and Problem-Oriented Learning (POL) have shown strong alignment with Gen Z's desire for real-world application, autonomy, and feedback-driven development (Weimer, 2021; Hmelo-Silver & Barrows, 2020).

Given this changing educational landscape, the present study investigates how increasing AI fluency among Gen Z students reshapes their expectations toward instructional design and the role of educators. By drawing empirical data from two student cohorts and recent literature, the paper aims to generate evidence-based recommendations for developing future-proof, AI-integrated learning environments that support engagement, motivation, and academic success.

The overall *key research question* for this paper is:

> *'How does increasing AI fluency among Gen Z students reshape their expectations toward instructional design and the role of educators in higher education?'*

This study is geographically confined to the European context, primarily focusing on the southern region of Germany (Bavaria) and western Austria (Tyrol). While the literature review draws on international sources published within the past five years, the empirical component is based on the experiences of students from Austria, Bavaria, and parts of Europe. These participants represent a specific cohort of Generation Z who completed secondary education during the COVID-19 pandemic and are now in their first year of university. As such, the findings reflect regional educational cultures and transitional experiences shaped by both pandemic-related disruptions and the early integration of generative AI in academic practice. These contextual boundaries may limit the generalizability of results to broader or non-European populations.

1. Terms and Definitions

Key terms are explicitly defined in this paper to ensure conceptual clarity. Given that certain terms may be interpreted variably across the literature, this section aims to prevent potential ambiguities.

Generation Z refers to individuals born between 1995 and 2012. This cohort matured during and after the COVID-19 pandemic, which significantly influenced their risk perceptions, learning attitudes, and social behaviors. Initially labeled the 'lost generation', Gen Z is now characterized by a mix of ambition and caution, driven by a desire for security and realistic goal setting (Grossegger, 2022). As digital natives, they have grown up with constant access to mobile and internet technologies, leading to technology-integrated learning preferences and comfort with hybrid learning environments. Their learning behavior is marked by a strong need for feedback and guidance, stemming in part from educational disruptions during the pandemic, yet they remain open to experimentation with new technologies (Chan & Lee, 2023).

AI Fluency, or Artificial Intelligence Fluency, is defined as the capability of machines to mimic human cognitive functions such as learning, understanding, and problem-solving (Koubaa et al., 2023). This includes domains such as machine learning, natural language processing, and computer vision (Cruz-Benito, 2023). AI fluency in the context of education refers not only to the technical ability to use AI tools but also to the capacity to apply them strategically, ethically, and reflectively for learning tasks. AI enhances instructional processes by supporting automation, personalization, and efficiency, but its use requires critical engagement by both students and educators (Mujiono, 2023).

GenAI and Chat GPT. GenAI encompasses AI technologies that can create new content autonomously, such as text, images, and music, by learning from existing data. It represents a significant advancement in AI capabilities, moving beyond traditional data processing to creative generation. GenAI tools are increasingly integrated into educational settings, enhancing teaching and learning experiences by providing personalized learning support and automating administrative tasks (Zhai, 2024).
ChatGPT is a specific application of GenAI that utilizes the Generative Pre-trained Transformer (GPT) architecture to generate human-like text responses based on user prompts. It is designed to assist users in various tasks, including writing, brainstorming, and providing information, making it a versatile tool in both educational and professional contexts (Chan & Lee, 2023).
The integration of GenAI and tools like ChatGPT in education suggests a shift towards more personalized and efficient learning experiences, potentially leading to improved student outcomes. However, there are concerns regarding the ethical implications, accuracy, and reliability of AI-generated content, necessitating the development of guidelines and policies for responsible use. In summary, GenAI and ChatGPT represent transformative technologies that can enhance learning and communication, but they also require careful consideration of their implications for teaching practices and ethical standards (Chan & Hu, 2023).

Instructional design is the systematic planning, development, and structuring of teaching and learning experiences to maximize student engagement, knowledge acquisition, and skill development. In the context of higher education, instructional design increasingly integrates

technology-enhanced and student-centred methods to meet the evolving needs of learners, particularly digital-native cohorts such as Generation Z. Two prominent approaches are:

- Project-Based Learning (PjBL): A learner-centred strategy in which students acquire knowledge and skills by actively investigating complex questions or real-world challenges over extended periods. It emphasizes autonomy, collaboration, iteration, and creating meaningful products or outcomes (Weimer, 2021).
- Problem-Oriented Learning (POL): A closely related model focusing on student inquiry driven by ill-structured, real-life problems. Learners define the problem, investigate solutions, and reflect on their learning process, promoting deep understanding, critical thinking, and interdisciplinary integration (Hmelo-Silver & Barrows, 2020).

Effective instructional design adapts these models to different learning contexts, often blending them with AI-supported environments, formative feedback, and flexible delivery formats. The role of the instructor shifts from content transmitter to facilitator, guide, and feedback provider, particularly as students interact more autonomously with digital tools.

Overall, all these areas of expertise and terms are relevant to the paper and should be clarified up front.

2. Research Question and Method

This study draws upon extensive professional experience in the education sector, including periods of instructional disruption due to multiple lockdowns and the implementation of diverse teaching methodologies. In response to the rapid integration of artificial intelligence (AI), particularly generative AI (GenAI) and tools such as ChatGPT, questionnaires were administered to student cohorts in three consecutive years: 28 students in 2023 (focusing on the initial 10 questions), 63 students in 2024, and 56 students in 2025[1]. This longitudinal approach enabled a comparative analysis of classroom-based versus online instruction over three years. In parallel, a small-scale case study was conducted to evaluate the effectiveness of a structured, business-oriented learning approach supported by AI tools in enhancing student learning outcomes and confidence. The study also includes a comprehensive review of recent literature, with findings contextualized through comparison with related empirical research.

The overall *key research question* for this paper is:

> *'How does increasing AI fluency among Gen Z students reshape their expectations toward instructional design and the role of educators in higher education?'*

A set of hypotheses has been defined, which are examined through a review of current literature and by empirical insight gathered via qualitative student questionnaires.

> H1: *The characteristic traits of Generation Z are positively related to their use of generative AI tools for self-directed learning tasks*
>
> H2: *Even among students with high AI fluency, there is a continued demand for structured learning environments and emotionally intelligent guidance, especially during early academic transitions.*
>
> H3: *Gen Z students report greater engagement and learning satisfaction with PjBL and POL methods than with lecture-based formats.*

Recent studies confirm that both educators and students recognize the urgent need for reskilling to keep pace with generative AI, yet institutional guidance remains limited (Chan & Lee, 2023). While early concerns centred on misuse and misinformation, the present study reveals that by 2025, many Gen Z students are using tools like ChatGPT regularly for content structuring, brainstorming, and exam preparation. This evolution reframes ChatGPT not as a novelty but as a functional component of academic life (Rios-Campos et al., 2023).

However, the dual nature of generative AI persists. Risks such as academic dishonesty, reduced critical thinking, and information reliability require continued vigilance and ethical integration (Lo, 2023). At the same time, these tools offer unique benefits, including personalized feedback,

[1] The questionnaires contain open questions, questions with formatted answers, and 10 questions using a Likert scale up to 5, where 5 is positively supporting the question.

accessibility enhancements, and support for diverse learners (Rudolph et al., 2023). As such, the educator's role is not diminished but redefined: fostering critical literacy, guiding ethical use, and reinforcing confidence in digital self-directed learning (Sullivan et al., 2023). The case study on thesis writing with AI illustrates the value of structured experimentation and highlights the need to build students' metacognitive awareness and AI fluency.

Methodology used for this research design

This study employs a mixed-methods approach. It integrates a literature-based theoretical framework with qualitative empirical data collected through student questionnaires. The approach allows hypothesis-driven validation and exploratory insight, particularly suitable for studying emergent phenomena such as AI integration in education. The empirical component involved a purposive sample of Generation Z students enrolled in undergraduate programs across three academic years (2023–2025). In total, 147 students participated: 28 in 2023, 63 in 2024, and 56 in 2025. This sample was selected to capture longitudinal shifts in attitudes and behaviours.

A structured questionnaire was developed, featuring both closed-ended and open-ended questions. The instrument aimed to assess:

- Students' AI fluency (measured via self-reported confidence and frequency of AI tool use)
- Preferences for learning environments and instructional methods (PjBL, POL, lecture, online, or classroom)
- Perceptions of teacher roles and emotional support
- Patterns of self-directed learning using AI tools

Responses were collected anonymously and voluntarily, ensuring adherence to ethical standards regarding participant consent and data confidentiality. Although the study included responses from multiple student cohorts across three academic years, the sample represents only a small subset of the broader Generation Z student population. Consequently, the analysis emphasizes qualitative insights over statistical generalizability. An inductive thematic analysis was conducted on the open-ended responses, identifying recurring patterns related to the use of generative AI tools, expectations for emotional support, and preferences in instructional design.

3. Generation Z characteristics and their use of Generative AI in self-directed learning

Generation Z, generally defined as individuals born between 1997 and 2012, represents a cohort that has matured within an era of pervasive digital connectivity, rapid technological advancement, and shifting socio-economic norms. As of 2025, the eldest members of this generation are entering their late twenties, holding influential roles in both professional and academic contexts. This chapter identifies five key characteristics of Generation Z that are particularly relevant to their educational behaviors and engagement with emerging technologies such as generative artificial intelligence (GenAI).

Digital Nativity and Technological Fluency, Generation Z is characterized by an intrinsic familiarity with digital technologies, having been raised in an environment dominated by smartphones, social media, and ubiquitous internet access. This digital upbringing has shaped their cognitive, communicative, and learning preferences. According to Chardonnens (2025), Gen Z learners demonstrate a strong inclination toward interactive, multimodal, and self-regulated learning environments, favouring platforms that provide real-time feedback and personalised content. Similarly, Ishak et al. (2022) report that a significant proportion of Gen Z students prefer multimodal learning styles, with a particular emphasis on kinaesthetic engagement.

Demand for Flexibility and Work-Life Balance, Flexibility and autonomy are central values for Generation Z in educational and professional contexts. Gen Z consistently ranks work-life balance, hybrid models, and flexible scheduling as top priorities (Kästner & Mattutat, 2024). These preferences extend into learning environments, where asynchronous content delivery, remote access, and learner-driven pacing are increasingly expected. The desire for flexibility reflects a broader pragmatic approach to career and education, wherein personal fulfilment and adaptability outweigh hierarchical advancement (Nuttall, 2025).

Heightened Mental Health Awareness, Mental health remains a salient concern for Generation Z. This cohort reports higher levels of anxiety and psychological stress than previous generations, often attributed to academic pressure, digital overstimulation, and socio-political uncertainty. Nuttall (2025) notes that 28% of Gen Z self-identify as prone to anxiety, with social media frequently cited as a contributing stressor. These findings suggest educational institutions must adopt holistic support systems that integrate emotional well-being with academic performance.

Individualism and Self-Directed Learning, Autonomy is a defining educational preference for Generation Z. Self-directed and individualized learning pathways are favoured, particularly when facilitated by technology. Chardonnens (2025) emphasizes that Gen Z students seek personalized learning experiences enabled by AI technologies, which allow for adaptable pacing, immediate feedback, and goal-oriented progress tracking. This generation's preference for independence aligns with a broader shift from passive instruction to active and experiential learning models.

Purpose-Driven Values and Social Engagement, while often stereotyped as either idealistic or disengaged, Generation Z demonstrates a complex relationship with social and ethical issues. They place high value on authenticity, diversity, and corporate or institutional responsibility, but expect

tangible outcomes over symbolic gestures (Nuttall, 2025) Their engagement is often issue-specific and pragmatic, with growing interest in sustainability, mental health advocacy, and ethical technology use, including concerns about AI transparency and bias (Chardonnens, 2025).

In sum, Generation Z's learning behaviors and educational expectations are shaped by their digital upbringing, mental health awareness, demand for flexibility, and strong sense of personal and social agency. Understanding these traits is essential for designing effective educational environments and leveraging GenAI tools to align with Gen Z's learning needs and values.

For example, technological fluency impacts their learning in that they prefer interactive, multimodal platforms and benefit from personalized learning through generative AI, which provides real-time feedback and adaptive content (Chardonnens, 2025). Passive lectures are often ineffective for this cohort. Other characteristics, impact as high rates of anxiety and stress, demand supportive, psychologically safe learning environments. Institutions must offer empathetic teaching practices and access to well-being resources (Nuttall, 2025). Gen Z values personalized and self-directed learning. Adaptive learning technologies and AI-driven platforms allow students to pursue individual goals at their own pace, enhancing motivation and engagement (Chardonnens, 2025). Social and ethical relevance is central to Gen Z's educational engagement. They are drawn to content that reflects real-world issues and institutions that model integrity, inclusivity, and sustainability (Nuttall, 2025).

In conclusion, reviewing the main characteristics of Gen Z, the teaching methods, structures, and learning environments must change, especially for higher education. Generation Z requires learning environments that are technologically integrated, flexible, psychologically supportive, personalized, and value-driven. Adapting to these needs, especially through the responsible use of AI, will be crucial for higher education institutions aiming to remain relevant and effective.

4. Results and Analysis

This chapter presents the empirical findings based on questionnaire data collected from student cohorts in 2023, 2024, and 2025. The analysis is structured around the three hypotheses developed in response to the overarching research question: How does increasing AI fluency among Generation Z students reshape their expectations toward instructional design and the role of educators in higher education?

At the University of Applied Sciences, Bachelor's, and incoming international students completed the questionnaire during a lecture on teaching methods and academic writing tools. Many students reported feeling overwhelmed by the abundance of digital resources, particularly generative AI tools. While earlier cohorts relied primarily on library databases and academic texts, today's students face new challenges in navigating AI tools.

Literature and student feedback indicate that Bachelor students, still learning academic conventions, often lack confidence in using these tools effectively. Concerns about misuse, misinformation, and uncertainty around academic standards were common. The questionnaire included three parts: demographic data, current use and expectations of AI tools, and preferred teaching methods. These elements help contextualize the results and highlight evolving student needs in AI-supported learning environments.

The findings are drawn from structured questionnaires that assessed students' experiences with generative AI tools, their preferences for learning environments, and their expectations of educators. The results are presented concerning each hypothesis, beginning with a demographic overview of the participants.

4.1 Overview of the respondents and study design

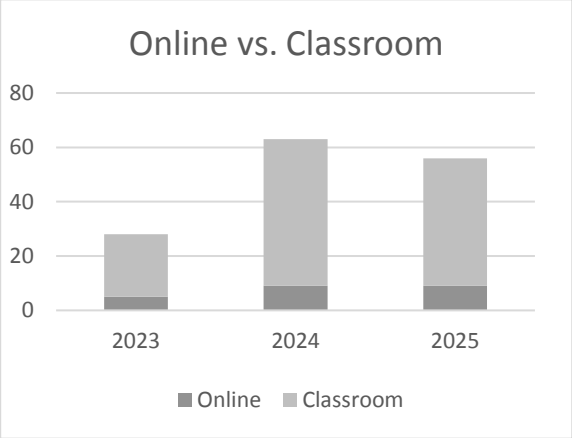
Over three academic years, a total of 147 students took part in the study. The distribution was uneven: 28 students, 2024: 63 students, and 2025: 56 students. In 2023, the focus was not much related to the AI questions. Therefore, the main comparison is just on the last 2 years, when the questionnaire executed contained identical 20 questions.[1]

All students were enrolled in undergraduate programs in economics, technology, or social sciences. Gender split stayed relatively balanced throughout the years, with no responses from non-binary or undisclosed gender identities. Most of the respondents (approx. 75%) were between 20 and 25 years old, with smaller groups under 20 or over 25.

[1] See as well the paper (van der Vorst, 2024) some results have been published from the one year independently not in reference to 2025 as in this very actual paper, and in a different context.

Given that the first start of this study was related to the COVID-19 Crisis, the questionnaire started with the question (Question 5) of Online vs. Classroom Training. It remains, about 85% of the students prefer to be back in the classrooms (see Figure 1).

Figure 1: Teaching questionnaire: Online vs. Classroom training preferences



Source: Author, 2025

4.2 Hypothesis 1: AI Fluency and Self-Directed Learning

Over the three years of this study, there has been a noticeable shift in how students use and perceive generative AI tools, specifically ChatGPT. In 2023, many students were just beginning to explore these tools, often with limited confidence and little understanding of their potential. By 2025, a majority reported frequent and confident use and described it as helpful in a lot of their daily routines.

In Chapter 4, the key characteristics of Gen Z were analysed due to literature and reflected with some of the learning methods. Specific learning behaviors and educational expectations are pointed out due to their digital upbringing, mental health awareness, demand for flexibility, and strong sense of personal and social agency. Understanding these characteristics, it is essential to consider this for future teaching.

The questionnaire contained some related questions. Firstly, checking with Question 8 “How much experience do you have using AI for your studies?”. This self-evaluation of the two cohorts increased measurably over the last year. While the average was 3.02 on a 5-point Likert scale in 2024, the average increased to 3.68 a year later.
Another question remained very relevant, still increasing. Question 9: “Would you like to learn more about AI tools relevant to studies?” The average rate on the same scale increased from 4.22 in 2024 to 4.36 in 2025. To get trained, learn more about the AI tools, and really use the tools in daily requirements, is more important to them than ever.

In their own words, students described using AI for a variety of academic tasks: generating ideas, outlining papers, rephrasing complex content, and preparing for exams. In 2025, 29 students said ‘they used AI regularly and found it made their work more efficient’. Another 8 students noted that AI significantly reduced their manual workload and helped them feel better prepared for assessments.

These developments align with what we know about Generation Z from previous research: they are confident with digital tools and prefer flexible, self-directed learning environments (Chardonnens, 2025). As they become more comfortable with generative AI, they are integrating it into their workflows not just for convenience, but as a genuine learning aid.

Question 10 was a more open question asking about the current use and experience of the AI tools, specifically for the studies at the university. While the most dominant tool was ChatGPT in 2024 with 75%, and some other tools like Co-pilot had just been tired. In 2025, ChatGPT increased to 88% use, but with a greater variety of other tools like Gemini, Perplexity, GitHub, Claude, and Copilot. Some students commented. “I use AI almost daily, specifically for drafting and rewriting texts and translations”. “ChatGPT helps me to express ideas”. These comments reflect just a small cohort, but the shift from cautious experimentation in 2024 to a practical use in 2025.

Hypothesis one – H1: The characteristic traits of Generation Z are positively related to their use of generative AI tools for self-directed learning tasks.

All these findings can positively support Hypothesis 1. As digital natives, Gen Z students are not generally comfortable with AI, but they are using it to shape their learning experience. Their approach to AI is increasingly strategic, and their confidence continues to grow. This reflects a broader trend towards self-regulated and tech-supported learning.

4.3 Hypothesis 2: Structured Learning and Educator Support

As AI becomes a more common part of students’ academic routines, one might expect a shift toward more independent, technology-driven learning models. However, the data reveals a different story. While students are increasingly confident in using AI tools for self-directed tasks, they continue to express a strong preference for structured learning environments and meaningful human interaction. Over the three years, most students indicated a preference for classroom-based learning over online formats (see Figure 1). This persistent trend suggests that while Gen Z students are open to using technology, they still value the clarity, guidance, and sense of structure provided by in-person instruction. For many, the classroom remains an important space for interaction, clarification, and emotional support.

Students were also asked about the ideal role of educators in the future (Question 12). In both 2024 and 2025, most responses reflected an expectation that teachers should not only deliver content but also help students understand and apply methods and tools, including digital and AI-based ones (see as well Figure 3). As it fits their characteristics, it needs to be interactive, using some interesting tool or playing games. Just reading slides and content is not requested at all anymore.

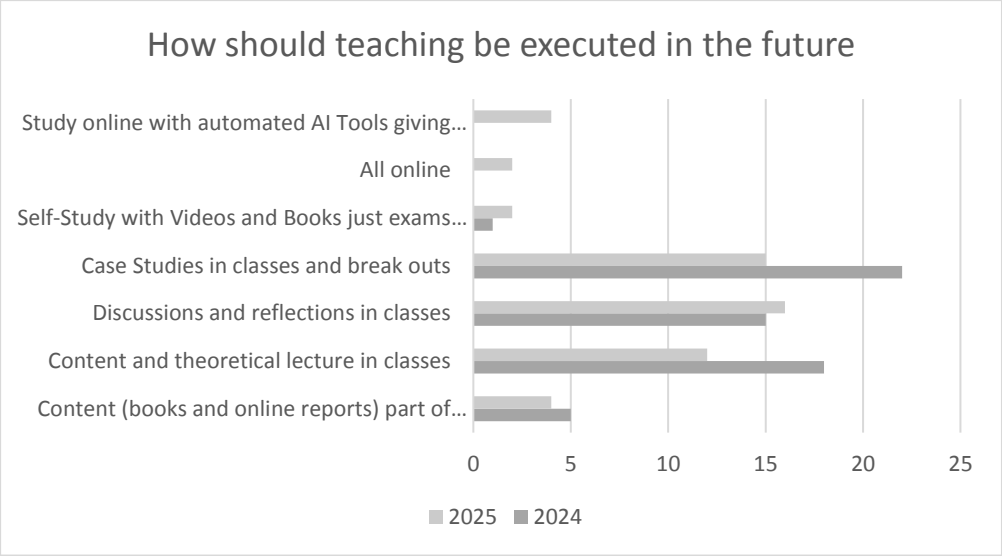
This expectation of educator involvement is also reflected in students' increasing emphasis on soft skills and emotional intelligence. The importance of social skills and self-evaluation was rated as important, rising in 2025 (Question 15). The average rate in 2024 was 4.18 out of 5, being the best or most significant, and increased to 4.34 points in 2025. These consistently high scores show that students value instructors who are not only technically proficient but also empathetic, approachable, and supportive.

Qualitative responses illustrate that AI has not replaced the need for guidance; in fact, it has made it more important. Many students shared that they feel uncertain about where and how to use AI effectively, and that they look to teachers for direction:

- "I use AI sometimes, but I'm not always sure I'm doing it right."
- "It's helpful, but I still need a real person to explain what's expected academically."

This feedback highlights a critical point: AI fluency does not mean academic confidence. Especially in early academic phases, students continue to rely on teachers to help them navigate expectations and evaluate the quality and relevance of AI-generated content.

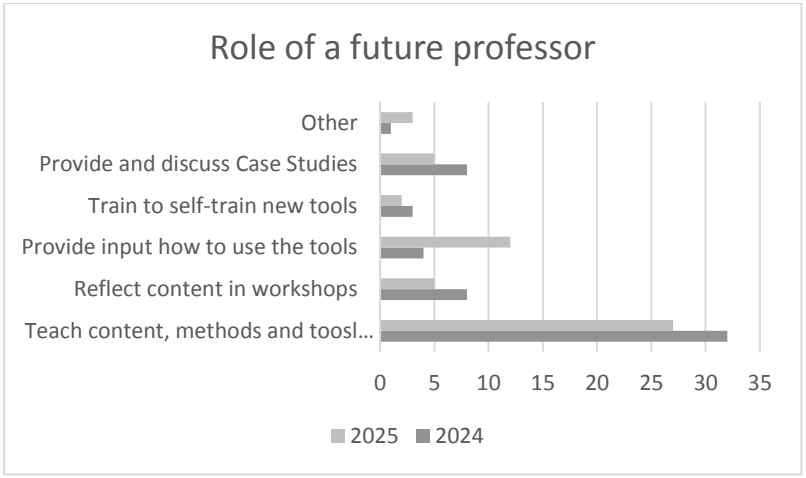
Figure 2: Teaching questionnaire: Execution of teaching



Source: Author, 2025

As you see in Figure 2, the students want less content in the classroom (Question 11). They like case studies or interactive discussions. Only a few want to do their studies remotely, online.

Figure 3: Teaching questionnaire: Role of a future professor

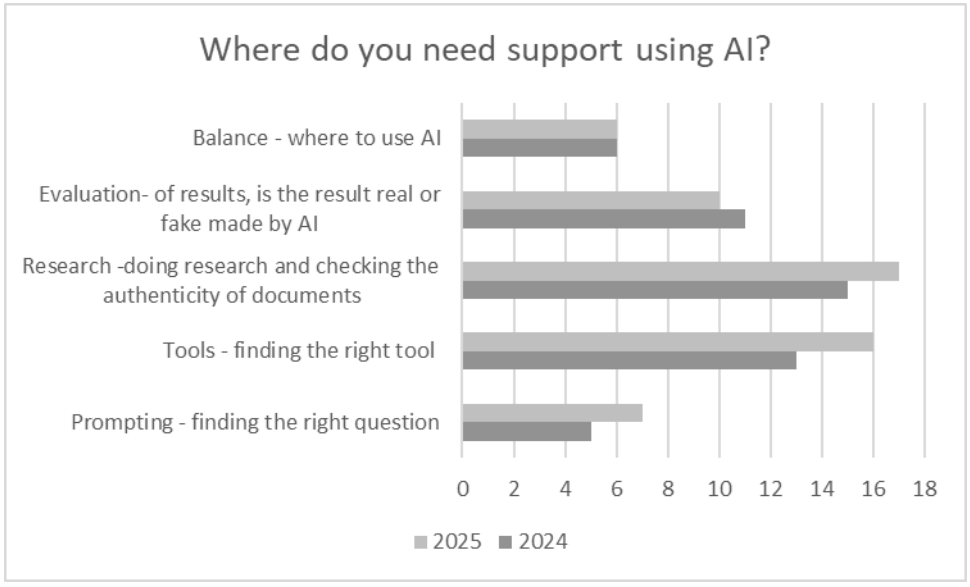


Source: Author, 2025

Figure 3 indicates professors' future roles (Question 12). They request input on using tools and techniques. Rather than content knowledge, which is always available through online tools, the students would prefer multiple formats to gain tool and method experience.

The questionnaire contains some questions about the AI knowledge of the students, as well as their experience and expectations using it. Asking about the experience, the average student rated in 2024 being prepared with 3.13, rising to 3.86 in 2025 (Question 20). And they evaluate the importance of AI for their future work as very important, 2024, an average of 4.11 and 4.21 in 2025 (Question 19). They are still asking for more support (Question 17):

Figure 4: Teaching questionnaire: Needed Support



Source: Author, 2025

As shown in Figure 4, as more students are using AI, they need more support. As well as gaining from professional and peer experience. Specifically, in finding the right tool and with the evaluation of the AI results, they are requesting support.

Hypothesis 2: *Even among students with high AI fluency, there is a continued demand for structured learning environments and emotionally intelligent guidance, especially during early academic transitions.*

The findings strongly support Hypothesis 2. Even as students become more familiar using AI tools, their desire for structured learning and meaningful guidance remains high. Gen Z students appreciate the autonomy that technology enables but still depend on educators to provide clarity, emotional support, and a framework for responsible tool use. Rather than replacing the teacher, AI appears to amplify the importance of the educator's role as a mentor, facilitator, and ethical guide.

4.4 Project-based and Problem-oriented learning preferences

One of the defining characteristics of Generation Z is their preference for active, experiential, and collaborative forms of learning. This hypothesis was examined by comparing student ratings of different instructional formats across the three cohorts. The findings consistently indicate that Gen Z students are more engaged by methods that allow them to apply knowledge, solve real-world problems, and work collaboratively, rather than passively receive information in traditional lecture formats.

Students were asked to rate their preference for theoretical lectures versus more interactive formats such as breakout sessions and case-based activities. The data reflect a clear and consistent preference for the latter. In the Questionnaire (Question 7), it was asked about the interactive lectures in Case Studies and Projects. During the three years, there was no change. On average, this was positively rated at 3.8. So, this learning method is evaluated positively and should be part of modern teaching. Evaluating the question (Question 6) related to theoretical lectures in classrooms, the average rate was 2.96 in 2023, 3.44 in 2024, and 3.57 in 2025. These ratings show a modest rise in appreciation for lecture-based content over time, likely due to improved integration with digital tools. However, case-based and applied learning formats have consistently outperformed lectures in all three years.

In 2023, students were specifically asked about their preference for a blended format that included both theory and case studies. The mean score for this combination was 4.04, indicating strong support for integrated, practice-oriented learning

The open-ended responses align with the quantitative trends. Students frequently described case studies, group discussions, and real-world examples as the most meaningful parts of their learning experience. Some students also noted that these formats allowed them to collaborate more, think

critically, and stay engaged over longer periods; these features are often missing in purely lecture-based settings.
Interestingly, the preference for active learning formats complements the increased use of AI tools. Students often use AI to prepare for case discussions or generate ideas for projects, which suggests that GenAI and PjBL / POL are not in conflict, but rather mutually reinforcing. AI enables rapid information access and task preparation, while project-based formats provide context, application, and deeper learning opportunities.

Hypothesis 3: *Generation Z students report greater engagement and learning satisfaction with project-based learning (PjBL) and problem-oriented learning (POL) methods than with lecture-based formats.*

The results support Hypothesis 3. Generation Z students are most engaged when learning is active, applied, and socially interactive. Their consistent preference for PjBL and POL formats over traditional lectures reflects a broader shift in expectations toward relevance, collaboration, and experiential learning. When paired with AI tools, these instructional methods offer a powerful combination that aligns with the learning needs and values of today's students

5. Discussion

This study was sent out to explore how increasing AI fluency among Generation Z students influences their expectations of the role of educators in higher education. Using data collected from three cohorts between 2023 and 2025, the results offer insights into how Gen Z students are adapting to generative AI tools like ChatGPT, and how this is reshaping their learning behaviors and needs.

One of the most significant observations is that AI fluency among students has grown steadily. By 2025, many students reported regular, confident use of tools such as ChatGPTs as an integrated part of their learning process. They used AI to brainstorm ideas, structure assignments, and improve the quality of their writing. This supports *Hypothesis 1* and reflects existing research showing that Gen Z, as digital natives, are quick to adopt tools that offer autonomy and efficiency (Chardonnens, 2025).

However, this fluency in technology does not mean that students want to learn entirely on their own. Despite their growing independence, students consistently preferred structured learning environments with real human interaction. This preference remained strong over all three years of the study. They want teachers to guide them, especially in understanding when and how to use AI responsibly. This supports *Hypothesis 2* and highlights that the educator's role is not disappearing but changing. Instructors are now expected to help students make sense of digital tools, offer emotional support, and create safe, clear learning spaces (Sullivan et al., 2023).
The results also showed that Gen Z students are more engaged by project-based and problem-oriented learning than by traditional lectures. They value interactive sessions, group work, and real-world case studies. Lecture formats were consistently rated lower, even as AI use increased. This supports *Hypothesi*s 3 and aligns with research suggesting that Gen Z learns best through doing, discussing, and applying knowledge in practice (Cilliers, 2017).

The overall *key research question* for this paper, *'How does increasing AI fluency among Gen Z students reshape their expectations toward instructional design and the role of educators in higher education?'* has been answered by reflecting literature as well as by answering the three hypotheses.
The results show that while Gen Z students are increasingly confident and capable in using generative AI tools like ChatGPT, this has not led to a reduced role for educators. Instead, their expectations have shifted: they now look to instructors not only as content experts but also as guides, mentors, and facilitators who can help them navigate new technologies thoughtfully and ethically. Students appreciate the autonomy that AI provides. At the same time, they still place high value on structured learning environments, personal interaction, and emotional support. They also expect more interactive, applied teaching formats that mirror the way they learn and engage with information outside the classroom.

6. Conclusion and Recommendations

This study set out to better understand how Generation Z students, growing up in a digital world, respond to the rise of generative AI tools in higher education. Over three years, students were surveyed about their experiences, habits, and expectations around learning and technology.

The findings show that AI tools, especially ChatGPT, are becoming a regular part of students' study routines. By 2025, many students would not just experiment with AI, but use it actively to help them plan, write, and organize their academic work. This confirms that today's students are digitally fluent and willing to try out new technologies that support their independence.

But the results also make it clear that students don't want to rely on AI alone. They still value the guidance, structure, and emotional support that human educators provide, especially in the early stages of academic work or when tasks feel unfamiliar. They expect their teachers to help them make sense of the tools they use and what's appropriate in an academic context.

When it comes to how they learn best, students consistently prefer formats that involve participation, collaboration, and real-world application. Project-based and problem-oriented learning methods were rated more engaging than traditional lectures year after year. Students are looking for ways to apply what they're learning, not just absorb it.

These results show that AI is not replacing teaching; it's reshaping it. The educator's role is changing, but it's still essential.

Like any study, this one has its limits. The sample size was relatively small compared to the overall student population, and it focused on specific study programs at one university with international students to extend the variety. While the results offer useful insights, they may not represent all Gen Z students globally or across disciplines.

Also, AI tools and their use are changing rapidly. What students say about ChatGPT or similar tools today may shift quickly as new features, policies, or alternatives emerge. The findings offer a snapshot of a moment in time, valuable, but not final.

Future studies could build on these findings by exploring how different academic disciplines engage with AI, or by comparing students across countries or education systems. Longitudinal research could also look at how attitudes toward AI continue to evolve after graduation, in the workplace or in lifelong learning contexts. It would also be valuable to explore educators' perspectives in more depth. How they are adapting, what support they need, and how institutions can help them navigate this new landscape.

7. References

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