DOI: 10.20472/IAC.2024.062.015

CLAUDIA VAN DER VORST
FH Kufstein Tirol Bildungs GmbH, Austria

GENERATION Z MEETS ARTIFICIAL INTELLIGENCE. CURRENT ROLE OF PROFESSORS.

Abstract:

In today's rapidly evolving environment, students are facing constant changes. With the recent pandemic, followed by the introduction of AI tools such as ChatGPT, students are now expected to adapt their research and other academic pursuits with the use of AI. However, as this is a novel development, it has not been previously taught (cf. Sullivan et at., 2023).

The current generation of undergraduates, known as Generation Z (GenZ), completed their high school education during the COVID-19 pandemic, which posed significant challenges for their teachers and professors. As digital natives, GenZ is characterized by their constant use of social media and mobile devices, and they expect changes in their learning and teaching experiences. They prefer interactive situations and hybrid learning but are now faced with generative AI tools (GenAI) that some teachers may forbid due to their own lack of experience. Therefore, students require clear guidance and direction for their academic pursuits (cf. Chan et al., 2023a).
Upon graduation, these students will enter the workforce and will be expected to possess knowledge of technology, tools, and GenAI to implement them in various businesses.

The research aims to investigate the expectations of GenZ students with the following research questions: ‘What kind of support do GenZ students expect to use AI more effectively?’ and ‘What challenges do GenZ students currently experience during their studies?’

Questionnaires were utilized as a qualitative research method and trends were analyzed through the feedback received and literature research conducted. The study sought to evaluate the students' feedback on their current expectations, as well as their future requirements. The paper aims to provide a clearer perspective on the need for current educational institutions and teaching styles to adapt more quickly in order to support GenZ in their use of new AI tools. To achieve this, a structured approach to writing a final thesis will be provided as an example.

Students must leave university with a high level of self-confidence in their ability to adapt to fast-changing situations. They should also be well-equipped with the necessary structures and methodologies for their respective fields of business. While society may not be fully prepared to implement AI in all areas of business immediately, these students will be at the forefront of the development of all possibilities of AI in both business and private life (cf. Gewiese et al., 2024). Even though it seems an outstanding challenge it is a reflection of the past; GenX had to tailor computers and integrate IT and GenY adapted to the Internet and digitalize businesses. Now, these changes are occurring at an unprecedented rate, with less guidance available due to their global nature.

Keywords:

Life-long Learning, Higher Education, Education 4.0, Learning Methods, ChatGPT, GenAI, AI,

Academic integrity

JEL Classification: A20, D83, I29

Introduction and Relevance

Over the last two years, significant changes have occurred in teaching methodologies. The integration of technology, such as online platforms and virtual classrooms, has become more prevalent, enhancing the accessibility and flexibility of education. This effect was pushed by the remote learning/teaching environment during the pandemic (cf. Ng, et al., 2023). Additionally, there has been a shift towards personalized learning approaches, catering to individual student needs and promoting student engagement and motivation. Furthermore, project-based learning has gained traction, focusing on real-world applications and collaborative problem-solving skills (cf. Adair, 2023). Lastly, the emphasis on social-emotional learning has increased, recognizing the importance of students' well-being and mental health in the learning process (cf. Cruz-Benita, 2022). These changes reflect a dynamic evolution in teaching practices aimed at enhancing student learning outcomes and overall educational experience.

Gen Z, characterized by entrepreneurial skills and a focus on immediate satisfaction, has faced various impacts recently. They engage well with gamification in learning, encounter digital ads frequently on social media and online platforms (cf. Chan et al., 2023a), and are influenced by societal issues like job displacement due to GenAI. Moreover, the pandemic has shaped Gen Z's experiences, with differences in opinion expression based on educational backgrounds (cf. Chan et al., 2023b). Concerns about job security due to AI advancements and the need for digital literacy highlight the challenges faced by Gen Z. These impacts underscore the importance of addressing educational, societal, and technological aspects to support Gen Z's growth and success in an evolving world.

This paper will focus primarily on the GenZ the young people graduating under the pandemic now challenged with booming technological changes. The questionnaire executed will capture a bigger picture of the requirements for these students where they are today and what they expect from their teaching professors and peers.
This constantly changing environment will lead to lifelong learning because nobody expects that technology development will decrease, even now nobody has a clear picture of what the introduction of GenAI will mean to global businesses in detail.

The overall **key research questions** for this paper are:

> ‘What challenges do GenZ students currently experience during their studies?’ and
> ‘What kind of support do GenZ students expect to use AI more effectively?’
> ‘

Supporting these questions hypotheses have been defined which will be evaluated in literature research and facilitated by questionnaires as a qualitative research method.

Limitations: Geographically this research is limited to Europe, especially the southern part of Germany, Bavaria, and Tirol in Austria. While the literature research focuses on all recent literature available, the interviews focus on the experience of adolescents mainly in the Austrian Bavarian, and northern European areas, where young people finalized school during the pandemic Covid-19

and now being in the first year of their studies. The topic is very actual therefore mainly recent literature of the past five years is considered.

1. Terms and Definitions

Key terms are clearly stated and defined for this paper. Sometimes notions are used differently therefore this chapter should avoid confusion.

Generation-Z; born between 1995 and 2012, developed after the Pandemic. After firstly being called the lost generation, now they seem very ambitious and risk-averse at the same time. Their aim for security and a calculated sense of something achievable is based on all the challenges they experienced in their adult lives. They are willing to improve their learning feedback while they expect constant feedback on their learning process. (cf. Grossegger, 2022, p.15). They are digital natives, the first generation that grew up with the full availability of digital mobile devices. Their learning style is natively technology-focused, and they do not mind hybrid teaching. Living for the present, social media is integrated into daily lives so they could be called technoholics. Students of this generation seek for more feedback and guidance based on the lack of own experience at the pandemic but still willing to try new technologies (cf. Chan et. al, 2023a).

AI, or Artificial Intelligence, refers to technology that mimics human cognitive functions like learning, understanding, and problem-solving (cf. Koubaa et al., 2023). It encompasses various techniques such as machine learning, natural language processing (NLP), and computer vision (cf. Cruz-Benito, 2023). AI plays a crucial role in enhancing efficiency across industries, improving healthcare, and transforming education by automating tasks and providing innovative solutions (cf. Mujiono, 2023). The development of AI aims to create smarter technology capable of independent learning and problem-solving to drive progress and innovation in various fields. AI represents a transformative technology with vast potential for essential changes to all processes.

GenAI, GenAI, short for Generative Artificial Intelligence, refers to AI models designed to create new data resembling their training data (cf. Chan et al, 2023a) These models excel in tasks like image, text, and music generation, showcasing their potential in various creative fields. In education, GenAI shows promise in aiding educators by generating course materials like summaries and quizzes, thereby saving time, and enhancing pedagogical focus (cf. Cazzaniga, et al., 2024). Additionally, students can benefit from GenAI in improving their writing skills, receiving personalized feedback, and facilitating research and analysis tasks. Despite its potential benefits, the integration of GenAI in education requires addressing challenges like data privacy, biases in algorithms, and the necessity of human oversight in decision-making processes (cf. Chan et al., 2023b). Overall, GenAI presents a transformative tool with vast applications for education and far beyond.

ChatGPT, developed by OpenAI, is an advanced AI chatbot that utilizes a Generative Pre-trained Transformer model to engage in natural conversations and provide detailed responses to queries

(cf. Kumar, 2023). ChatGPT has sparked discussions in academia regarding its impact on education, with some concerns about the potential misuse of academic writing tasks (cf. Schreiber, et al., 2024). Despite limitations in academic writing quality, ChatGPT presents opportunities for learners by assisting in problem-solving, and skill development, and providing personalized guidance (cf. Rudolph et al, 2023).

2. Research Question and Method

This research was based on many years of working in the education sector, experiencing various lockdowns and all the executions of different teaching methods. Now being challenged with the rapid introduction of AI, GenAI, and ChatGPT a questionnaire was executed to 63 students to evaluate their expectations on the next level of education. In combination, a small case study was conducted to evaluate if a structured business approach with the support of AI tools would be beneficial to the learning process and the confidence of the students.
A lot of recent literature has been evaluated and additional studies have been reviewed and compared with the results of this analysis.

The overall **key research questions** for this paper will be supported by two hypotheses:

‘What challenges do GenZ students currently experience during their studies?’

‘What kind of support do GenZ students expect to use AI more effectively?’

H1: Students face even more constant changes in their learning environment and get no guidance and structures from their teachers therefore they lack confidence.

H2: They want support acquired not on the use of the new tools, these they figure out themselves, but they request support in the context of their studies showing examples of a structured approach or applied method in combination with the new tools.

The detailed study of Chan et al. confirmed as well, that both teachers and students recognize that they should get reskilled to keep up with all the technological changes with GenAI. Proper guidelines are still missing in most of the fields, so GenAI is not just an opportunity it is seen as a threat as well (cf. Chan, et al., 2023a).

Currently, the GenZ students are mainly using ChatGPT and are not aware of its functionality and real benefits. Therefore, ChatGPT presents both threats and opportunities in studying and teaching. It offers personalized feedback, interactive lessons, and programming support, benefiting students and educators (cf. Rios-Campos et al., 2023). However, concerns arise regarding academic dishonesty, diminished critical thinking, and challenges in evaluating generated (cf. Rahman, et al., 2023). Despite these risks, ChatGPT can enhance accessibility for diverse student groups, demystify academic conventions, and support students with disabilities (cf. Rudolph et al., 2023).

Educators can leverage ChatGPT to innovate teaching strategies, provide feedback, and encourage student experimentation (cf. Sullivan et al., 2023). While the technology may lead to concerns about cheating and information accuracy (cf. Lo, 2023), it also prompts a re-evaluation of teaching practices to incorporate AI ethically and foster critical thinking skills. In conclusion, ChatGPT's impact on education is a complex interplay between risks and rewards, requiring responsible implementation and adaptation by educators. So, the case study on how to write a thesis using or not using AI tools is very much an example to structure an approach. In summary, it is still very important to increase the student's self-confidence in the use of all AI tools.

3. Generation Z is facing a new situation again while looking for a stable environment

The pandemic has affected school leavers and students by forcing them into unpredictable exam conditions after a stable school period, leaving many unprepared for long lockdowns and increased personal responsibility. As traditional role models failed, they had to rely more on their families, affecting their path to independence. An 80% majority of adolescents feel the burden, causing them to focus on their closest circle of friends and family, health, sports, and nature. Although they don't want to be seen as a "lost generation," the pandemic has led to increased social anxiety among larger groups of people (cf. Grossegger, 2022)

Taking the long remote and virtual teaching times into consideration the students have been asked ever since what their preferences are. The 2021 study showed that 65% of students prefer classroom teaching, 29% prefer mixed teaching and only 6% want virtual teaching (cf. Van der Vorst, 2021, p.13). The same survey in spring 2023 clearly shows that 82% prefer face-to-face teaching (cf. Van der Vorst, 2023, p.5). Now, the pandemic time seems like history, and GenZ students are adapting technology and experiencing many more different styles of teaching styles. The same question in the study 2024 shows among 63 students 86% of preferred classroom teaching. Specifically, Bachelor Students request this and do not want to go back into a remote environment. In the same questionnaire in 2024, the question was asked which AI tool are the students familiar with and which tools are they using? The answer reflects that they are at the very beginning of using AI tools. 70% answered ChatGPT, 14% Copilot, and 6% Canvas the rest is spread among a lot of different tools. So, there is a very high expectation of the teachers educating the students in structuring all the different business methods and getting knowledge about supporting tools.

GenZ students request personalized and immediate feedback from educators when utilizing GenAI technologies (cf. Chan et al., 2023a). They value AI's ability to act as a virtual tutor, providing tailored learning support and answering queries promptly (cf. Chan et al., 2023b). Additionally, they seek feedback on assignments to enhance their understanding and depth of thinking (cf. Rahman, et al., 2023). However, despite the benefits perceived by students, there are concerns about the limitations of AI systems, such as the inability to replace human teachers in providing emotional support and social interaction (cf. Ng et al., 2023). GenZ students acknowledge the importance of

human teachers in understanding their unique learning needs, styles, and preferences, emphasizing the necessity of direct observation and interaction for effective teaching and support.

Teachers cannot provide this stable environment because it is changing too fast and unplannable. During the pandemic, teachers faced significant challenges in adapting to AI-driven technologies for online teaching (cf. Ng et al., 2023). These challenges included technical difficulties in implementing AI applications, lack of funding, immature AI curricula, and insufficient tools for evaluation (cf. Rios-Campos et al., 2023). Additionally, teachers encountered obstacles in developing AI digital competencies and twenty-first-century skills to effectively use AI tools in education. Concerns also arose regarding the ethical implications of AI in education, such as privacy threats related to student data and the potential depletion of ethical elements in education (cf. Mujiono, 2023). Despite AI's assistance in online learning, teachers played a crucial role in creating a safe and inclusive learning environment, fostering creativity, and assessing complex skills, highlighting the irreplaceable role of teachers in education (cf. Chan et al., 2023a).

Confirmation of hypothesis 1 can be achieved through the examination of existing literature. The young people adapted to the use of new technologies and some AI tools, mainly ChatGPT but for using it in an appropriate, efficient way are still expected to get input and guidance from their teachers. It is necessary to show and articulate where they are still lacking confidence.

4. Empirical part; Questionnaire and Experiment in a teaching environment

Teaching and working with students fitting in the exact group of young people of this specific Generation Z there was the possibility of executing a questionnaire of 20 questions to 63 students. Additionally, a handful of students were allowed to partake in a brief case study, which aimed to appraise the efficacy of AI-based teaching techniques. Does that increase their confidence to be prepared for the future? The students were a varied group, consisting of Germans, Austrians, and international students hailing mainly from central and northern Europe, such as Ireland. The age range spanned from 14 to 25 years, with the majority of students, 36, between 20 to 25 years old. The gender distribution was relatively even, with 35 men, 27 women, and one student who preferred not to disclose their gender. Regarding academic backgrounds, the students primarily specialized in either economics or technical studies.

4.1 Execution of the anonymous questionnaire

At the University of Applied Science Bachelor and Master Students answered the questionnaire in the context of a lecture about teaching methods and tools for writing a scientific paper. Most of the students have been overwhelmed by the masses of information available for this project. In the

past, students relied on books and scientific papers from libraries and databases, but now there are numerous GenAI tools at their disposal. According to literature evaluations, students, especially Bachelor students who are still learning the academic writing process, are struggling to navigate these new tools. Furthermore, there are concerns about the potential negative consequences of misusing AI tools like ChatGPT. The students have been very much irritated and the confidence of using a tool went down significantly.

The questionnaire was divided into three parts: demographic data, questions about the current use and expectations of AI tools, and a request for future support from professors. The main demographic data was mentioned above to describe the framework of the questionnaire.

The next set of questions has been about the preferences for teaching and learning to understand what students are expecting.

Question 5 asked about the structure of online teaching. What are the preferences of the students nowadays?

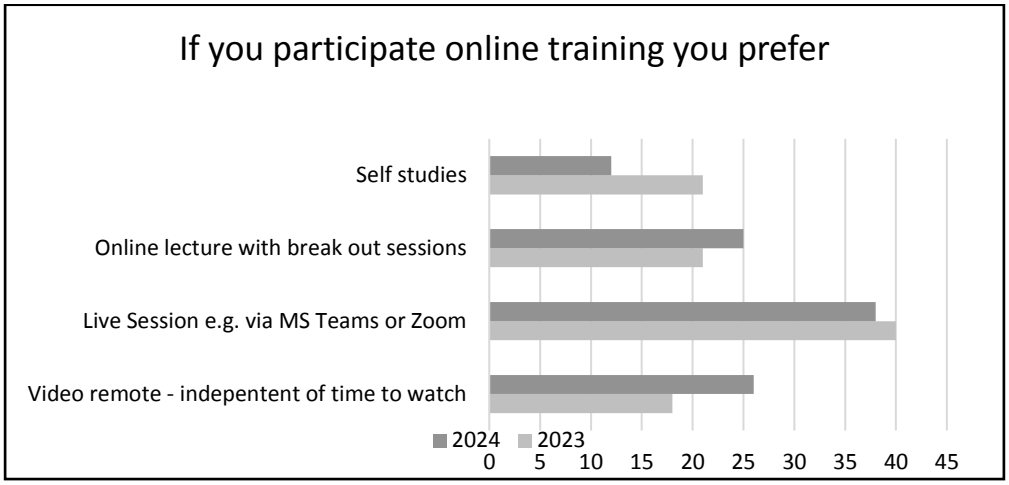

Figure 1: Teaching questionnaire: Online training preferences, by author 2024

Reviewing that just 14% of the students are still interested in online training. But of that in a remote setting, the request for interaction increased. Independent self-studies are the least of the priority of the students even decreasing since last year according to Figure 1.

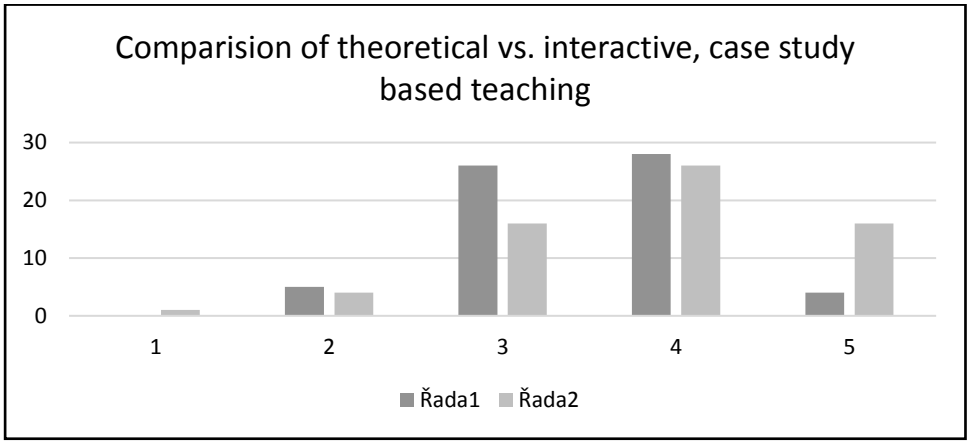

Figure 2: Teaching questionnaire: Theoretical vs. Interactive teaching, by author 2024

Figure 2 shows the comparison of theoretical and interactive teaching. Series 1 in dark is more traditional teaching. The students evaluated this as average, but the interactive part (Series 2 - light) was much higher ranked.

The next questions evaluated what the main structure and content of the topics for the lectures should contain. The distinction was between professional content, methods and tools, and social interactions. The feedback from the students sets a clear priority that methods and structure should be an essential part of the lectures. Professional content is expected anyway but it is rapidly changing in some fields. So, very often an overall method and structure help the students to put all the functional content into perspective and prepare to adjust later to new content. Very specifically the use of tools or AI tools is easier to replace. The questions are ranked with an average of over 4 meaning the topic is very important.

Overall, the average trend was reflected. Specific knowledge in a lot of areas is important. For the future specifically with new technologies being involved; a method and tool training seems to be very important.
The next question was more about how teaching should be executed, given the generation of students is used to using a lot of media and front-end teaching seems ancient.

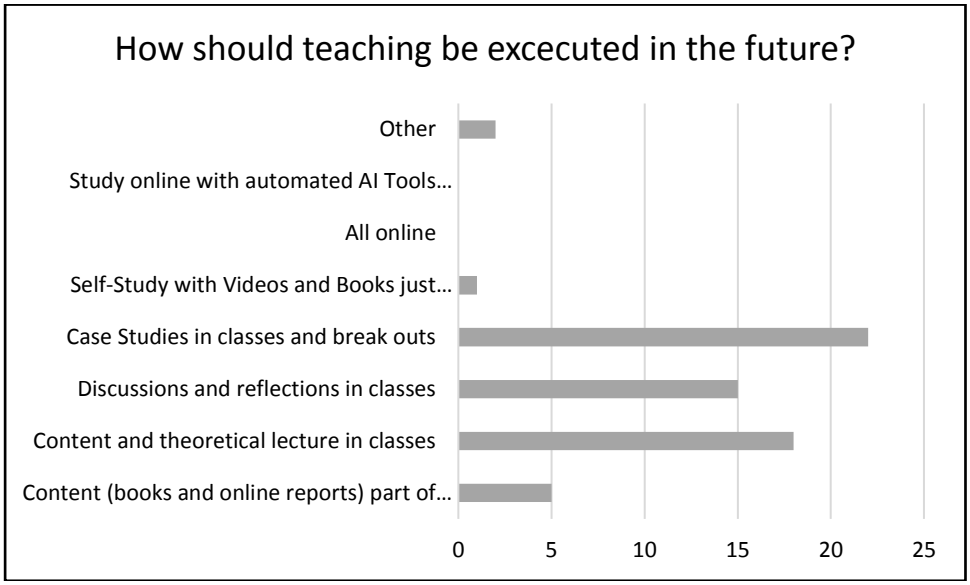

Figure 3: Teaching questionnaire: Execution of teaching, by author 2024

Figure 3 points out that classroom training with variations of interaction with the students is preferred.

The next question evaluated the role of educators. The majority of learners favor the employment of techniques, resources, and proficient materials as the foremost aspect of teaching inside a classroom. Conversely, breakout sessions and case studies are deemed less significant.

In general, instructors are projected to have face-to-face interaction with their students and teach alongside expert materials. The utilization of structured methods and supportive tools is highly valued. This feedback slightly opposes the students' perception, considering that they are digital natives who primarily use media. Nonetheless, the traditional teaching approaches remain relevant.

The next set of questions is in the context of the current and future use of GenAI concerning studying. What is the status versus the expectations and predictions of future use? In total 7 questions related to this field have been asked.

Firstly, the question about AI tools the students are familiar with, this provides a clear direction for the evaluation of the following questions. 70% of the participants use and know ChatGPT, 14% Copilot, and 6% Canvas. This shows that AI now functions as an extended Search Engine not considering more details about possible functionality.
The question about how much experience the students have with AI gives average feedback of 2.9 on a scale from 1-5 where 5 means having a lot of experience. his feedback, coupled with the previous question, suggests that all students were interested in trying out the new tools but lacking real experience.

The questions on how comfortable the students feel and where there is additional training needed are based on the little expectations with using ChatGPT as a sparring partner. So, half of the students feel okay using it, where the other half are just starting not having an idea about the value of AI tools for their use. Observing the demand for education on AI tools (depicted in Figure 5), it becomes evident that there exists a prominent trend of insufficiency across all domains. This emphasizes the importance of recognizing the benefits of utilizing AI tools.

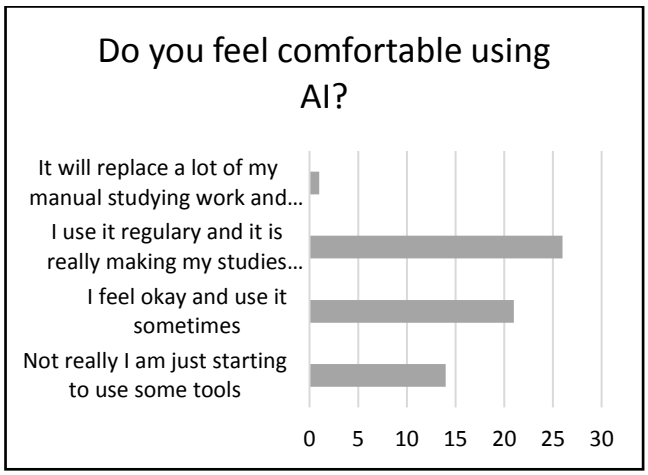

Figure 4: Teaching questionnaire: Use of AI, by author 2024

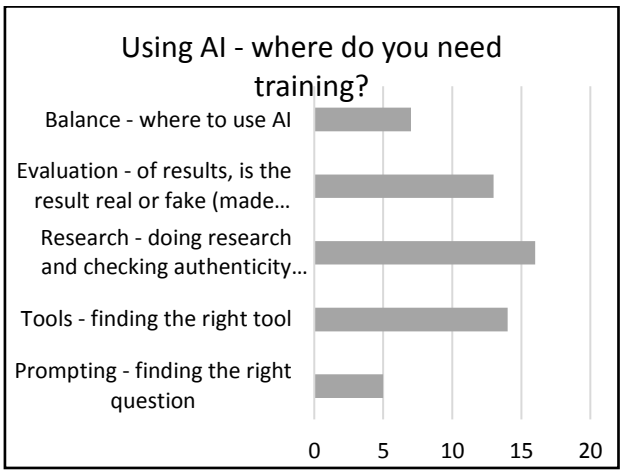

Figure 5: Teaching quest.: Training for AI, by author 2024

The next questions regarding the prediction of the future are clearly stated. According to their knowledge of the tools they feel kind of prepared for it. However, all participants are certain that AI tools will be very important for their future work, and they need to get educated about it.

So, in summary, the students have some overall experience mainly with ChatGPT as an AI tool and are certain that these tools will impact their future work. Currently, they have little experience. At present teaching the use of AI tools is not part of the lectures, so they are asking for support in structuring this new topic.

4.2 Practical lecture to evaluate the process of writing a scientific paper

The knowledge regarding the use of AI tools during studies had been very limited at the beginning of a series of lectures. The request for training in relation to a reusable structured approach was announced by some students. A lot of high-level training material had been available, but no practical experience and real examples had been provided.

Every day a new AI Tool popped up and students were very confused on firstly the tools, secondly the serosity of the tools, which tools were allowed to be used, and the handling of it. The first master's thesis was executed with a very poor outcome. It was very clear, and well-announced by the students that guidance was missing.

For example, the process of writing a scientific paper was taken as an example firstly to structure a process and then review possible supporting tools reflecting AI tools.

A group of students reviewed the possible tools for the use of doing the research for a paper. With many examples and trials, they figured out the pros and cons of this particular area.

Various student groups reviewed the method of splitting a piece of work and then evaluating possible supporting AI tools.

The overall feedback was very positive. The process of structuring and breaking it up into something where the process and the results could be evaluated helped a lot to find the best tool and support with an AI tool. In addition, the first enthusiasm of the students that “AI will do all the work for me” was replaced by “AI is a tool I need to understand and learn to evaluate. Then it will be of very good help.”

This small case study supported hypothesis 2, that doing a real structured example using a reproducible method, provided self-confidence to the students to evaluate an AI tool by themselves.

5. Conclusion and Next Steps

This paper analyzed the situation of the Generation-Z people, now in their studies, challenged with rapidly upcoming new technologies and tools. These are promoted everywhere and seem to be the next generation of digitalization or networking environments. Given there is no experience either in the use, scope, or context of these tools and structures, there is a high uncertainty of how to involve and leverage them in a right or wrong way.

Some recent studies and statistics were evaluated, and a detailed questionnaire was executed to get enough data to analyze the research questions.

The results for the overall **key research questions** of this paper are:

> ‘What challenges do GenZ students currently experience during their studies?’
>
> ‘What kind of support do GenZ students expect to use AI more effectively?’

The questions have been examined with two hypotheses, which took actual literature and a questionnaire into account. Both hypotheses could be positively confirmed. The findings revealed that students are struggling with the constant changes in technology, particularly with GenAI tools, and are seeking clear guidance from their educators. This would encourage them and give them more self-confidence. In addition, the clear guidance should include a clear structured approach and method on how to use these new tools and how to evaluate them. This requires practical training courses that offer positive experiences with these tools, which can make a significant difference in their future endeavors.

The challenges of Generation Z have been elaborated related to their previous experiences with the pandemic as well as due to new technologies and GenAI tools. The questionnaire with 20 detailed questions provided an insight into future requirements on lecturing and the focus on structures and methods.

In summary, Generation Z is establishing its ground. They want to have social interaction with peers and educators to get a lot of positive feedback to develop businesses using the new technologies and GenAI tools in all fields.

6. References

- Adair, A. (2023). Teaching and Learning with AI: How Artificial Intelligence is Transforming the Future of Education. *XRDS: Crossroads, The ACM Magazine for Students*, *29*(3), 7-9.
- Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A. J., Pizzinelli, C., ... & Tavares, M. M. (2024). Gen-AI: Artificial Intelligence and the Future of Work. *Staff Discussion Notes*, *2024*(001).
- Chan C., Lee K., (2023a), The AI generation gap: Are Gen Z students more interested in adopting generative AI such as ChatGPT in teaching and learning than their Gen X and Millennial Generation teachers? arXiv preprint arXiv:2305.02878.
- Chan, C.K.Y., Hu, W. (2023b). Students' Voices on Generative AI: Perceptions, Benefits, and Challenges in Higher Education. arXiv preprint arXiv:2305.00280v1.
- Cruz-Benito, J. (2022). *AI in Education* (p. 114). MDPI-Multidisciplinary Digital Publishing Institute.
- Grossegger B., (2022), Generation Z. Wie „ticken“ zukünftige Studierende?, www.jugendkultur.at
- Koubaa, A., Boulila, W., Ghouti, L., Alzahem, A., & Latif, S. (2023). Exploring ChatGPT Capabilities and Limitations: A Survey. IEEE Access.
- Kumar, A. H., (2023). Analysis of ChatGPT Tool to Assess the Potential of its Utility for Academic Writing in Biomedical Domain. Biology, Engineering, Medicine and Science Reports, 9(1), 24–30. https://doi.org/10.5530/bems.9.1.5
- Lo, C. K. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. Education Sciences, 13(4), 410.
- Mujiono, M. (2023). Educational Collaboration: Teachers and Artificial Intelligence. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, *9*(2), 618-632.
- Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023). Teachers’ AI digital competencies and twenty-first century skills in the post-pandemic world. *Educational technology research and development*, *71*(1), 137-161.
- Rahman, M. M., & Watanobe, Y. (2023). ChatGPT for education and research: Opportunities, threats, and strategies. Applied Sciences, 13(9), 5783.
- Rios-Campos, C., Cánova, E. S. M., Zaquinaula, I. R. A., Zaquinaula, H. E. A., Vargas, D. J. C., Peña, W. S., ... & Arteaga, R. M. Y. (2023). Artificial Intelligence and Education. South Florida Journal of Development, 4 (2), 641–655.
- Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? Journal of applied learning and teaching, 6(1), 342-363.
- Schreiber, G., & Ohly, L. (2024). *KI: Text: Diskurse über KI-Textgeneratoren* (p. 591). De Gruyter.
- Sullivan, M., Kelly, A., & McLaughlan, P. (2023). ChatGPT in higher education: Considerations for academic integrity and student learning.
- Vorst v. d., C. (2021) Higher Education turnaround supporting digital transformation, IISES Conference June 2021.
- Vorst v. d., C. (2023) Project based learning strengthen the confidence in own capabilities, IISES Conference June 2023.