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Author for correspondence:
Lirika Bërdynaj-Syla
lirika.berdynaj-syla@aab-edu.net
Faculty of Social Sciences, AAB College, Prishtinë, 10000, Republic of Kosovo

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ChatGPT Integration in Higher Education: Impacts on Teaching and Professional Development of University Professors

Elmedina Nikoçeviq-Kurti, Lirika Bërdynaj-Syla

Abstract

Background/purpose: The integration of ChatGPT in education shows great potential, but its success depends upon educators' technological skills, their ability to adapt to new teaching tools, and a willingness to embrace AI as part of their instructional strategies. This qualitative study investigates the integration of AI, specifically ChatGPT, into lecture and lesson planning by faculty members in Kosovo. The study examines how ChatGPT contributes to their professional development and how it influences their higher education teaching practices.

Materials/methods: This study employed qualitative case study methodology, interviewing 10 faculty members (seven females, three males) from public and private universities in Kosovo to explore their use of AI in teaching. The participants, aged 38 to 52 years old, represent mid-career to late-career professionals with 3 to 13 years of teaching experience, and deemed likely more open to the adoption of new technologies. Data from email interviews were analyzed according to thematic analysis, with codes organized into broad themes to identify patterns and relationships.

Results: The findings indicate that faculty members view ChatGPT as a valuable tool for streamlining time-intensive teaching tasks, such as generating content ideas, creating engaging activities, and providing resources. This support was perceived to enhance their efficiency, contributing to more dynamic and interactive lectures. Faculty members raised concerns that ChatGPT's integration may reduce student engagement in independent learning and critical thinking.

Conclusion: To enhance ChatGPT's integration in academia, it is essential to provide diverse information sources and to develop comprehensive professional development programs that cover technical skills and ethical considerations. This study emphasizes the need for ongoing training to raise awareness of ChatGPT's applications and ethical implications, while promoting collaboration among educators to share best practices.

1. Introduction

Integration of the ChatGPT artificial intelligence (AI) tool in education has garnered significant interest due to its potential to enhance the learning experiences of students (Kiryakova & Angelova, 2023; Ogurlu & Mossholder, 2023; Rahman & Watanobe, 2023; Tan & Subramonyam, 2023; Van den Berg & du Plessis, 2023). As AI technologies become increasingly prevalent in educational settings, it is crucial to understand how they are being utilized and their impact upon teaching practices and student learning. Habibi et al. (2023) suggested that higher education institutions (HEIs) maximize the benefits of ChatGPT by promoting its usage, thereby increasing user acceptance and encouraging participation in learning activities. To this end, educators are advised to stress the importance of integrating AI into students' daily educational routines.

Nikoçeviq-Kurti (2023) identified a disconnect between theoretical knowledge and practical application, attributing this gap to lecturers' insufficient technological skills for effective online teaching. This finding aligns with other studies that have emphasized the critical importance of faculty members' technological proficiency in successfully integrating AI tools like ChatGPT into their teaching practices (Gill & Kaur, 2023; Rahman & Watanobe, 2023). Such technological competencies are essential for harnessing AI's potential to enhance educational outcomes and bridge the gap between theory and practice.

Bullar et al. (2024) highlighted the necessity for HEIs to provide training for educators on effectively utilizing AI technologies such as ChatGPT. They also stressed the importance of equipping students with comprehensive academic integrity training, which includes a thorough understanding of both appropriate and inappropriate uses of AI tools like ChatGPT. Meckler and Verma (2022) underscored the concerns among educators regarding the potential for academic misconduct associated with AI-driven chatbots like ChatGPT. While many university faculty members are familiar with AI applications, including ChatGPT, a significant number either do not use these tools or employ them sparingly, typically reserving them for specific purposes (Kiryakova & Angelova, 2023). Given the increasing significance of AI technologies in education, especially concerning academic integrity and student training, there is a pressing need for research in Kosovo to explore the adoption and impact of these technologies in higher education. The integration of AI tools like ChatGPT into educational practices presents a unique set of opportunities and challenges, especially within the specific educational and cultural context of Kosovo. The current study seeks to address a significant gap in the existing literature by providing an in-depth exploration of how university faculty members incorporate ChatGPT into lesson planning. The authors expect this study to reveal how ChatGPT can be effectively integrated into lesson planning, offering insights into its impact on teaching methods, student engagement, and overall educational outcomes.

The study aimed to detail evidence on the practical integration of ChatGPT within the higher education setting. The outcome aims to promote understanding of the benefits and challenges of AI in lesson planning, offering new perspectives that can inform both future research and policy development on AI's use within the higher education context.

2. Literature Review

2.1. Theoretical Framework

In examining the integration of ChatGPT into lesson planning for university faculty members, the current study was guided by the Technological Pedagogical Content Knowledge (TPACK) framework (Shulman, 1986). TPACK provides a comprehensive approach to understanding how technology can be effectively incorporated into teaching practices. TPACK involves a transactional relationship between technology, pedagogy, and content that is contextually grounded (Koehler & Mishra, 2008; Mishra & Koehler, 2006). As such, effective integration of technology requires more than just knowledge of each component in isolation; it demands the ability to orchestrate and coordinate

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these elements in specific educational contexts (Tarisayia, 2024). According to TPACK, successful technology integration requires faculty members to possess a deep understanding of these three areas. The TPACK framework serves as a foundational guide for understanding and improving the integration of AI in educational settings, emphasizing the importance of aligning content, pedagogy, and technology to foster effective teaching and learning practices.

2.2. Utilization of ChatGPT in Higher Education

The concept of artificial intelligence has roots that stretch back centuries, originating in the ancient Greek era, where early speculations about the creation of intelligent machines first began. The modern era of AI, however, was officially inaugurated in 1956, when a group of scientists and mathematicians convened at Dartmouth College to explore the feasibility of developing computers with cognitive abilities akin to those of humans (Deng & Lin, 2022). In today's era of advanced technology, artificial intelligence (AI) is significantly reshaping the higher education sector. One of the most impactful developments in this domain has been ChatGPT, a language model created by OpenAI, which has the potential to revolutionize teaching and learning processes.

Higher education institutions can leverage their understanding of AI's influence on the job market to adjust their curricula, emphasizing skills that AI cannot easily replicate, such as problem solving and critical decision making. Furthermore, these institutions can prepare students for the evolving job market by educating them on how to effectively use and develop AI, thereby enhancing their prospects for success in the workplace (Dempere et al., 2023). According to Slimi and Villarejo-Carballido (2024), AI also plays a crucial role in fostering a deeper sense of academic integrity among students by providing AI-driven tools that guide them through their academic endeavors.

Dempere et al. (2023) argued that the adoption of AI-based technologies like ChatGPT offers numerous benefits to HEIs, including enhanced efficiency in student services, streamlined enrollment processes, improved retention rates, and significant advancements in teaching and research activities. Regarding ChatGPT's influence on students, Nguyen et al. (2024) revealed significant influence on student learning behaviors. However, these technologies also pose substantial risks concerning privacy and data security.

Recent reports have highlighted the use of ChatGPT in language learning, where it can provide personalized guidance to students, enabling educators to create lesson plans and instructional materials tailored to the individual needs and interests of their students. This personalized approach can enhance student engagement, and thereby the efficiency of language acquisition. Additionally, ChatGPT can be used to design practical exercises that are more aligned with students' proficiency levels and learning goals, thereby improving language skills acquisition and boosting students' motivation (Baskara & Mukarto, 2023). Another noteworthy feature is ChatGPT's ability to generate authentic language content, such as dialogue, news articles, and reading passages, which can be used to enhance students' reading comprehension level and to provide a more authentic learning experience.

Deng and Lin (2022) further explored the efficiency gains that ChatGPT can provide through automated conversations, which can save both time and resources by reducing the need for manual interactions. The model's ability to quickly generate responses facilitates more efficient communication all round. Similarly, Gill and Kaur (2023) emphasized ChatGPT's broad range of application in the higher education and training contexts, including the creation of customized instructional materials and study plans that address the unique needs and interests of individual learners. ChatGPT also assists in guiding learners through their educational journeys, generating engaging educational content such as interactive videos and assessments, evaluating student work, providing constructive feedback, and fostering online collaboration among students and instructors.

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2.3. Attitudes of University Faculty Towards Using ChatGPT in Teaching

While many faculty members recognize the benefits of technology-based educational practices, others remain quite skeptical and concerned about the potential challenges and negative impacts that such practices might introduce (Chien et al., 2014). University lecturers have generally expressed favorable attitudes toward integrating ChatGPT into their teaching methods, with 41.4% showing a positive disposition according to Kiryakova and Angelova (2023). However, some faculty members remain unfamiliar with ChatGPT and are therefore uncertain about whether it represents a threat or a valuable opportunity (Kiryakova & Angelova, 2023; Limna et al., 2023). Research by Iqbal et al. (2022) and Kamoun et al. (2024) revealed that faculty members tend to have a more negative perception of ChatGPT compared to students and that they often display a higher degree of skepticism, with 63.4% of faculty reported as lacking the necessary training and resources to effectively integrate ChatGPT into their teaching practices (Kamoun et al., 2024).

Kamoun et al. (2024) also highlighted faculty concerns regarding copyright infringement (83.4%), increased plagiarism potential among weaker students (83.4%), critical thinking and creativity inhibition (77.2%), and reluctance to accept ChatGPT-generated assignments (57.2%). Furthermore, Nguyen (2024) found that many university faculty members have an incomplete understanding of ChatGPT, leading to mixed and often negative opinions about its use in teaching and assessment. However, Ofosu-Ampong (2024) reported that the vast majority (84%) of lecturers are open to incorporating AI into their teaching, while just 16% are not. Factors that significantly predict AI acceptance in education include years of teaching experience, institutional support for AI use, and attitudes toward AI. Key factors influencing lecturers' acceptance include perceived pedagogical benefits, organizational policies and incentives, perceived complexity and usability, and the sociocultural context.

Addressing the concerns of faculty members through supportive policies, user-friendly interfaces, and alignment with pedagogical goals can encourage AI adoption in higher education institutions. Studies have suggested that while attitudes and perceptions regarding the integration of AI technologies like ChatGPT into education may vary, provision of appropriate training, the establishment of supportive policies, and aligning AI use with educational objectives can help to enhance acceptance and facilitate more effective implementation in higher education.

2.4. Benefits, Challenges, and Limitations of ChatGPT in Higher Education

While ChatGPT offers considerable potential to provide students personalized and interactive learning experiences, it also presents significant challenges that faculty must carefully manage. Issues related to bias, the generation of inappropriate content, and the production of inaccurate information highlight the need to develop effective strategies in order to mitigate these areas of risk (Borji, 2023; Deng & Lin, 2022; Sallam, 2023).

ChatGPT can be used in HEIs to greatly enhance personalized learning, but it also has certain limitations. One key limitation is its lack of comprehensive contextual understanding, which can result in the dissemination of inappropriate or misleading information within academic environments. Furthermore, challenges related to privacy and data security are of paramount importance, necessitating robust strategies to protect students' information in order to ensure their digital and physical safety. Addressing these challenges is crucial if the potential benefits of ChatGPT are to be maximized, while minimizing its potential drawbacks in the educational setting (Al-Momani & Ramayah, 2024; Li et al., 2024).

To ensure the effective utilization of ChatGPT in educational contexts, it is essential that educators acquire the necessary technological proficiency. Without this, they may inadvertently hinder the technology's integration and effectiveness in enhancing learning outcomes (Montenegro-Rueda et al., 2023).

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This study aimed to investigate the integration of AI, specifically ChatGPT, into lectures and lesson preparation by university faculty members in Kosovo, focusing on how its usage had impacted on their professional development. The research aimed to uncover several key aspects of this integration by exploring the changes in faculty members' teaching practices, particularly in lecture preparation and delivery, resulting from the incorporating of ChatGPT into their workflows. Additionally, the study examined the perceived benefits and challenges associated with using ChatGPT in university teaching, as reported by those who have adopted it.

The research is guided by the following questions:

1. What changes occur in university faculty members' teaching practices, specifically in lecture preparation and delivery, after integrating ChatGPT into their workflow?
2. What are the perceived benefits and challenges of using ChatGPT in teaching, according to faculty members who have incorporated it into their teaching practices?
3. How does the integration of ChatGPT affect the professional development of university faculty members in relation to enhancing their teaching practices?

3. Methodology

3.1. Research Design

The study employed a qualitative case study methodology, conducted in Kosovo, to explore the integration of AI technologies such as ChatGPT into university teaching. This approach is particularly effective for the examination of complex phenomena within their real-life context. The case study method in this research facilitated an in-depth analysis of how ChatGPT affected teaching practices and professional development among university faculty members. By focusing on detailed, contextualized exploration, this methodology aimed to provide a comprehensive understanding of both the benefits and challenges associated with incorporating AI technologies into academic settings.

3.2. Sample

For this study, a snowball sampling technique was utilized in order to select participants. Snowball sampling, a non-probability sampling method, is particularly effective for reaching hard-to-access populations or when a comprehensive list of the population is not available (Creswell, 2005). This method involves initial participants referring to additional potential subjects, thereby creating a chain of referrals.

The sample in the current study was comprised of 10 university faculty members from public and private universities and colleges in Kosovo. Specifically, the participants included four faculty from the University of Prishtina, three from AAB College, and one each from Heimerer College, UBT, and Universum. This diverse selection aimed at eliciting a well-rounded perspective on the integration of ChatGPT across various HEI types. The participants were selected with the aim of capturing a range of experiences and viewpoints regarding the application of AI technology in their university teaching practices.

Table 1. Sample demographics

Name	Gender	Age (years)	Professional title	Academic experience (years)	ChatGPT experience (months)
Faculty member 1	Female	45	Assistant professor	10	6
Faculty member 2	Female	42	Assistant professor	13	18
Faculty member 3	Female	40	Teaching assistant	2	18

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Name	Gender	Age (years)	Professional title	Academic experience (years)	ChatGPT experience (months)
Faculty member 4	Male	50	Assistant professor	10	12
Faculty member 5	Female	49	Associate professor	13	12
Faculty member 6	Female	38	Assistant professor	11	8
Faculty member 7	Male	40	Teaching assistant	3	12
Faculty member 8	Female	52	Assistant professor	9	12
Faculty member 9	Male	43	Assistant professor	10	18
Faculty member 10	Female	42	Assistant professor	8	12

The demographic breakdown of the sample included seven female faculty members and three male faculty members, ensuring some representational balance between the genders. The age range of the participants was between 38 and 52 years old, indicating a group of mid-career to late-career professionals who are likely to have substantial experience in teaching and are potentially more open to adopting new technologies (see Table 1).

Each faculty member was interviewed to gather in-depth insight into their utilization of AI technology, specifically ChatGPT, in their teaching practices. The interviews focused on understanding how the participants had integrated ChatGPT into their teaching workflow, the perceived benefits and challenges they had encountered, and the impact this technology had on their professional development and teaching effectiveness. Through analysis of these 10 faculty members' experiences, the study aimed to provide a detailed picture of the transformative effects of AI's usage in higher education within the context of Kosovo.

3.3. Instruments and Procedures

For this study, email interviews were chosen as the primary data collection instrument. Email interviews are advantageous for their convenience and flexibility, allowing participants to respond at their own pace and providing the researcher with the ability to gather detailed, written responses (Fritz & Vandermause, 2018). The interview consisted of 9 questions (see Appendix), formulated from reviewing the existing literature on AI integration in education, professional development, and teaching practices. This literature-informed approach ensured that the questions formed were relevant, comprehensive, and capable of eliciting insightful responses regarding the participants' experiences and perspectives.

The initial step in the interview process involved reaching out to potential participants via email. Each faculty member was asked two preliminary questions in order to determine their eligibility and willingness to participate in the study: 1) Do you use ChatGPT in your teaching practices? and 2) Are you willing to answer a series of questions regarding your experience with ChatGPT? Only those who answered affirmatively to both questions were included in the sample, ensuring that the study focused on individuals with direct experience of using ChatGPT in their teaching. Additionally, the participants were each required to sign an informed consent form in order to participate in the study.

The email interviews were conducted during a 2-month period (March-April, 2024), affording participants sufficient opportunity to reflect on their experiences and offer detailed responses. The extended time span also accounted for any potential delays due to participants' professional commitments, resulting in a comprehensive and robust dataset.

3.4. Data Analysis

The data collected from the email interviews were analyzed according to thematic analysis. This method was employed to systematically examine the data, identify patterns, analyze themes, and

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report on the findings. The analysis involved several key phases. Initially, each researcher independently coded the interview transcripts by identifying and highlighting significant phrases and concepts related to the research questions. Coding was done by the primary researchers plus another faculty member (external to the study). Following the initial coding exercise, the researchers convened to compare their codes and to discuss any discrepancies. This collaborative discussion aimed to reconcile differences and enhance the reliability of the coding process.

The agreed codes were then organized into broader themes by identifying patterns and relationships among them. This process included grouping similar codes and summarizing them into overarching themes accurately reflecting the data's core concepts. An external faculty member helped triangulate the data by reviewing the coding and themes, thereby validating the interpretations made and to minimize potential researcher bias. This multi-phase approach to thematic analysis, combined with the validation from an external expert, helped to ensure a comprehensive and rigorous analysis of the collected qualitative data.

4. Results and Discussion

Several prominent themes emerged from the analysis regarding the faculty members' integration of ChatGPT in their lessons. These themes were sources of information on ChatGPT for faculty members, instructional planning support from ChatGPT, the impact of ChatGPT on academic workflow, changes in student preparation and responses, limitations and challenges of using ChatGPT, and the need for professional development (see Table 2).

Table 2. Codes and themes derived from interviews

Themes	Codes	Quotes
Sources of information on ChatGPT for faculty members	▪ Younger individuals ▪ Social networks ▪ Online news portals ▪ Media ▪ Internet ▪ Seminars	*"I first heard about ChatGPT from my students."* (Faculty 1) *"I became acquainted with it by researching other LLMs created by OpenAI."* (Faculty 2) *"I heard from online news portals."* (Faculty 10)

Themes	Codes	Quotes
Instructional planning support from ChatGPT	▪ Information on new activities for lectures and exercises ▪ Latest data on specific topics ▪ Creating lecture scenarios ▪ Problem-solving activities ▪ Initial ideas and approaches for lecture planning ▪ Researching materials not found in physical literature ▪ Quizzes ▪ Content translation ▪ English spelling correction ▪ Paraphrasing sentences ▪ Advice on statistical analysis ▪ Advice on case study ideas for scientific research ▪ Advice and assistance in teaching strategies ▪ Assistance in identifying necessary resources and references ▪ Generating test questions based on course material ▪ Grading student assignments, providing feedback and evaluation based on predefined criteria ▪ Professional communication	*"I use ChatGPT to analyze suggestive patterns of text from the product itself."* (Faculty 2) *"I rely on ChatGPT to stay updated with my field's latest developments and research, to ensure my lectures are always current."* (Faculty 6) *"ChatGPT provides varied problem-solving activities to challenge my students and enhance their critical-thinking skills."* (Faculty 4) *"ChatGPT generates quizzes that test my students' understanding of course material, providing instant feedback on their progress."* (Faculty 1) *"ChatGPT's spell-check feature has been a lifesaver to ensure my lectures are spelling error free."* (Faculty 5) *"ChatGPT provides valuable advice on statistical analysis, helping me to interpret data and draw meaningful research conclusions."* (Faculty 7) *"ChatGPT's ability to generate test questions based on course material has been instrumental in creating comprehensive student assessments."* (Faculty 3)
Impact of ChatGPT on academic workflow	▪ Facilitated information retrieval according to specific requirements, enhancing the efficiency of academic research ▪ Updating lectures with new activities ▪ Detecting plagiarism ▪ Creating more engaging tasks ▪ Saving time in lecture preparation ▪ Supporting course development, course outlines	*"I use ChatGPT to brainstorm and incorporate new activities into my lectures, keeping them fresh and engaging for my students."* (Faculty 8) *"I can easily create interactive and engaging tasks with ChatGPT that challenge my students and promote active learning."* (Faculty 4) *"ChatGPT assists me when developing course outlines and structures, ensuring that they align with learning objectives and are well-organized."* (Faculty 1)

Themes	Codes	Quotes
Changes in student preparation and responses	▪ Decreased information retrieval skills becoming apparent ▪ Students receive information that is readily available ▪ Students tend to accept information without changes ▪ Short time available to notice any significant changes	*"I've noticed a decline in students' abilities to conduct independent research since the introduction of ChatGPT, since they rely more upon the tool for information retrieval."* (Faculty 9) *"Students now have access to a vast amount of information through ChatGPT, which has changed how they approach learning and research."* (Faculty 3)
Limitations and challenges of using ChatGPT	▪ Potential for assignments to be copied ▪ Diminished skills development in organizing and structuring papers ▪ Lack of professional development on using ChatGPT ▪ Lack of ethical issues awareness ▪ Insufficient information on appropriate use of ChatGPT ▪ Dependence on technology/ over-reliance on ChatGPT ▪ Decrease in critical thinking and writing skills ▪ Misuse of technology; no proper guidelines	*"The ease of generating content with ChatGPT may result in students neglecting the development of critical skills such as organizing and structuring their papers."* (Faculty 4) *"I'm concerned that students are using ChatGPT to plagiarize assignments, since the tool generates content that closely resembles existing materials."* (Faculty 3) *"Many students and faculty members may not be fully aware of the ethical considerations surrounding the use of AI tools like ChatGPT."* (Faculty 2)

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Themes	Codes	Quotes
Need for professional development	▪ Awareness of ChatGPT and its potential applications ▪ Participating in training sessions or workshops to learn how to use ChatGPT effectively ▪ Understanding the ethical considerations of using ChatGPT in academic settings ▪ Incorporating ChatGPT into teaching practices to enhance student learning ▪ Using ChatGPT for research purposes ▪ Collaborating with colleagues to share best practices and insights on using ChatGPT ▪ Continuously improving AI integration into professional practice	*"I think professional development programs are essential to become aware of ChatGPT and its potential applications in teaching and research."* (Faculty 1) *"Attending training sessions or workshops can help me to learn how to effectively integrate ChatGPT into teaching practices."* (Faculty 5) *"…should also cover the use of ChatGPT for research purposes, providing new tools for academic inquiry."* (Faculty 7) *"There is a need for collaboration with colleagues...to share best practices and insights on using ChatGPT, facilitating its effective integration into professional practice."* (Faculty 10)

4.1. Theme 1: Sources of Information on ChatGPT for Faculty Members

The study identified several key sources from which faculty members gathered information about ChatGPT. These sources include younger individuals, social networks, online news portals, from the media, the Internet, and from seminars. The findings provide insights into the diverse range of channels through which faculty members access information about ChatGPT, highlighting the importance of considering multiple sources in order for a comprehensive understanding to be achieved. Faculty member 2 mentioned, "I became acquainted with it by researching other LLMs created by OpenAI," indicating a reliance upon written sources for information. Faculty member 10 stated, "I heard from online news portals," suggesting an active engagement with online platforms for news and updates. Faculty member 1 noted, "I first heard about ChatGPT from my students," highlighting the role of students as sources of information and insight for educators. The variety of sources mentioned by the faculty members demonstrates a multifaceted approach to their staying informed about ChatGPT. The educators mentioned a range of preferences when it came to their most used sources of information on ChatGPT, with some favoring traditional sources, such as academic articles and news portals, while others turned to more contemporary channels, including social networks and direct interactions with students. This diversity in information sources underscores the dynamic nature of information dissemination and the need for educators to adapt their information-seeking behaviors.

Ogurlu and Mossholder (2023) found that many educators were not that optimistic about ChatGPT, a sentiment likely stemming from a lack of familiarity with the technology. Similarly, Tan and Subramonyam (2023) noted that integrating ChatGPT into classrooms differs from the integration of typical educational technologies, often lacking comprehensive training, documentation, and vetting processes. For many faculty members, ChatGPT represents their first encounter with AI tools in education. Initial discussions about ChatGPT were largely influenced by major news outlets at the time of its release, with information and perspectives predominantly circulated among colleagues through media coverage and news articles.

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4.2. Theme 2: Instructional Planning Support from ChatGPT

Based on the insights provided by the interviewed faculty members, ChatGPT offers a wide array of functionality. It can be used to provide information on new activities for lectures and exercises, to gain the latest information on specific topics, to create lecture scenarios, and to assist in problem-solving activities. Additionally, it can generate initial ideas and approaches for lecture planning, seek out research materials not found in the physical literature, as well as for creating quizzes, translating content, correcting English spelling, paraphrasing sentences, to seek advice on statistical analysis, generating test questions based on course material, grading student assignments, providing feedback and evaluations, and supporting professional communication.

Faculty members highlighted the benefits they experienced from using ChatGPT in their teaching and research. Faculty member 6 highlighted the role of ChatGPT in keeping their lectures current by staying updated with developments in their field. In contrast, Faculty member 4 mentioned how the tool "provides varied problem-solving activities that challenge students and enhance their critical thinking skills." Faculty member 1 used ChatGPT for generating quizzes that assess student understanding and since it offers immediate feedback. Additionally, Faculty member 5 emphasized the spell-checking feature of ChatGPT, which has been instrumental in ensuring their lecture materials remain spelling error free. These findings suggest that ChatGPT plays a significant role in supporting instructional planning for university faculty members, offering a wide range of tools and features that enhance teaching and research practices. However, further research is needed to explore the potential limitations and challenges associated with the use of ChatGPT in educational settings. The findings of the current study align with the premise that the use of large language models in education, like ChatGPT, holds promise for supporting faculty members' work (Ogurlu & Mossholder, 2023; Tan & Subramonyam, 2023; Van den Berg & du Plessis, 2023). The current study further confirms that these models can indeed assist with lesson planning, validating their potential to contribute to a more open approach in teacher education.

4.3. Theme 3: Impact of ChatGPT on Academic Workflow

Based on the interviewed faculty members, ChatGPT facilitates information retrieval according to specific requirements, enhancing the efficiency of academic research. It also aids in updating lectures with new activities, detecting plagiarism, creating more engaging tasks, saving time in lecture preparation, and supporting course development and course outlines. Faculty members highlighted the positive impact of ChatGPT on their academic workflow. For example, Faculty member 8 mentioned using ChatGPT "…to brainstorm and incorporate new activities into my lectures, keeping them fresh and engaging for my students." Similarly, Faculty member 4 noted, "I can easily create interactive and engaging tasks with ChatGPT that challenge my students and promote active learning." Faculty member 1 also shared, "ChatGPT assists me when developing course outlines and structures, ensuring that they align with learning objectives and are well-organized."

These findings suggest that ChatGPT plays a valuable role in enhancing the academic workflow of faculty members, offering a range of benefits that contribute to more effective and engaging teaching practices. In the studies of Kiryakova and Angelova (2023) and Rahman and Watanobe (2023), a positive attitude was found toward ChatGPT's potential for creating learning scenarios, materials, and presentations for lectures and practical lessons, as well as for generating exam questions, quizzes, and assignments. These studies suggest that ChatGPT can be utilized to develop lesson plans for various subjects and generate subject-specific questions tailored to different levels of difficulty.

4.4. Theme 4: Changes in Student Preparation and Responses

The integration of ChatGPT into academic settings has led to noticeable changes in student preparation and responses. The interviewed faculty members observed that students' ability to

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conduct independent research is declining. As Faculty member 9 noted, "I've noticed a decline in students' abilities to conduct independent research since the introduction of ChatGPT, as they rely more upon the tool for information retrieval." Furthermore, today's students have instant access to a significantly large amount of information through use of AI tools, which has reshaped their style of learning. On this, faculty member 3 remarked that, "Students now have access to a vast amount of information through ChatGPT, which has changed how they approach learning and research."

There is also a tendency among students to accept the information provided by ChatGPT without modification. It should be noted here that at the time the current study was undertaken, the timeframe since ChatGPT's first introduction was still very short, which will have limited the observation of any significant long-term changes or effects on students or teaching and learning practices. Javaid et al. (2023) mentioned that students need to be made aware of the limitations of AI chatbots such as ChatGPT, and for the necessity to critically evaluate the results they produce before blindly using them in their academic work. They also noted that ChatGPT as a source of knowledge may make students less likely to engage in independent learning and critical thought, thereby increasing their reliance upon AI for solutions. On the other hand, Montenegro-Rueda et al. (2023) asserted that while ChatGPT presents itself as an invaluable assistance tool for scientific writing, it should not be considered a complete solution for scientific content creation. Writers must also use their own knowledge and experience in order to validate and complement the information provided by AI tools.

4.5. Theme 5: Limitations and Challenges of Using ChatGPT

According to the interviewed faculty members, the integration of ChatGPT into academic settings presents several limitations and challenges. There was a concern raised that students may use ChatGPT to plagiarize assignments. On this, faculty member 3 expressed being "…concerned that students are using ChatGPT to plagiarize assignments, since the tool generates content that closely resembles existing materials." According to Lim et al. (2023), faculty members in higher education institutions face academic integrity challenges with the use of ChatGPT. They must determine whether student submissions, such as assignments and research reports, are the result of the students' original data analysis or whether they contain material plagiarized and recycled by ChatGPT. Faculty member 4 highlighted a related issue, stating that "The ease of generating content with ChatGPT may result in students neglecting the development of critical skills such as organizing and structuring their papers."

Montenegro-Rueda et al. (2023) highlighted that ChatGPT presents the potential to improve learning efficiency and to provide personalized educational support to both students and teachers. However, they also emphasized the importance of considering the risks and limitations associated with these technologies, including data privacy, cultural differences, language proficiency, and ethical implications.

Another point was made by faculty member 2, who described that, "Many students and faculty members may not be fully aware of the ethical considerations surrounding the use of AI tools like ChatGPT." This gap in awareness may be compounded by a lack of comprehensive information on how to use ChatGPT appropriately in academic settings. The interviewed faculty members expressed concerns that excessive reliance upon ChatGPT could lead to a decline in students' critical thinking and writing skills, and cautioned that overuse of the tool could potentially undermine the development of these essential skills.

4.6. Theme 6: Need for Professional Development

The study's findings highlighted the critical need for professional development in order to effectively integrate ChatGPT into academic settings. As Faculty member 1 stated, "I think that professional development programs are essential to become aware of ChatGPT and its potential

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applications in teaching and research." Training sessions or workshops can provide valuable knowledge on how to effectively use ChatGPT, which was something emphasized by faculty member 5, "Attending training sessions or workshops can help me to learn how to effectively integrate ChatGPT into teaching practices." There is a need to understand the ethical considerations of using ChatGPT in academic settings, ensuring responsible use of the tool. Collaboration with colleagues to share best practices and insights is also seen as vital for the effective integration of ChatGPT. Faculty member 10 highlighted the importance of this, stating, "There is a need for collaboration with colleagues...to share best practices and insights on using ChatGPT, facilitating its effective integration into professional practice."

Ongoing professional development is necessary to continuously improve the integration of ChatGPT into professional practice. These findings align with Yu (2024), who asserted that elevating digital literacy involves a commitment to ongoing professional development. This includes engaging with the latest digital education theories, participating in specialized training, and mastering the deployment of AI tools like ChatGPT in the classroom.

5. Conclusion and Recommendations

This study explored the integration of ChatGPT into university teaching practices, focusing on its impact on lecture preparation, perceived benefits and challenges, as well as the professional development of faculty members.

Regarding the first research question on what changes occur in university faculty members' teaching practices, specifically in lecture preparation and delivery, after integrating ChatGPT into their workflow, the findings indicate that significant changes were noted. The faculty members reported that ChatGPT supported their instructional planning by streamlining time-consuming tasks, thereby enhancing their working efficiency. These gains included generating content ideas, creating engaging activities, and providing resources, which together contributed to them giving more dynamic and interactive lectures. As a result, the faculty members found themselves able to dedicate more time to engaging with their students and refining their teaching strategies.

Concerning the examination of the perceived benefits and challenges of incorporating ChatGPT into university teaching, the faculty members reported several advantages. They found that ChatGPT helped them to better manage time-consuming tasks, that it boosted student engagement, and helped foster creativity in their lesson planning. Nevertheless, there were also notable challenges identified, including the necessity for their professional development in order to fully grasp how best to apply ChatGPT within their teaching practices, as well as giving adequate consideration to the ethical issues involved in the use of AI tools in education. Overcoming these challenges would involve targeted training and increased awareness so as to ensure more effective integration of ChatGPT in their teaching practices, while addressing potential concerns related to academic integrity and the tool's ethical application.

On the other hand, regarding how the integration of AI technologies like ChatGPT affected the professional development of faculty members in relation to enhancing their teaching practices, the integration of ChatGPT had profoundly impacted the participants' professional development. This underscores the necessity for comprehensive training programs that address technical skills, ethical considerations of using AI tools, and their effective use in teaching practices. This impact highlights the importance of continuous professional development to keep pace with technological advancements and enhance teaching practices. As such, faculty members must remain informed about AI applications, work in collaboration with their colleagues, and to continuously assess and improve their integration strategies.

These findings shed light on how ChatGPT's use in educational settings reflects the TPACK framework's emphasis on the interaction between technology, pedagogy, and content. The results

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underscore the necessity for faculty members to effectively coordinate these elements in order to enhance their teaching practices. By providing such insight into how ChatGPT can influence instructional planning and highlighting concerns regarding students' research skills and critical thinking, the current study reinforces the importance of taking a holistic approach to technology integration as outlined by TPACK. Consequently, understanding and improving the use of AI tools like ChatGPT in alignment with TPACK can help optimize educational outcomes and support more effective teaching and learning practices.

To enhance the integration of ChatGPT in academic settings, it is essential to diversify information sources for faculty members and to encourage the use of both traditional and contemporary channels. Comprehensive professional development programs should be developed that address both technical skills and the management of ethical considerations of AI usage in education, while promoting collaborative learning among educators to share best practices. However, developing and applying measures to monitor and address academic integrity, such as detecting AI-generated content, are crucial, and educational strategies should emphasize that students develop critical thinking and undertake independent research. Increasing awareness about the ethical implications of using AI tools in education and providing guidelines for their responsible application is paramount. Continuous feedback mechanisms and ongoing research will help to refine the best ways of using tools such as ChatGPT in teaching practices, ensuring that its use effectively supports teaching and learning outcomes.

5.1. Limitations and suggestions for future research

The findings of this qualitative case study may not be easily generalizable to other contexts or populations due to the specific nature of the sample and the context of Kosovo. There may have been inherent bias in the selection of the study's participants through the use of snowball sampling, as individuals referred by the initial participants may share similar characteristics or perspectives. The sample size of just 10 faculty members may be considered small, limiting the breadth of perspectives and experiences represented in the study. Conducting quantitative studies to complement the qualitative findings could also provide a broader understanding of the integration of AI technologies in university teaching, whilst longitudinal studies could track the impact of AI integration over time, providing insights into long-term effects and changes in attitudes and practices.

Declarations

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Conflicts of Interest. The authors declared no conflict of interest.
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Ethical Approval. All procedures performed throughout the study were carried out in accordance with the ethical standards of institutional and national research committees and the 1964 Helsinki Declaration and subsequent amendments and ethical standards.
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Appendix

Interview questions

- *When and how did you learn about the existence and options offered by ChatGPT?*
- *What do you usually use ChatGPT for? (Explain in detail related to lectures, lesson planning, quizzes, translations, scenarios, and other forms)*
- *How has your way of preparing lectures changed after you started using ChatGPT?*
- *What kind of experiences have you had with using ChatGPT in teaching?*
- *What are the main benefits you have noticed from using ChatGPT in your teaching process? For example, have students used ChatGPT in their assignments?*
- *What are your needs in teaching (e.g., preparation, teaching, student assessment) that you would like to explore further in ChatGPT?*
- *Have you thought about any ethical challenges that may arise from using AI technology like ChatGPT in the context of university teaching?*
- *What are your recommendations for institutions and faculty members who want to start using AI technology like ChatGPT in their teaching practices?*
- *Have you noticed any changes in student responses or the quality of discussions after starting to use ChatGPT?*

About the Contributor(s)

Elmedina Nikoçeviq-Kurti, Ph.D., is a teaching assistant at the Faculty of Education at the University of Prishtina, Kosovo. With a bachelor's degree in psychology and a master's in pedagogy, specializing in management in education, she is deeply committed to exploring the evolving landscape of teacher development. Her research focuses on empowering teachers through career development, enhancing teaching self-efficacy, fostering effective mentoring practices, and unraveling the complex process of constructing a professional teacher identity.
Email: elmedina.nikoceviq@uni-pr.edu
ORCID ID: https://orcid.org/0000-0001-9548-1297

Lirika Bërdynaj-Syla, Ph.D., is an assistant professor at the Department of Social Sciences of the AAB College, Kosovo. She has a strong research interest in effective teaching practices and the professional development of educators. Her work focuses on exploring innovative strategies to enhance teaching effectiveness and supporting educators in their continuous professional growth.
Email: lirika.berdynaj-syla@aab-edu.net
ORCID ID: https://orcid.org/0000-0002-3781-3342