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Systematic Review

Mapping Tomorrow's Teaching and Learning Spaces: A Systematic Review on GenAI in Higher Education

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Abstract: This collective systematic literature review is part of an Erasmus+ project, "TaLAI: Teaching and Learning with AI in Higher Education". The review investigates the current state of Generative Artificial Intelligence (GenAI) in higher education, aiming to inform curriculum design and further developments within digital education. Employing a descriptive, textual narrative synthesis approach, the study analysed literature across four thematic areas: learning objectives, teaching and learning activities, curriculum development, and institutional support for ethical and responsible GenAI use. The review analysed 93 peer-reviewed articles from eight databases using a keyword-based search strategy, a collaborative coding process involving multiple researchers, in vivo coding and transparent documentation. The findings provide an overview of recommendations for integrating GenAI into teaching and learning, contributing to the development of effective and ethical AI-enhanced learning environments in higher education. The literature reveals consensus on the importance of incorporating GenAI into higher education. Common themes like mentorship, personalised learning, creativity, emotional intelligence, and higher-order thinking highlight the persistent need to align human-centred educational practices with the capabilities of GenAI technologies.

Keywords: generative artificial intelligence; higher education; academic integrity; guidelines; AI literacy

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1. Introduction

Since the launch of ChatGPT in late 2022, Generative Artificial Intelligence (GenAI) has suddenly become easily accessible for everyone, including students and lecturers in higher education. The term GenAI refers to the latest generation of AI systems that are trained on enormous amounts of data and can produce (rather than just analyse) human-like text, images, speech, music, video, computer code, and more by predicting the next unit of content. For example, Large Language Models (LLMs), such as ChatGPT, produce text by predicting the most likely next word in a sentence. That is why their output usually sounds plausible but is not necessarily true [1,2]. Next to the LLM powering ChatGPT, many more LLMs and Image Generators have become popular and accessible, such as those powering Claude, Gemini, DALL-E and Midjourney.

The emergence of GenAI offers exciting opportunities for students and lecturers in higher education. Students can use it to brainstorm ideas, help write essays, simulate real-life scenarios, provide feedback, explain difficult concepts, generate practice exam questions, and much more [2,3]. For lecturers, it can minimise time-consuming tasks such as writing emails, generating practice exam questions, giving personalised feedback, generating teaching plans or preparing teaching materials [2,3]. GenAI would then allow lecturers to have more time to directly support and deepen the knowledge of their students [4]. However, the use of GenAI also raises ethical concerns, such as biased or discriminatory output, spreading of misinformation and plagiarism issues, and challenging the reliability of all off-campus assessments [5]. Therefore, it is crucial for both students and lecturers to learn how to use GenAI responsibly in higher education. Banning it altogether, as some higher education institutions tried to do, despite how hard it is to enforce this ban, appears to be counterproductive [6]. While Asimov's three laws for robotics are generally accepted ("a robot may not injure a human being", "a robot must obey the orders given by human beings", "a robot must protect its own existence") [7], these types of laws or guidelines do not yet exist for the use of GenAI in higher education. Thus, in this collective systematic literature review, we critically analyse and summarise existing literature on the ethical use of GenAI in teaching, learning, curriculum development and institutional support, generating a set of recommendations for educators and institutions.

Similar literature reviews in the context of AI in higher education have focused on ChatGPT [8], AI chatbots [9], ethical principles [10], assessment [11], solutions for faculty and students [12] and Latin American higher education [13]. We assess the current state of the literature by focusing on four predefined thematic areas: learning objectives, teaching and learning activities, curriculum development, and institutional support. These themes were selected in order to provide an overview of the extent to which GenAI in higher education is currently being discussed in the literature. Ultimately, this paper serves as a guide for both educators and institutions. It aims to summarise what educators should keep in mind when utilising GenAI in their teaching practice and what kind of institutional support should be provided so educators can responsibly utilise GenAI in teaching and learning. To make sense of the existing literature about GenAI in teaching and learning in higher education, a descriptive, textual narrative synthesis approach [14] is applied. The search in eight databases using 173 keyword combinations revealed 93 relevant articles. Relevant excerpts were coded in vivo [15], formulated in gerunds, and grouped within the above-mentioned themes with the help of a critical interaction with ChatGPT 4.0.

Across the literature, we found a consensus on the necessity of integrating GenAI in higher education. Recurring themes such as mentorship, personalised learning, creativity, emotional intelligence, and higher-order thinking reflect the ongoing need to harmonise human-centred educational practices with the power of GenAI technologies.

2. Materials and Methods

This study is a collective systematic literature review [16] that aims to map the existing research [17] on the use of GenAI in teaching and learning in higher education. The research objective is to explore the current state of GenAI in higher education, examining how GenAI can be effectively and ethically integrated into teaching and learning. The goal is to inform curriculum design and digital education practices across four thematic areas: learning objectives, teaching and learning activities, curriculum development, and institutional support for ethical and responsible use of GenAI. The findings are presented as actionable recommendations in the results section. They are organised according to the four predefined thematic areas.

The endeavour is part of an Erasmus+ project funded by the European Union (TaLAI: Teaching and Learning with Artificial Intelligence in Higher Education). The project consortium consists of two higher education institutions in Germany (Friedrich-Alexander University of Erlangen-Nuremberg and South Westphalia University of Applied Sciences), one in the Netherlands (University of Amsterdam) and one educational association in Belgium (Media & Learning Association). Representatives of all partner institutions actively participated in this review. The findings of the systematic literature review serve as a basis for formulating policy recommendations on assessment with GenAI in higher education while also informing the curriculum design of the online course and the TaLAI platform, which will be developed as part of the Erasmus+ project.

To this end, a descriptive, textual narrative synthesis approach [14] was applied. Such a descriptive review assesses the current state of the literature, focusing on specific thematic areas [14]. The predefined thematic areas related to GenAI in higher education were (1) learning objectives, (2) teaching and learning activities, (3) curriculum development, and (4) institutional support. The purpose of the predefined themes helped to organise the selected literature. Textual narrative synthesis is characterised by the application of a standard data extraction format that focuses the review on different characteristics of the literature, such as findings and context [18,19]. As a result of this standardised nature of our review, quantitative and qualitative studies related to each topic area were included. The literature review focused on the recommendations made in the literature for the predefined topics. Additionally, the review followed the PRISMA guidelines, flow diagram and checklist. Although the review was not registered, to allow more flexibility in the methodology, rigour was ensured by following best practices and documenting all decisions made during the review in a transparent manner. A review protocol was prepared and is available upon email request to the first author. The following Figure 1 shows the PRISMA 2020 flow diagram and provides an overview of the review process.

This study relied on eight databases, which were equally divided by the partner institutions, namely SpringerLink, Jstor, Web of Science, IEEE Xplore, ERIC, MDPI, Scopus and LearnTechLib. These databases were selected due to their comprehensive coverage of interdisciplinary research, educational technology, and cutting-edge developments in artificial intelligence, ensuring a robust and diverse foundation for investigating the integration of generative AI in higher education. Each partner conducted the identification and screening process using the following criteria shown in Table 1.

Table 1. Inclusion criteria for the literature selection.

Criteria Type	Description
Source and Language	Literature published in peer-reviewed journals in English
Period	Literature published between November 2022–July 2024
Relevance	Literature addressing policies on the ethical use of GenAI in teaching and learning in higher education Literature relevant to the responsible and ethical application of GenAI in higher education in teaching and learning

The keyword string below was developed beforehand by the consortium. Each partner used combinations of these keywords to identify relevant literature in the databases.

AI OR Artificial Intelligence AND Policy OR Regulation OR Strategies OR Guidelines AND Ethics OR ethical principles AND Higher Education OR HEI.

The consortium kept track of the combinations used in the different databases by means of a search log recorded in an Excel spreadsheet. The consortium used a total of 174 keyword combinations in the 8 selected databases. The following Table 2 provides an overview of the number of keyword combinations applied in each database and the number of relevant literature included in this review from each database.

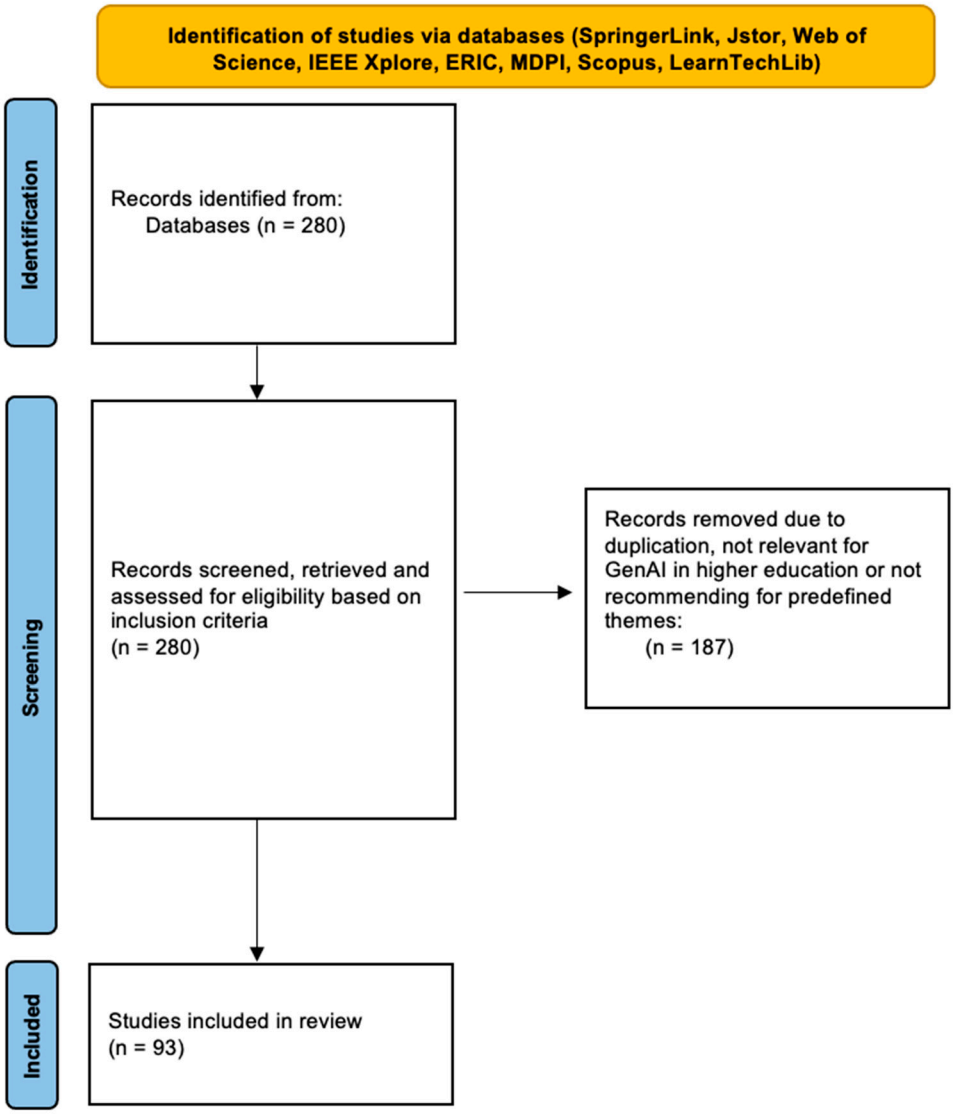

Figure 1. PRISMA 2020 flow diagram.

Table 2. Search result overview.

Database	Number of Keyword Combinations Applied	Number of Relevant Sources Identified for This Review
SpringerLink	21	18
Jstor	5	4
Web of Science	32	15
IEEE Xplore	32	12
ERIC	31	9
MDPI	35	6
Scopus	8	27
LearnTechLib	9	2

To gather and collectively review the literature, the consortium developed an Excel sheet which included the following columns: Database, References, Year of publication, Abstract, Relevance (Yes/No/Unsure), Key excerpts with page numbers, and predefined themes [(1) learning objectives, (2) teaching and learning activities, (3) curriculum development, (4) institutional support]. All columns were filled in by the partners for their share of the 280 initial sources. On the basis of the information collected in the Excel sheet, two researchers eliminated the duplicates and checked the excerpts in relation to the predefined themes. The recommendations were coded in the column of the relevant predefined theme. As each predefined theme was assigned a specific colour, the colours were used to indicate

the relevant data in the "key excerpts with page numbers" column. In most cases, the codes were in vivo in order to preserve the meanings of the authors' views in the coding itself [15]. This is a technique borrowed from Grounded theorists where the participants' own words become codes, as opposed to creating codes based on the interpretation of their words. Moreover, all codes are formulated in gerund in order to indicate actions [15], which closely aligns with the focus of this review: the practical recommendations for the use of GenAI in higher education. After completion of the initial coding of the 93 sources, the codes of each theme were further grouped together through a critical discussion with and support from ChatGPT 3.0. Table 3 below displays some examples of prompts used in this process:

Table 3. Examples of prompts applied in the data analysis of this review.

Examples
1. Create categories of the following codes-group them together in accordance to similarities: Theme-Learning objectives Codes: Identifying learning outcomes before using GenAI Focusing on using GenAI in an ethical and responsible manner to improve teaching and learning outcomes. Mastering GenAI prompting and nuanced editing emerges as the new cornerstone of intellectual and creative expression. Enhancing holistic competencies. Describing the level of proficiency expected from students. Focusing on lifelong skills. Prioritising metacognition. Promoting offloading. Encouraging self-awareness and cognitive regulation. Supporting collaborative learning approaches that promote effective teamwork and GenAI integration. Considering learner GenAI interactive levels Incorporating social and emotional intelligence in learning outcomes. Emphasising competencies relevant to the future workforce. Focusing on students' critical thinking and creativity. Ensuring that GenAI tools and applications are aligned with the learning objectives
2. Which of these categories would you say do not belong to the theme learning objectives?
3. Critically review your categorisation, what would you improve?
4. I think the following codes can be moved to other categories, what do you think? Taking a deeper approach to learning, Balancing the use of GenAI and the advantages of human guidance and mentorship

Based on the co-creation of the categories for each theme, the first author also checked whether the coding scheme accurately represented the data and whether the analysis could be replicated. In this process, some categories were reassigned to different themes to better align with the predefined themes and to eliminate redundancy of similar categories across the six themes.

The next step in the process of validating this coding scheme involved the second and third authors, who carried out reliability checks and provided detailed feedback on the coding scheme and the developed categories based on the similarities of the codes in each theme. The feedback was then discussed in detail between the three first authors. In-depth discussions focused on the assignment of codes to categories, as well as the naming of categories to more accurately reflect the similarities of the codes. Refinements were made on the basis of this discussion. The findings were then presented to and discussed with the consortium, where final refinements to the categories and their names were made according to the feedback given.

3. Results

The results present the recommendations in accordance with the predefined thematic areas related to GenAI in higher education: (1) learning objectives, (2) teaching and learning activities, (3) curriculum development and (4) institutional support. Within each theme, specific categories emerge that emphasise critical areas of focus, such as the importance of student-centred learning, the societal implications of GenAI education, and the need for institutional resources and governance.

The following Figure 2 visually represents these key themes and categories, offering a comprehensive overview of the central areas explored in this review. The numbers added to each category indicate the number of papers providing recommendations for the given category.

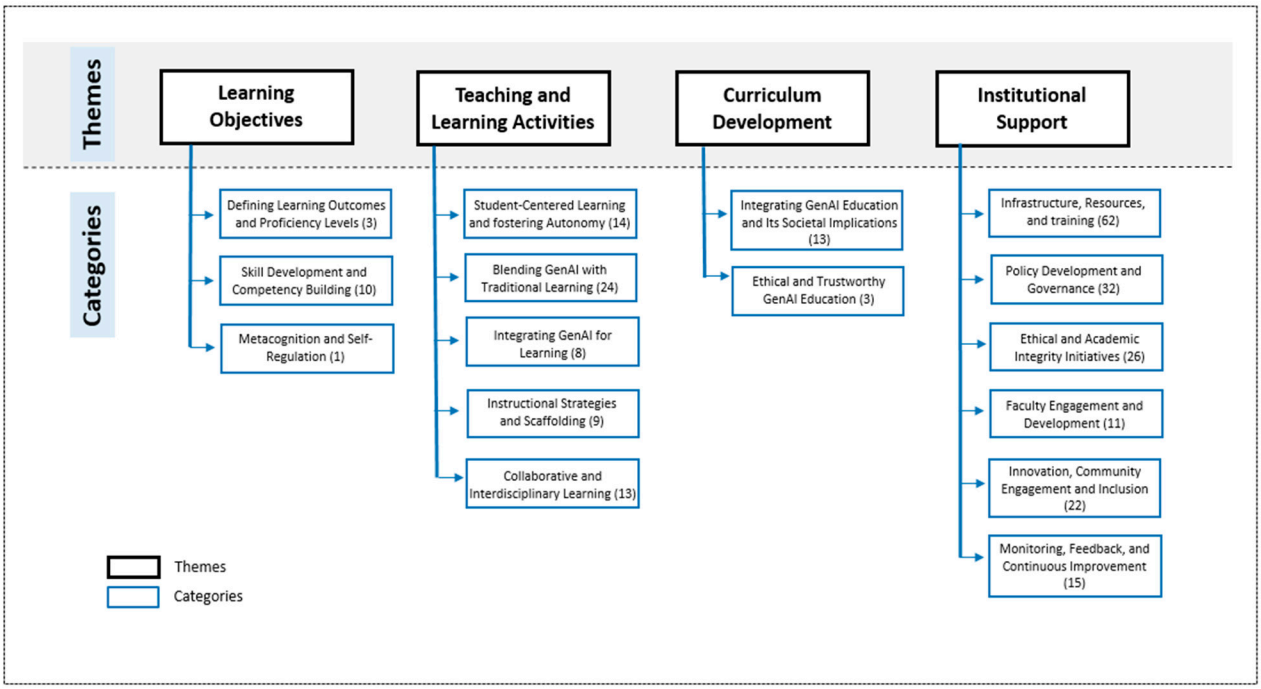

Figure 2. Key themes and categories.

3.1. Learning Objectives

The findings of this theme are organised into three key categories: Defining Learning Outcomes, Skill Development and Competency Building, and Metacognition and Self-Regulation. The first category, Defining Learning Outcomes, underscores the importance of defining clear objectives and proficiency levels before incorporating GenAI tools into educational settings. It is essential to ensure that these tools are aligned with established educational goals to achieve the desired learning outcomes. The second category, Skill Development and Competency Building, highlights the significant role that GenAI can play in fostering essential skills. This includes the development of critical thinking, creativity, and other holistic competencies that are crucial for lifelong learning and future workforce readiness. Finally, the category of Metacognition and Self-Regulation focuses on the need to prioritise metacognitive skills and cognitive regulation. Encouraging students to develop self-awareness in their learning processes is vital for fully realising the potential benefits of GenAI in education. In what follows, those categories are explained.

3.1.1. Defining Learning Outcomes and Proficiency Levels

Codes:

- Identifying learning outcomes before using GenAI [20];
- Describing the level of proficiency expected from students [21];
- Ensuring that GenAI tools and applications are aligned with the learning objectives [22].

While all aforementioned three sources agree on the need for alignment between GenAI and educational outcomes, Su and Yang [20] focus on the initial identification of these outcomes, Tubella et al. [21] emphasise clarity in expected proficiency levels, and Gilbertson et al. [22] concentrate on ensuring that AI tools are used strategically to support these defined objectives. Together, these perspectives underscore a comprehensive approach to integrating GenAI in education, where technology is harnessed to enhance, rather than dictate, the learning process.

Su and Yang [20] propose a theoretical framework known as the IDEE Framework, which begins with identifying desired outcomes before incorporating GenAI technologies like ChatGPT into education. This approach ensures that the use of AI is purposefully directed toward achieving specific educational goals. Tubella et al. [21] reinforced this concept by advocating for the establishment of clear learning outcomes that explicitly define the expected level of student proficiency. This recommendation highlights the need for clarity in what students should achieve as a result of using GenAI tools. Gilbertson et al. [22] extend this idea by stressing the importance of aligning GenAI tools with the broader learning objectives of a course or programme. They caution against adopting GenAI for its own sake and recommend that GenAI applications, such as adaptive learning platforms, be used to support specific instructional goals. For instance, before implementing a GenAI-driven platform, it is crucial to first identify the desired learning outcomes and understand how the platform can tailor instruction to help students achieve these goals.

3.1.2. Skill Development and Competency Building

Codes:

- Enhancing holistic competencies [23];
- Focusing on lifelong skills [24,25];
- Incorporating social and emotional intelligence in learning outcomes [4,24];
- Emphasising competencies relevant to the future workforce [26];
- Focusing on students' critical thinking and creativity [22,27–29];
- Considering learner-GenAI interactive levels [30].

While all the studies agree on the value of GenAI in fostering skill development, Chan [23] emphasises the importance of holistic competencies, such as digital literacy and time management. In contrast, Elbanna and Armstrong [24] and AlDhaen [25] focus on cultivating skills that go beyond what AI can replicate—critical thinking, creativity, and emotional intelligence. Ivanov [4] expands on this by suggesting that emotional and social intelligence should be embedded in learning outcomes to ensure students are well-rounded.

Osman and Ahmed [26] highlight the need for future-oriented competencies, suggesting that higher education policy should emphasise skills that will be relevant in rapidly changing work settings. This includes hands-on, practical activities that prepare students for future careers. Chan and Hu [27], along with other researchers such as Xie and Ding [28], Klyshbekova and Abbott [29], and Gilbertson et al. [22], argue that critical thinking and creativity should be at the core of GenAI integration in education, as these are skills that cannot be replaced by algorithms.

Hwang and Chen [30] add a nuanced perspective by identifying five levels of interaction between learners and GenAI, ranging from students who depend entirely on teacher input to those who engage with AI as collaborative partners. This progression underscores the role of GenAI not only in skill development but also in enhancing students' abilities to think critically and independently, transforming them into more proactive learners.

3.1.3. Metacognition and Self-Regulation

Codes:

- Prioritising metacognition [31];
- Encouraging self-awareness and cognitive regulation [31].

The study underlines the importance of metacognitive skills in educational settings that incorporate GenAI. Atchley et al. [31] argue that prioritising metacognition ensures that students become more aware of their learning processes, which is critical in an AI-driven learning environment. Developing these skills allows students to reflect on their

understanding and learning strategies, helping them to adapt effectively to the demands of GenAI technologies.

Additionally, Atchley et al. [31] emphasise that cognitive regulation should be a key pedagogical goal. Encouraging students to be self-aware and to regulate their thinking processes can enhance their ability to work collaboratively with GenAI tools while maintaining control over their own learning. This form of self-regulation fosters not only independent learning but also the ability to use GenAI in ways that augment, rather than replace, critical cognitive functions. The thematic area of Teaching and Learning Activities is presented below.

3.2. Teaching and Learning Activities

The findings of this theme are divided into five key categories: Student-Centred Learning and Fostering Autonomy; Blending GenAI with Traditional Learning; Integrating GenAI for Learning; Instructional Strategies and Scaffolding; and Collaborative and Interdisciplinary Learning. The first category, Student-Centred Learning, focuses on fostering autonomy, encouraging critical thinking, and supporting students as they evaluate AI content and engage in problem-solving. Blending GenAI with traditional learning emphasises using GenAI as a complement to traditional teaching while maintaining key academic practices and human mentorship. Integrating GenAI for learning explores practical uses of GenAI, such as generating quizzes, prompts, and personalised feedback to enhance creativity and AI competencies. Instructional strategies stress scaffolding, flipped learning, and adapting to individual learning styles for deeper understanding. Finally, collaborative learning highlights peer review, face-to-face interaction, and interdisciplinary teamwork, with GenAI acting as a personalised tutor.

3.2.1. Student-Centred Learning and Fostering Autonomy

Codes:

- Allowing students to write about topics that genuinely interest them, in which their voices come through and their opinions are valued [32];
- Teaching students to think and create and not just be satisfied with the convenience of acquiring knowledge [28];
- Enabling students to break out of their comfort zones [25];
- Encouraging students to critically evaluate AI-generated content and distinguish between reliable and unreliable sources to develop their critical thinking skills [27,33];
- Concentrating on life problems [25,34];
- Emphasising human-centred approaches [25];
- Promoting offloading [31];
- Fostering autonomy without compromising student self-efficacy [35];
- Taking on the role of mentors [9,25,36,37];
- Asking students to include, make visible, and evaluate GenAI contributions [31,37–39];
- Taking a deeper approach to learning [40].

The reviewed literature emphasises the importance of fostering autonomy while maintaining a student-centred approach in incorporating GenAI tools in higher education. Rudolph et al. [32] highlight the importance of allowing students to express their opinions through personalised topics that resonate with their interests, ensuring that students feel heard and valued. Xie and Ding [28] further stress the need to encourage creativity and critical thought in students, moving beyond the convenience of AI-generated knowledge. This aligns with AlDhaen's [25] argument that teaching in modern contexts requires pushing both educators and students out of their comfort zones, fostering a more challenging and dynamic learning environment.

Chan and Hu [27] and Yeadon and Hardy [33] advocate for students to be taught how to critically evaluate AI-generated content. Given the widespread use of tools like ChatGPT, educators must help students distinguish between reliable and flawed outputs, sharpening their analytical abilities. This complements AlDhaen [25] and Dai et al.'s [34] call to focus on real-life challenges and encourage the development of essential skills such as problem-solving, resilience, and perseverance, preparing students to navigate uncertainties beyond academia.

AlDhaen [25] also highlights the importance of integrating human-centred approaches in AI-enhanced education, noting the need for a balance between GenAI and human elements, given GenAI's limitations in replicating human judgement and empathy. Atchley et al. [31] propose "offloading" certain cognitive tasks to AI, enabling students to focus more on higher-order thinking. However, Williams [35] warns that fostering student autonomy should not compromise self-efficacy, as students must retain confidence in their ability to independently manage learning tasks.

The evolving role of educators is another key concept, with AlDhaen [25], Guillén-Yparrea and Hernández-Rodríguez [36] highlighting the importance of teachers transitioning from knowledge transmitters to mentors. In this role, they provide guidance, motivation, and emotional support, aspects that GenAI cannot fully replicate. Stone [37] emphasises that such mentorship is especially crucial for helping students develop effective self-regulatory strategies and time management skills.

Finally, Atchley et al. [31] and Kumar et al. [38] stress the need for transparency in group assignments involving AI. Students should be asked to explicitly acknowledge and evaluate the contributions of GenAI tools. This reflective process allows them to critically assess the role of GenAI in their work, fostering responsible use of technology in learning. Bannister et al. [40] call for a deeper learning approach, advocating for students to engage with GenAI not just as a tool for convenience but as a complement to more profound intellectual exploration.

3.2.2. Blending GenAI with Traditional Learning

Codes:

- Considering GenAI tools as a complementary teaching approach instead of an alternative [22,36,38,39,41–45];
- Balancing the integration of GenAI support while preserving core elements of academic writing education [46,47];
- Gradually integrating GenAI tools into teaching practices [48];
- Understanding the role of the lecturer to help the student use GenAI correctly and effectively in educational and scientific activities [24,34,49,50];
- Balancing the use of GenAI and the advantages of human guidance and mentorship [8];
- Highlighting caution against over-reliance on GenAI to maintain genuine learning experiences [33,51];
- Emphasising caution about the accuracy and reliability of the answers provided by GenAI [52–54];
- Ensuring GenAI only supports systemic thinking, not replace it [5];
- Mastering GenAI prompting and nuanced editing emerges as the new cornerstone of intellectual and creative expression [55].

Blending GenAI with traditional learning is consistently seen as an augmentation rather than a replacement of established pedagogical methods. Tu [41] advocates for the balanced integration of GenAI into the classroom, emphasising that neither students nor educators see GenAI as a future substitute for teachers. Instead, GenAI should complement existing teaching methods through its responsible and strategic application [44,45]. Michel-

Villarreal et al. [42] further argue that the inclusion of GenAI should work alongside active learning pedagogies like experiential or problem-based learning, where AI-powered tools provide supplemental experiences, such as virtual labs, which enhance traditional lectures.

This balance is especially crucial in areas like academic writing, where Aljuaid [46] and Foung et al. [47] suggest that GenAI tools should assist, not overshadow, core elements of writing education. The use of GenAI for writing support must be carefully calibrated to avoid overreliance, with educators promoting varied language tools that preserve the integrity of student-driven learning.

Kohnke et al. [48] call for the gradual introduction of GenAI tools in teaching to mitigate "technostress" and allow both teachers and students to adjust to the evolving technological landscape. This gradual integration aligns with the role of lecturers in ensuring that students use AI wisely and ethically. Spivakovsky et al. [50] and Gorichanaz [49] emphasise the lecturer's responsibility to guide students on the judicious use of AI, helping them understand its limitations, ethical concerns, and the need to verify AI-generated information against credible sources. These educators recognise that AI will play a significant role in students' future professional lives, and it is crucial to instil a mindful, critical approach to GenAI use.

Bhullar et al. [8] underscore the importance of maintaining human mentorship and guidance alongside GenAI. They highlight the irreplaceable value of human interaction in the learning process, where educators provide motivation, emotional support, and tailored feedback that AI cannot replicate. This balance between GenAI and human oversight is echoed by Chan and Colloton [51] and Yeadon and Hardy [33], who caution against students becoming overly dependent on GenAI for learning. Overreliance can hinder genuine intellectual growth and diminish the authenticity of a student's work.

Concerns regarding the accuracy and reliability of GenAI outputs are prevalent throughout the literature. Camacho-Zuñiga et al. [52] and Kayalı et al. [54] warn that AI-generated content can sometimes be misleading or erroneous, requiring users to critically assess and cross-reference GenAI outputs with trustworthy sources. This is essential to maintain academic rigour and ensure that AI functions as a supportive tool rather than a replacement for student-driven analysis and reasoning.

Finally, Wu and Zhang [5] argue that AI should support, but not replace, systemic thinking, particularly in non-STEM disciplines where creative and critical exploration is paramount. They highlight the technical limitations of GenAI, such as its reliance on pre-trained data, lack of human reasoning, and outdated information, advocating for a cautious approach where AI enhances but does not overshadow deeper cognitive processes. Bozkurt [55] adds that mastering the art of GenAI prompting and nuanced editing has become a new cornerstone for intellectual expression, highlighting that while AI can aid creativity, human agency and expertise remain central.

3.2.3. Integrating GenAI for Learning

Codes:

- Generating with GenAI discussion questions, case studies, or problem sets tailored to their specific teaching objectives [56];
- Using GenAI to spark students' creativity by generating diverse and unpredictable ideas and prompts [27];
- Using GenAI in language teaching and learning to create simulated speaking environments [57];
- Utilising GenAI as a secondary collaborator in teamwork [31];
- Applying GenAI to provide feedback or offer alternative views [31];
- Generating self-test quizzes for students [57];

- Providing code explanations to computer science students [57];
- Providing personalised, real-time feedback [58];
- Integrating GenAI tools into instructional design practices and pairing them with additional practices to facilitate the students' GenAI competencies [59];
- Cultivating digital literacy and AI ethics education [27,60,61].

Integrating GenAI for learning offers diverse opportunities to enhance teaching practices and student engagement. Wang [56] highlights how AI-generated content, such as discussion questions and problem sets, can be tailored to specific teaching objectives, providing personalised support to educators and optimising course materials for classroom discussions.

GenAI can also spark creativity in students. Chan and Hu [27] emphasise that AI-generated prompts offer diverse, unpredictable ideas, fostering innovative thinking and solutions. In language education, O'Dea [57] notes that GenAI can create simulated speaking environments, while AI-generated self-test quizzes allow students to assess their progress independently.

AI also enhances collaborative learning. Atchley et al. [31] explore how tools like ChatGPT can act as secondary collaborators, improving group dynamics and offering feedback or alternative perspectives. In technical fields, GenAI can provide code explanations, helping students understand complex concepts [57].

Personalised, real-time feedback is another key benefit. McIntire et al. [58] stress that AI can streamline detailed feedback, promoting continuous improvement for students. Delcker et al. [59] suggest that integrating GenAI into instructional design should be paired with practices that develop students' AI competencies.

Lastly, cultivating digital literacy and AI ethics is essential in today's educational landscape. Chan and Hu [27], Holmes et al. [60] and Magrill and Magrill [61] advocate for including AI ethics and digital literacy in curricula, preparing students to responsibly engage with AI technologies and navigate their challenges.

3.2.4. Instructional Strategies and Scaffolding

Codes:

- Scaffolding coursework [38];
- Using flipped learning to ensure that the most critical pieces of work are completed in class [32,38];
- Incorporating multimedia into tasks [29,32];
- Involving practical challenges and projects in instructional design [41];
- Adapting to individual learning styles [28,54,62];
- Incorporating student learning trajectories [5];
- Incorporating learning strategies for active engagement and problem-solving [41];
- Incorporating social and emotional intelligence in teaching practices [4].

This category focuses on instructional strategies and scaffolding techniques that leverage Generative AI (GenAI) to create a supportive and effective learning environment. Instructional strategies that integrate GenAI aim to scaffold learning and support diverse student needs. Scaffolding coursework [38] allows for gradual learning, while flipped learning ensures that critical tasks are completed during class time [32].

Incorporating multimedia in instructional tasks is emphasised as a way to enhance engagement, especially given that AI tools like ChatGPT generate text-based responses [29]. Practical challenges and project-based learning are recommended to promote higher-order thinking skills [41]. Additionally, adapting teaching to individual learning styles is crucial for personalisation, enhancing the effectiveness of AI-assisted education [28,54].

Incorporating learning trajectories helps mitigate risks associated with academic integrity in AI-assisted tasks [5]. Active engagement strategies, such as inquiry-based and project-based learning, are essential for developing problem-solving skills [41]. Finally, teaching practices should incorporate social and emotional intelligence to holistically support students' development [4]. This approach balances traditional pedagogy with AI's capabilities to create a more effective and personalised learning environment.

3.2.5. Collaborative and Interdisciplinary Learning

Codes:

- Integrating peer review in collaborative projects [5,32];
- Utilising GenAI as a personalised tutor [9,25,41,51,56];
- Fostering interdisciplinary learning [11,27];
- Focusing on face-to-face discussion and interaction [25,29,40];
- Taking a deeper approach to learning [40];
- Supporting collaborative learning approaches that promote effective teamwork and GenAI integration [31].

This category focuses on the integration of collaborative and interdisciplinary approaches in educational settings, emphasising the role of GenAI in enhancing teamwork, peer review, and personalised learning experiences. Integrating peer review in collaborative projects helps address ethical concerns while fostering a sense of accountability among students [5,32]. The use of GenAI as a personalised tutor can provide immediate feedback and support, enhancing the learning experience and promoting cognitive development [41,56].

Fostering interdisciplinary learning is crucial for preparing students for a future where GenAI technologies are integrated into various fields [27]. Furthermore, focusing on face-to-face discussions and interactions encourages meaningful dialogue and deeper connections among learners [25,40]. Taking a deeper approach to learning enhances comprehension and retention of knowledge [40]. Lastly, supporting collaborative learning strategies that effectively integrate GenAI promotes teamwork and enhances group dynamics [31]. Overall, these strategies aim to create a more engaging and interactive learning environment that prepares students for the complexities of modern education.

3.3. Curriculum Development

The findings of this theme are categorised into two main areas: Integrating GenAI Education and Its Societal Implications and Ethical and Trustworthy GenAI Education. In Integrating GenAI Education, the focus is on incorporating AI literacy modules into existing curricula or creating specialised courses that address GenAI technologies in education. This category emphasises the need for updated curricula that adopt GenAI-specific pedagogical models and educate students on the societal impact of algorithms, preparing them for a future increasingly shaped by AI.

The second category, Ethical and Trustworthy GenAI Education, highlights the importance of legal compliance, ethical alignment, and sociotechnical robustness in GenAI curricula. It advocates for including trustworthy development methodologies and coordinating national education strategies to ensure consistent adoption of Trustworthy GenAI principles across disciplines. This approach fosters interdisciplinary education, equipping students with the knowledge needed to engage responsibly with AI technologies.

3.3.1. Integrating GenAI Education and Its Societal Implications

Codes:

- Integrating GenAI literacy modules into existing curricula or developing specialised courses addressing GenAI technologies in education [11,26,32,36,47,53,60,61,63,64];

- Designing and updating curricula with GenAI [56];
- Adopting GenAI-specific pedagogical models [48];
- Educating on the impact of GenAI tools and similar algorithms on business and society [65].

Curriculum development in the context of GenAI is centred on equipping students with AI literacy and preparing them for the ethical, social, and practical challenges of a world increasingly influenced by AI. This includes integrating modules that address AI functionalities, limitations, and their societal impact into existing curricula or developing specialised courses on these topics [36,53]. Ethical considerations are a crucial element, as higher education institutions should embed discussions on privacy, misinformation, and critical thinking in relation to AI into their curricula [60,61].

Besides, universities are encouraged to continually update their curricula to account for advancements in GenAI and explore GenAI-specific pedagogical models [48,56]. Preparing students for real-world implications involves educating them on the influence of AI on business and society, ensuring they are ready for a future dominated by algorithms [65]. Institutions must take proactive steps to foster AI literacy, ethics, and practical skills that allow students to use AI tools responsibly and effectively across disciplines [47,66].

3.3.2. Ethical and Trustworthy GenAI Education

Codes:

- Proposing legal compliance, ethical alignment, and sociotechnical robustness to ensure trustworthiness [21];
- Explicitly including trustworthy GenAI development methodologies in curricula [21];
- Coordinating the introduction of Trustworthy GenAI in curricula through national education strategies, ensuring uniform adoption [21];
- Offering interdisciplinary education in Trustworthy GenAI [21,26,34].

This category highlights the importance of embedding ethical and legal considerations in GenAI education. Institutions are encouraged to integrate legal compliance, ethical alignment, and sociotechnical robustness into the curriculum to ensure that GenAI technologies are developed and applied in a trustworthy manner [21]. This includes the use of methodologies like privacy-preserving data collection and explainability tools, which help ensure transparency in GenAI systems [21].

A coordinated national strategy for the uniform adoption of trustworthy GenAI education is also recommended, promoting consistent ethical standards across institutions [21]. Moreover, offering interdisciplinary education on trustworthy GenAI enables students to understand the ethical implications of GenAI across different domains, thereby fostering a holistic understanding of the challenges and responsibilities involved in GenAI development [26,34].

3.4. Institutional Support

This theme is structured by six key categories: Infrastructure, Resources, and Training; Policy Development and Governance; Ethical and Academic Integrity Initiatives; Faculty Engagement and Development; Innovation, Community Engagement and Inclusion; and Monitoring, Feedback, and Continuous Improvement.

Infrastructure, Resources, and Training emphasises the need for investment in GenAI infrastructure, training for faculty and students, and providing customisable AI toolkits. Institutions are encouraged to offer hands-on experiences and create open-source platforms for transparency.

Policy Development and Governance focuses on reducing regulatory burdens, aligning GenAI policies with institutional goals, and collaborating globally to create uniform

regulations. This category also highlights the importance of updating academic integrity policies and involving students in policy development.

Ethical and Academic Integrity Initiatives stress the need to refine policies to ensure responsible use of GenAI, promote transparency, and provide resources for maintaining academic integrity. Institutions must monitor AI use and secure student data while fostering discussions around ethical AI usage.

Faculty Engagement and Development calls for motivating educators to incorporate GenAI in their teaching, promoting AI literacy, and supporting faculty development with incentives and training. Engaging educators in using AI tools ethically is a priority.

Innovation, Community Engagement, and Inclusion encourages institutions to foster local GenAI innovations, interdisciplinary collaboration, and community engagement through pilot projects, feedback sessions, and inclusive practices. Continuous monitoring and evaluation mechanisms are essential for refining GenAI's impact on education.

3.4.1. Infrastructure, Resources, and Training

Codes:

- Generating a specialised database platform to ensure neutrality and reduce prejudice [5];
- Investing in GenAI infrastructure [21,67,68];
- Providing the necessary resources and training to enable faculty, students, and technical staff to understand and use GenAI properly [26,32,33,36,42,47,60,61,66,67,69–76];
- Providing training for both students and teachers on effectively using and integrating GenAI technologies into teaching and learning practices [8,9,11,21–25,27,29,34,38,43,48,50,53,56,57,68,70,77–91];
- Ensuring user-friendly interfaces and a well-defined implementation strategy [25];
- Providing customisable GenAI toolkits adaptable to individual learning paths [48];
- Facilitating exposure to technologies and hands-on experience [27];
- Investing in open-source AI technology for more transparent and democratically controlled technologies [42];
- Providing assistance based on the needs of educators and learners [53,79,82].

This category focuses on the foundational infrastructure, resources, and training required for institutions to effectively integrate Generative AI (GenAI) into teaching, learning, and research practices. It emphasises the need for investments in both physical and intellectual resources, ensuring the ethical and responsible use of AI technologies within academic environments.

Several studies, particularly those by AlAli and Wardat [67], Fu et al. [68], and Aler Tubella et al. [21], highlight the importance of investment in GenAI infrastructure to support the development of a knowledgeable academic workforce and enhance user proficiency with GenAI technologies like ChatGPT. These citations are particularly prevalent, underscoring the widespread agreement on this point.

One significant focus is on building specialised database platforms to ensure neutrality in research, particularly in non-STEM subjects like sociology [5]. This approach contributes to ensuring that GenAI systems are trustworthy and can serve a broad range of academic disciplines. Similarly, providing user-friendly interfaces and customisable GenAI toolkits allows educators to tailor GenAI tools to fit diverse learning environments [48]. Another major element is hands-on exposure to GenAI technologies, which is key to enhancing both understanding and acceptance [27]. Additionally, Michel-Villarreal et al. [42] advocate for investing in open-source AI technologies, ensuring that these tools are democratically controlled and transparent. These resources ensure that educators and students can not only use but also critically engage with AI technologies, fostering a deeper understanding of their capabilities and limitations.

Additionally, there is a strong emphasis on the necessity of training programs for both students and teachers, ensuring that they can use GenAI tools effectively. The research by Marchena Sekli et al. [12] and Holmes et al. [60], among others, shows the importance of understanding the ethical, social, and technical implications of GenAI technologies. This dual focus on both skills and ethics is central to many studies, which argue that a lack of proper training could lead to misuse or underutilisation of GenAI tools [27,56,75].

Moreover, institutions are urged to provide comprehensive training for faculty, students, and technical staff, enabling them to responsibly use GenAI [12,42,66,72,76]. Given the high number of citations for this code, it is evident that numerous studies emphasise the importance of professional development and the need for ethical awareness in AI usage [60,66]. Training should also include "teaching the teachers"—developing pedagogical skills to effectively integrate AI technologies into teaching practices [21,77]. This perspective is reinforced by numerous studies, further reflecting the importance of addressing this issue not only in academic but also in policy-making contexts.

Finally, providing assistance tailored to the needs of educators and learners is also vital. Studies by Romero et al. [79] and Güner et al. [82] demonstrate the importance of creating support systems, such as workshops and chatbot-assisted learning, which align with the specific needs of faculty and students, ensuring a smooth integration of GenAI into academic environments.

3.4.2. Policy Development and Governance

Codes:

- Reducing the regulatory burden and maintaining adaptability to the rapid change of GenAI tools [92];
- Developing a GenAI education policy that prepares students to work with and understand the principles of this technology [65];
- Considering Deliberative Democracy offers educational institutions an approach to address the urgent need for meaningful student/staff consultation [93];
- Working together with different jurisdictions to develop globally accepted regulations [65];
- Developing policies in collaboration with students [52,61,78,86,91,94–96];
- Reviewing and updating all institutional documents on academic integrity and definitions related to plagiarism, quotations, and text matches [50,97];
- Blending university policies and course syllabi [95];
- Developing policies and guidelines based on the experiences and perceptions of all faculty members [64];
- Taking an international and multi-stakeholder approach to align GenAI with responsible and beneficial use [35,38,43,52,53,61,64,78,81,84,90,91,94,95,97–101];
- Encouraging intellectuals to engage with the public and share their voices to enhance ground rules in teaching and learning [102];
- Ensuring that GenAI adoption is aligned with the mission, vision, and strategic goals of the institution [57].

The category Policy Development and Governance under the theme of Institutional Support is focused on creating flexible and forward-looking governance structures that can effectively integrate Generative AI (GenAI) into higher education institutions. This includes reducing regulatory barriers and promoting policies that can adapt to the fast-paced evolution of AI technologies [92]. Developing educational policies that equip students with the necessary skills to understand and work with GenAI is central to this category [65].

A key aspect of this category is engaging stakeholders, particularly students and faculty, in policy development. Research by Bannister et al. [94] highlights the need

to involve students in shaping the rules that govern GenAI use, as they are the most impacted by these changes. This approach fosters a more collaborative environment for policy creation, ensuring that regulations reflect the diverse needs and perspectives of the academic community [52].

Furthermore, the category emphasises the importance of regularly reviewing and updating institutional documents on academic integrity, especially as they relate to plagiarism and the use of GenAI tools like ChatGPT [97]. This process is crucial for maintaining trust and transparency in academic work while adapting to new technological realities [50].

Another critical aspect is taking a multi-stakeholder approach, as described by Alwahaby and Cukurova [90], which ensures that policies are globally aligned and involve input from various educational jurisdictions. This global perspective allows institutions to navigate the complexities of AI adoption, ensuring that ethical and beneficial use remains at the forefront [98].

Lastly, aligning GenAI integration with the institution's broader mission, vision, and strategic goals is essential for long-term sustainability. As O'Dea [57] suggests, policies should not only provide clear guidelines for AI use but also reflect the institution's core educational values.

3.4.3. Ethical and Academic Integrity Initiatives

Codes:

- Revising and refining academic integrity policies [8];
- Cautiously using advanced plagiarism detection software [35,36,56,65,74];
- Creating spaces incentivising academic integrity dialogues among students, scholars, educators, and policymakers [78];
- Establishing academic integrity groups or committees [78];
- Developing a centralised web area for academic integrity [78];
- Providing academic integrity structural resources [78];
- Ensuring that students properly handle sources and maintain transparency about GenAI use in their work [80];
- Explicitly communicating expectations and what students are allowed and what they are not allowed to do [4,34,37,38,42,80,87,88,96];
- Monitoring and regulating students' use of GenAI [8,22,36,42,67];
- Providing access to information to ensure accountability and the promotion of best practices [9,22,52–54,59,78];
- Setting realistic expectations for learners and teachers [48];
- Ensuring faculty members are aware of where their students' data are going and how to secure them when needed [25];
- Creating technology/GenAI-free zones in educational settings [103].

The category Ethical and Academic Integrity Initiatives addresses the critical need for educational institutions to cultivate a culture of integrity in the context of emerging technologies like GenAI. This involves revising and refining academic integrity policies to ensure they are relevant and effective in a rapidly changing educational landscape [8]. In addition, caution is urged regarding the use of advanced plagiarism detection software, highlighting the need for institutions to stay informed about the limitations of current technologies and to establish clear guidelines for their use [36,65].

Creating spaces that encourage dialogue about academic integrity among various stakeholders, including students, scholars, educators, and policymakers, is essential for fostering a collaborative environment that supports ethical practices [78]. Moya and Eaton [78] also mention that establishing academic integrity groups or committees underscores the importance of involving students in policy development, ensuring that the perspectives

and values of future generations are reflected in institutional guidelines. The establishment of centralised resources for academic integrity, along with clear communication of expectations regarding the use of GenAI, is vital for maintaining transparency and guiding students in responsible practices [80]. Moreover, institutions must actively monitor and regulate the use of GenAI to uphold academic standards while providing access to information that promotes best practices in technology integration [22,52].

In addition, the creation of technology-free zones may help develop critical thinking skills and maintain ethical standards in educational settings [103]. This comprehensive approach aims to ensure that academic integrity remains at the forefront of educational practices in the era of GenAI, addressing both ethical concerns and the practical implications of technology use in academia.

3.4.4. Faculty Engagement and Development

Codes:

- Proactively replacing traditional coursework with modern alternatives to foster critical thinking [8,34];
- Motivating faculty members to make an ethical commitment to themselves and to their profession, using GenAI as a support tool, not as a stand-in for their teaching and research work [70];
- Motivating teaching staff to engage deeply with GenAI so that the tools can be incorporated into instructional activities to benefit students [65];
- Encouraging educators to employ GenAI in the classroom through praise, promotion, and monetary incentives [25];
- Strengthening teachers' beliefs about human and GenAI assessment [11];
- Conducting an information campaign on AI literacy [42,50,67];
- Encouraging teaching staff to engage online [48];
- Integrating GenAI necessitates an ongoing process of acquiring knowledge, adjusting to new circumstances, and contemplating ethical implications [94].

The category focuses on the significant role of faculty in adapting to the integration of Generative AI (GenAI) within higher education. A fundamental aspect of this category is the proactive replacement of traditional coursework with modern alternatives that cultivate critical thinking among students [8]. Faculty members are encouraged to continuously improve their assessment literacy to create evaluations that focus on critical thinking, problem-solving, and creativity, which are essential skills in today's educational landscape [34].

Additionally, motivating faculty members to commit ethically to their profession while utilising GenAI as a supportive tool rather than a replacement for teaching and research is vital [70]. This ethical commitment ensures that educators maintain their responsibility toward their students and the integrity of the educational process.

Engagement with GenAI is also critical; faculty should be motivated to incorporate these tools into their instructional activities for the benefit of students [65]. According to AlDhaen [25], encouragement through praise, promotion, and financial incentives can facilitate this integration, ensuring that educators feel supported in their efforts to adapt their teaching methods. Faculty must understand the implications of using GenAI in evaluation processes, fostering confidence in their ability to assess student performance accurately. Conducting information campaigns on AI literacy serves to enhance faculty understanding of the risks and benefits associated with AI technologies [50].

Encouraging online engagement among teaching staff [48] supports collaboration and knowledge sharing, which are essential in navigating the complexities of integrating GenAI. To conclude, integrating GenAI requires a commitment to continuous learning

and adjustment, as well as careful consideration of ethical implications [94]. This ongoing process ensures that faculty remain responsive to emerging issues and evolving academic cultures, ultimately enhancing the educational experience for both educators and students.

3.4.5. Innovation, Community Engagement and Inclusion

Codes:

- Setting up regular feedback sessions with teachers and GenAI experts to encourage open dialogue [48];
- Fostering communities of practice [32,48,81,85,91,104];
- Organising thematic round tables on the use of GenAI in various fields of knowledge [50];
- Incentivising interdisciplinary collaboration in education by valuing it in the curriculum and introducing credits for it [21];
- Integrating GenAI necessitates engagement and intensive study across institutions [61,62,74];
- Creating an inclusive environment for all stakeholders [50,67,68,77];
- Developing an organisational culture favourable to the use of GenAI [24,69,71,77,98];
- Ensuring the use of GenAI is democratised, widespread, and reflective of the latest technological and training iterations [79];
- Creating more robust connections with student organisations [78].

The category of Innovation, Community Engagement and Inclusion emphasises the effective incorporation of Generative AI (GenAI) into educational environments while promoting community and inclusivity. Establishing communities of practice fosters knowledge-sharing and collaborative decision-making, benefiting all parties involved [91,104]. Additionally, regular feedback sessions between educators and GenAI experts are crucial for facilitating open communication and refining training programs based on real-time feedback [48]. Furthermore, successfully integrating GenAI necessitates significant engagement and research across institutions to equip students and researchers with vital skills [61]. Supporting local innovations ensures that GenAI effectively meets the distinct needs of communities, while thematic round tables can enhance interdisciplinary collaboration [50].

Creating an inclusive atmosphere is essential for all stakeholders [67]. Policies should ensure that all faculty members, including those in non-specialised fields, have access to modern digital tools [50]. Fostering a positive organisational culture around GenAI adoption is crucial for its successful implementation and for overcoming resistance to change [71]. It is important that the use of such a technology is democratised and aligned with the latest technological developments to encourage widespread adoption [79]. By pursuing these strategies, educational institutions can cultivate a supportive environment that embraces innovation, promotes inclusivity, and effectively engages all stakeholders.

3.4.6. Monitoring, Feedback, and Continuous Improvement

Codes:

- Ensuring that technical staff develops explainable GenAI models that provide clear explanations of their decision-making processes [27];
- Examining the implications of technostress for teachers who utilise GenAI [48]
- Continuously monitoring student use of GenAI in academic assignments to revisit policies and guidelines [36,53,95];
- Developing mechanisms to monitor, evaluate, and measure the impact of AI on education, teaching, and learning [105];
- Fostering a transparent GenAI environment [23,35,42,74,98];
- Developing mechanisms for reporting misuse or concerns related to GenAI usage [34,53];

- Continuously attending to the ethical implications of GenAI technologies in education [83];
- Focusing on greater precision in feedback [40].

The category of Monitoring, Feedback, and Continuous Improvement highlights the importance of actively overseeing the use of Generative AI (GenAI) in education to ensure effective integration and adherence to ethical standards. A priority is developing explainable AI models that clarify their decision-making processes, which helps build trust and understanding among users [27].

Institutions must examine the implications of technostress on teachers utilising GenAI, addressing any challenges that arise in the teaching environment [48]. Mechanisms should be established to evaluate the impact of AI on education, providing a solid evidence base for policy formulation [105]. Continuous monitoring of student use of GenAI is essential as tools and usage patterns evolve, requiring periodic reassessment of policies and guidelines [95].

Institutions should also create robust systems for reporting misuse or concerns related to GenAI, ensuring ethical use and academic integrity [34]. Incorporating continuous ethical considerations into the use of GenAI in education is key to maintaining trust and responsibility [83]. Focusing on delivering precise feedback also enhances the learning experience, ensuring that students and educators can maximise the potential of GenAI tools [40]. Through these strategies, institutions can create a sustainable, supportive environment that leverages GenAI for educational advancement while upholding ethical standards.

The findings from our thematic analysis provide a comprehensive overview of the recommendations for integrating GenAI in higher education. These recommendations are organised into three key thematic areas: Learning objectives, teaching and learning activities, and curriculum development. By addressing these themes, institutions can create a robust framework that not only enhances student learning and engagement but also supports faculty development, fosters innovation, and ensures continuous monitoring and improvement. This holistic approach is crucial for maximising the potential of GenAI while upholding educational integrity and ethical standards in higher education.

4. Discussion

The study highlights the pressing need for higher education institutions to establish robust policies and guidelines that govern the ethical integration of GenAI into teaching, learning, and curriculum development. Throughout the literature, there is consensus on the necessity of institutional and policy-level frameworks to ensure responsible GenAI integration. However, the review reveals that, despite the recognised importance, few higher education institutions have successfully implemented these policies into practice. This gap between theoretical understanding and practical application remains a significant challenge that requires urgent attention.

A recurring theme in the literature is the global and multi-stakeholder approach to aligning GenAI with ethical and beneficial use in education. Nineteen sources advocate for this approach, stressing that collaboration between various stakeholders, including educators, policymakers, industry experts, and students, is essential to creating robust and inclusive policies which should be adaptable and reflective of the diverse needs of these stakeholders. However, there remains a need for more concrete strategies that facilitate this collaborative effort, particularly at the international level, where differing educational norms and regulations may hinder the creation of standardised policies.

Training and resource provision emerged as another significant area of focus. A large portion of the literature (54 sources) emphasises the importance of equipping faculty, students, and technical staff with the skills and knowledge to effectively use and integrate

GenAI into teaching practices. Without adequate training, the potential benefits of GenAI may not be fully realised, and there is a risk of unintended consequences, such as increased technostress among educators. The review highlights that while training is widely recommended, the specifics of what constitutes effective GenAI training remain underexplored, presenting an opportunity for future research to address this gap.

The role of students in policy development is another critical aspect identified in the review. While a top-down approach is a very common way for policy creation, eight sources highlight the importance of involving students in the process. This aligns with contemporary educational theories that emphasise student agency and co-creation in learning environments [106]. Engaging students in policy-making ensures that their perspectives are considered, which can lead to more effective and widely accepted GenAI guidelines. Despite this, relatively few studies have explored how to operationalise student involvement in policy creation, suggesting an area for future research to investigate strategies for meaningful student engagement.

The literature also draws attention to the need for clear communication of policies and expectations regarding GenAI use. Nine sources recommend explicitly outlining what students are permitted to do with GenAI tools, which is critical for maintaining academic integrity and preventing misuse. Additionally, the review suggests that GenAI should be positioned as a complementary tool in education rather than as a replacement for traditional teaching methods. This nuanced view aligns with current discussions in GenAI research, where human-GenAI collaboration is seen as the most effective way to enhance educational outcomes. However, the practical implications of this approach remain underexplored, and more empirical studies are needed to determine how best to integrate GenAI as a supportive tool in different educational contexts.

The findings of this study carry significant implications for both policy and practice. Higher education institutions must prioritise the development of robust, flexible, and inclusive GenAI policies that can adapt to the rapidly evolving landscape of AI technology. Equally important is ensuring that sufficient resources and training are provided to all stakeholders, with students actively engaged in the decision-making process. The review also highlights notable gaps in the existing literature. While the need for ethical guidelines is widely recognised, there is limited research on the long-term effects of GenAI integration on student learning outcomes and faculty performance. Furthermore, the potential negative consequences of GenAI, such as technostress and over-reliance on AI tools, remain underexplored, particularly in the context of higher education. Future research should address these gaps, focusing on the development of scalable, adaptable policy frameworks and effective training models that can be implemented across diverse educational settings.

While there is clear recognition of the need for policy frameworks and training resources to integrate GenAI into higher education, actual implementation remains a challenge. By addressing these gaps and continuing to explore the implications of GenAI integration, higher education institutions can ensure that GenAI technologies are used in ways that align with ethical standards and contribute meaningfully to educational advancement.

5. Conclusions

The systematic literature review emphasises the growing significance of GenAI in shaping the future of higher education, particularly in teaching, learning, and curriculum development. Across the literature, there is consensus on the necessity of integrating GenAI as institutions gear up for a GenAI-driven landscape. Recurring themes such as mentorship, personalised learning, emotional intelligence, and higher-order thinking reflect the ongoing need to harmonise human-centred educational practices with the power of AI technologies. Additionally, GenAI's potential to foster creativity, with GenAI-generated

prompts encouraging innovative thinking, is another promising benefit highlighted in the research.

While these themes highlight the clear benefits of GenAI, they also emphasise the need for proactive and thoughtful implementation. Institutions must recognise both the opportunities and the challenges that come with such integration. Future efforts should aim at developing frameworks that not only leverage GenAI's potential but also uphold deep learning, creativity, and the irreplaceable human elements of education. In doing so, higher education can effectively harness the power of GenAI to create ethical, dynamic, inclusive, and future-ready learning environments.

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References

1. Cascella, M.; Montomoli, J.; Bellini, V.; Bignami, E. Evaluating the feasibility of ChatGPT in healthcare: An analysis of multiple clinical and research scenarios. *J. Med. Syst.* **2023**, *47*, 33. [CrossRef] [PubMed]
2. Fui-Hoon Nah, F.; Zheng, R.; Cai, J.; Siau, K.; Chen, L. Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. *J. Inf. Technol. Case Appl. Res.* **2023**, *25*, 277–304. [CrossRef]
3. Atlas, S. *ChatGPT for Higher Education and Professional Development: A Guide to Conversational AI*; University of Rhode Island: South Kingstown, RI, USA, 2023.
4. Ivanov, S. The dark side of artificial intelligence in higher education. *Serv. Ind. J.* **2023**, *43*, 1055–1082. [CrossRef]
5. Wu, T.; Zhang, S.-H. Applications and Implications of Generative AI in Non-STEM Disciplines in Higher Education. In *Communications in Computer and Information Science: AI-Generated Content*; Zhao, F., Miao, D., Eds.; Springer Nature: Singapore, 2024; Volume 1946, pp. 341–349. [CrossRef]
6. Eke, D.O. ChatGPT and the rise of generative AI: Threat to academic integrity? *J. Responsible Technol.* **2023**, *13*, 100060. [CrossRef]
7. Asimov, I. *I, Robot*; Gnome Press: New York, NY, USA, 1950.
8. Bhullar, P.S.; Joshi, M.; Chugh, R. ChatGPT in higher education—A synthesis of the literature and a future research agenda. *Educ. Inf. Technol.* **2024**, *29*, 21501–21522. [CrossRef]
9. Labadze, L.; Grigolia, M.; Machaidze, L. Role of AI chatbots in education: Systematic literature review. *Int. J. Educ. Technol. High. Educ.* **2023**, *20*, 56. [CrossRef]
10. Nguyen, A.; Ngo, H.N.; Hong, Y.; Dang, B.; Nguyen, B.P.T. Ethical principles for artificial intelligence in education. *Educ. Inf. Technol.* **2023**, *28*, 4221–4241. [CrossRef]

11. Xia, Q.; Weng, X.; Ouyang, F.; Lin, T.J.; Chiu, T.K. A scoping review on how generative artificial intelligence transforms assessment in higher education. *Int. J. Educ. Technol. High Educ.* **2024**, *21*, 40. [CrossRef]
12. Marchena Sekli, G.F.; Godo, A.; Véliz, J.C. Generative AI solutions for faculty and students: A review of literature and roadmap for future research. *J. Inf. Technol. Educ. Res.* **2024**, *23*, 014. [CrossRef]
13. de la Torre, A.; Baldeon-Calisto, M. Generative artificial intelligence in Latin American higher education: A systematic literature review. In Proceedings of the 2024 12th International Symposium on Digital Forensics and Security (ISDFS) (1–7), San Antonio, TX, USA, 29–30 April 2024. [CrossRef]
14. Xiao, Y.; Watson, M. Guidance on Conducting a Systematic Literature Review. *J. Plan. Educ. Res.* **2019**, *39*, 93–112. [CrossRef]
15. Charmaz, K. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*; Sage: London, UK, 2006.
16. Templier, M.; Paré, G. A Framework for Guiding and Evaluating Literature Reviews. *Commun. Assoc. Inf. Syst.* **2015**, *37*, 6. [CrossRef]
17. Briner, R.B.; David, D. Systematic Review and Evidence Synthesis as a Practice and Scholarship Tool. In *The Oxford Handbook of Evidence-Based Management*; Rousseau, D.M., Ed.; Oxford Library of Psychology; Oxford University Press: Oxford, UK, 2012.
18. Popay, J.; Roberts, H.; Sowden, A.; Petticrew, M.; Arai, L.; Rodgers, M.; Britten, N.; Roen, K.; Duffy, S. Guidance on the Conduct of Narrative Synthesis in Systematic Reviews. A Product from the ESRC Methods Programme. *Res. Rep.* **2006**, *1*, b92. Available online: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=ed8b23836338f6fdea0cc55e161b0fc5805f9e27 (accessed on 20 December 2024).
19. Lucas, P.J.; Baird, J.; Arai, L.; Law, C.; Roberts, H.M. Worked examples of alternative methods for the synthesis of qualitative and quantitative research in systematic reviews. *BMC Med. Res. Methodol.* **2007**, *7*, 4. [CrossRef] [PubMed]
20. Su, J.; Yang, W. Unlocking the Power of ChatGPT: A Framework for Applying Generative AI in Education. *ECNU Rev. Educ.* **2023**, *6*, 355–366. [CrossRef]
21. Aler Tubella, A.; Mora-Cantallops, M.; Nieves, J.C. How to teach responsible AI in Higher Education: Challenges and opportunities. *Ethics Inf. Technol.* **2024**, *26*, 3. [CrossRef]
22. Gilbertson, B.; Riley, M.; Ross, S. Enhancing education through AI tools: Discussing the new "Wild West" in online course design and teaching. In Proceedings of the Society for Information Technology & Teacher Education International Conference, Las Vegas, NV, USA, 25 March 2024; Cohen, J., Solano, G., Eds.; Association for the Advancement of Computing in Education (AACE): Las Vegas, NV, USA, 2024; pp. 2055–2062. Available online: https://www.learntechlib.org/p/224259 (accessed on 20 December 2024).
23. Chan, C.K.Y. A comprehensive AI policy education framework for university teaching and learning. *Int. J. Educ. Technol. High. Educ.* **2023**, *20*, 38. [CrossRef]
24. Elbanna, S.; Armstrong, L. Exploring the integration of ChatGPT in education: Adapting for the future. *Manag. Sustain. Arab Rev.* **2024**, *3*, 16–29. [CrossRef]
25. AlDhaen, F. The Use of Artificial Intelligence in Higher Education—Systematic Review. In *COVID-19 Challenges to University Information Technology Governance*; Alaali, M., Ed.; Springer International Publishing: Cham, Switzerland, 2022; pp. 269–285. [CrossRef]
26. Osman, S.A.; Ahmed, Z.E. Navigating AI Integration. In *Advances in Educational Technologies and Instructional Design: AI-Enhanced Teaching Methods*; Tomei, L., Ahmed, Z.E., Hassan, A.A., Saeed, R.A., Eds.; IGI Global: Hershey, PA, USA, 2024; pp. 240–267. [CrossRef]
27. Chan, C.K.Y.; Hu, W. Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *Int. J. Educ. Technol. High. Educ.* **2023**, *20*, 43. [CrossRef]
28. Xie, X.; Ding, S. Opportunities, Challenges, Strategies, and Reforms for ChatGPT in Higher Education. In Proceedings of the 2023 International Conference on Educational Knowledge and Informatization (EKI), Guangzhou, China, 22–24 September 2023; pp. 14–18. [CrossRef]
29. Klyshbekova, M.; Abbott, P. ChatGPT and assessment in higher education: A magic wand or a disruptor? *Electron. J. E-Learn.* **2023**, *22*, 30–45. [CrossRef]
30. Hwang, G.-J.; Chen, N.-S. Editorial Position Paper: Exploring the Potential of Generative Artificial Intelligence in Education: Applications, Challenges, and Future Research Directions. *Educ. Technol. Soc.* **2023**, *26*. [CrossRef]
31. Atchley, P.; Pannell, H.; Wofford, K.; Hopkins, M.; Atchley, R.A. Human and AI collaboration in the higher education environment: Opportunities and concerns. *Cogn. Res. Princ. Implic.* **2024**, *9*, 20. [CrossRef] [PubMed]
32. Rudolph, J.; Tan, S.; Tan, S. ChatGPT: Bullshit Spewer or the End of Traditional Assessments in Higher Education? *J. Appl. Learn. Teach.* **2023**, *6*, 342–363. [CrossRef]
33. Yeadon, W.; Hardy, T. The Impact of AI in Physics Education: A Comprehensive Review from GCSE to University Levels. *Phys. Educ.* **2024**, *59*, 25010. [CrossRef]
34. Dai, Y.; Liu, A.; Lim, C.P. Reconceptualizing ChatGPT and generative AI as a student-driven innovation in higher education. *Procedia CIRP* **2023**, *119*, 84–90. [CrossRef]

35. Williams, R.T. The Ethical Implications of Using Generative Chatbots in Higher Education. *Front. Educ.* **2024**, *8*, 1331607. [CrossRef]
36. Guillén-Yparrea, N.; Hernández-Rodríguez, F. Unveiling generative AI in higher education: Insights from engineering students and professors. In Proceedings of the 2024 IEEE Global Engineering Education Conference (EDUCON), Kos Island, Greece, 8–11 May 2024; pp. 1–5. [CrossRef]
37. Stone, A. Student Perceptions of Academic Integrity: A Qualitative Study of Understanding, Consequences, and Impact. *J. Acad. Ethics* **2022**, *21*, 357–375. [CrossRef] [PubMed]
38. Kumar, R.; Eaton, S.E.; Mindzak, M.; Morrison, R. Academic integrity and artificial intelligence: An overview. In *Second Handbook of Academic Integrity*; Eaton, S.E., Ed.; Springer Nature: Cham, Switzerland, 2024; pp. 1583–1596. [CrossRef]
39. Tarisayi, K.S. ChatGPT Use in Universities in South Africa Through a Socio-Technical Lens. *Cogent Educ.* **2024**, *11*, 2295654. [CrossRef]
40. Bannister, P.; Santamaría-Urbieta, A.; Alcalde-Peñalver, E. A Delphi Study on Generative Artificial Intelligence and English Medium Instruction Assessment: Implications for Social Justice. *Iran. J. Lang. Teach. Res.* **2023**, *11*, 53–80. [CrossRef]
41. Tu, Y.-F. Roles and Functionalities of ChatGPT for Students with Different Growth Mindsets: Findings of Drawing Analysis. *Educ. Technol. Soc.* **2024**, *27*, 198–214. [CrossRef]
42. Michel-Villarreal, R.; Vilalta-Perdomo, E.; Salinas-Navarro, D.E.; Thierry-Aguilera, R.; Gerardou, F.S. Challenges and opportunities of generative AI for higher education as explained by ChatGPT. *Educ. Sci.* **2023**, *13*, 856. [CrossRef]
43. Nguyen, T.N.T.; van Lai, N.; Nguyen, Q.T. Artificial Intelligence (AI) in Education: A Case Study on ChatGPT's Influence on Student Learning Behaviors. *Educ. Process Int. J.* **2024**, *13*, 105–121. [CrossRef]
44. Shabunina, V.; Sarancha, V.; Maslak, V.; Shevchenko, O.; Tur, O. Educational Potential of ChatGPT: Teaching Tool for Students' Competencies Development. In Proceedings of the 2023 IEEE 5th International Conference on Modern Electrical and Energy System (MEES), Kremenchuk, Ukraine, 27–30 September 2023; pp. 1–6. [CrossRef]
45. Woerner, J.H.; Turtova, A.P.; Lang, A.S. Transformative Potentials and Ethical Considerations of AI Tools in Higher Education: Case Studies and Reflections. In Proceedings of the SoutheastCon 2024, Atlanta, GA, USA, 15–24 March 2024; pp. 510–515. [CrossRef]
46. Aljuaid, H. The Impact of Artificial Intelligence Tools on Academic Writing Instruction in Higher Education: A Systematic Review. *Arab World Engl. J.* **2024**, *1*, 26–55. [CrossRef]
47. Foung, D.; Lin, L.; Chen, J. Reinventing assessments with ChatGPT and other online tools: Opportunities for GenAI-empowered assessment practices. *Comput. Educ. Artif. Intell.* **2024**, *6*, 100250. [CrossRef]
48. Kohnke, L.; Zou, D.; Moorhouse, B.L. Technostress and English language teaching in the age of generative AI. *Educ. Technol. Soc.* **2024**, *27*, 306–320. Available online: https://www.jstor.org/stable/48766177 (accessed on 20 December 2024).
49. Gorichanaz, T. Accused: How students respond to allegations of using ChatGPT on assessments. *Learn. Res. Pract.* **2023**, *9*, 183–196. [CrossRef]
50. Spivakovsky, O.V.; Omelchuk, S.A.; Kobets, V.V.; Valko, N.V.; Malchykova, D.S. Institutional Policies on Artificial Intelligence in University Learning, Teaching, and Research. *Inf. Technol. Learn. Tools* **2023**, *97*, 181–202. [CrossRef]
51. Chan, C.K.Y.; Colloton, T. *Generative AI in Higher Education*; Routledge: London, UK, 2024. [CrossRef]
52. Camacho-Zuñiga, C.; Rodea-Sánchez, M.A.; López, O.O.; Zavala, G. Generative AI Guidelines by/for Engineering Undergraduates. In Proceedings of the 2024 IEEE Global Engineering Education Conference (EDUCON), Kos Island, Greece, 8–11 May 2024; pp. 1–8. [CrossRef]
53. Pallivathukal, R.G.; Soe, H.H.K.; Donald, P.M.; Samson, R.S.; Hj Ismail, A.R. ChatGPT for academic purposes: Survey among undergraduate healthcare students in Malaysia. *Cureus* **2024**, *16*, e53032. [CrossRef] [PubMed]
54. Kayalı, B.; Yavuz, M.; Balat, Ş.; Çalışan, M. Investigation of student experiences with ChatGPT-supported online learning applications in higher education. *Australas. J. Educ. Technol.* **2023**, *39*, 20–39. [CrossRef]
55. Bozkurt, A. GenAI et al. Cocreation, Authorship, Ownership, Academic Ethics and Integrity in a Time of Generative AI. *Open Praxis* **2024**, *16*, 1–10. [CrossRef]
56. Wang, T. Navigating Generative AI (ChatGPT) in Higher Education: Opportunities and Challenges. In *Lecture Notes in Educational Technology: Smart Learning for a Sustainable Society*; Anutariya, C., Liu, D., Kinshuk Tlili, A., Yang, J., Chang, M., Eds.; Springer Nature: Singapore, 2023; pp. 215–225. [CrossRef]
57. O'Dea, X. Generative AI: Is it a Paradigm Shift for Higher Education? *Stud. High. Educ.* **2024**, *49*, 811–816. [CrossRef]
58. McIntire, A.; Calvert, I.; Ashcraft, J. Pressure to plagiarize and the choice to cheat: Toward a pragmatic reframing of the ethics of academic integrity. *Educ. Sci.* **2024**, *14*, 244. [CrossRef]
59. Delcker, J.; Heil, J.; Ifenthaler, D.; Seufert, S.; Spirgi, L. First-year students AI-competence as a predictor for intended and de facto use of AI-tools for supporting learning processes in higher education. *Int. J. Educ. Technol. High. Educ.* **2024**, *21*, 1–13. [CrossRef]
60. Holmes, W.; Iniesto, F.; Anastopoulou, S.; Boticario, J.G. Stakeholder perspectives on the ethics of AI in distance-based higher education. *Int. Rev. Res. Open Distrib. Learn.* **2023**, *24*, 96–117. [CrossRef]

61. Magrill, J.; Magrill, B. Preparing educators and students at higher education institutions for an AI-driven world. *Teach. Learn. Inq.* **2024**, *12*, 1–9. [CrossRef]
62. Ateeq, A.; Alaghbari, M.A.; Alzoraiki, M.; Milhem, M.; Hasan Beshr, B.A. Empowering Academic Success: Integrating AI Tools in University Teaching for Enhanced Assignment and Thesis Guidance. In Proceedings of the 2024 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSIS), Manama, Bahrain, 28–29 January 2024; pp. 297–301. [CrossRef]
63. Hazari, S. Justification and roadmap for artificial intelligence (AI) literacy courses in higher education. *J. Educ. Res. Pract.* **2024**, *14*, 7. [CrossRef]
64. Katsamakas, E.; Pavlov, O.V.; Saklad, R. Artificial intelligence and the transformation of higher education institutions: A systems approach. *Sustainability* **2024**, *16*, 6118. [CrossRef]
65. Dwivedi, Y.K.; Kshetri, N.; Hughes, L.; Slade, E.L.; Jeyaraj, A.; Kar, A.K.; Baabdullah, A.M.; Koohang, A.; Raghavan, V.; Ahuja, M.; et al. Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *Int. J. Inf. Manag.* **2023**, *71*, 102642. [CrossRef]
66. Farrelly, T.; Baker, N. Generative artificial intelligence: Implications and considerations for higher education practice. *Educ. Sci.* **2023**, *13*, 1109. [CrossRef]
67. AlAli, R.; Wardat, Y. Enhancing Classroom Learning: ChatGPT's Integration and Educational Challenges. *Int. J. Relig.* **2024**, *5*, 971–985. [CrossRef]
68. Fu, C.-J.; Silalahi, A.D.K.; Huang, S.-C.; Phuong, D.T.T.; Eunike, I.J.; Yu, Z.-H. The (Un)Knowledgeable, the (Un)Skilled? Undertaking Chat-GPT Users' Benefit-Risk-Coping Paradox in Higher Education Focusing on an Integrated, UTAUT and PMT. *Int. J. Hum-Comput Int.* 2024. Available online: https://www.semanticscholar.org/paper/The-(Un)Knowledgeable,-the-(Un)Skilled-Undertaking-Fu-Silalahi/fe784f92808ec5b7e6ea7c0dbffff0bfc6502220 (accessed on 20 December 2024).
69. Abulibdeh, A.; Zaidan, E.; Abulibdeh, R. Navigating the Confluence of Artificial Intelligence and Education for Sustainable Development in the Era of Industry 4.0: Challenges, Opportunities, and Ethical Dimensions. *J. Clean. Prod.* **2024**, *437*, 140527. [CrossRef]
70. Torres, C.G.; González, A.Z.; Hernando, J.L.O. The impact of Generative Artificial Intelligence in higher education: A focus on ethics and academic integrity. *Rev. Electrón. Investig. Eval. Educ.* **2023**, *29*, 1–19. [CrossRef]
71. Ivanov, S.; Soliman, M.; Tuomi, A.; Alkathiri, N.A.; Al-Alawi, A.N. Drivers of generative AI adoption in higher education through the lens of the Theory of Planned Behaviour. *Technol. Soc.* **2024**, *77*, 102521. [CrossRef]
72. Pellas, N. The influence of sociodemographic factors on students' attitudes toward AI-generated video content creation. *Smart Learn. Environ.* **2023**, *10*, 57. [CrossRef]
73. Phutela, N.; Grover, P.; Singh, P.; Mittal, N. Future prospects of ChatGPT in higher education. In Proceedings of the 2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 14–15 March 2024; pp. 1–5. [CrossRef]
74. Qadhi, S.M.; Alduais, A.; Chaaban, Y.; Khraisheh, M. Generative AI, research ethics, and higher education research: Insights from a scientometric analysis. *Information* **2024**, *15*, 325. [CrossRef]
75. Santos, P.; Urgel, K.; Moreno, V. Generative Artificial Intelligence in teaching and learning of ICT engineering education: A literature review and illustrative scenarios. In Proceedings of the 2024 47th MIPRO ICT and Electronics Convention (MIPRO), Opatija, Croatia, 20–24 May 2024; pp. 1338–1343. [CrossRef]
76. Zeb, A.; Ullah, R.; Karim, R. Exploring the role of ChatGPT in higher education: Opportunities, challenges, and ethical considerations. *Int. J. Inf. Learn. Technol.* **2024**, *41*, 99–111. [CrossRef]
77. Baxto, W. Public policy and digital transformation in higher education. In *Digital Transformation in Higher Education Institutions*; de Bem Machado, A., Sousa, M.J., Dal Mas, F., Secinaro, S., Calandra, D., Eds.; EAI/Springer Innovations in Communication and Computing; Springer: Cham, Switzerland, 2024. [CrossRef]
78. Moya, B.A.; Eaton, S.E. Academic integrity policy analysis of Chilean universities. *J. Acad. Ethics* **2024**, *22*, 639–663. [CrossRef]
79. Romero, M.; Reyes, J.; Kostakos, P. Generative Artificial Intelligence in higher education. In *Creative Applications of Artificial Intelligence in Education*; Urmeneta, A., Romero, M., Eds.; Palgrave Studies in Creativity and Culture; Palgrave Macmillan: Cham, Switzerland, 2024. [CrossRef]
80. Walter, Y. Embracing the future of artificial intelligence in the classroom: The relevance of AI literacy, prompt engineering, and critical thinking in modern education. *Int. J. Educ. Technol. High. Educ.* **2024**, *21*, 639–663. [CrossRef]
81. Slimi, Z.; Carballido, B.V. Navigating the ethical challenges of artificial intelligence in higher education: An analysis of seven global AI ethics policies. *TEM J.* **2023**, *12*, 590–602. [CrossRef]
82. Güner, H.; Er, E.; Akçapinar, G.; Khalil, M. From chalkboards to AI-powered learning: Students' attitudes and perspectives on the use of ChatGPT in educational settings. *Educ. Technol. Soc.* **2024**, *27*, 386–404. [CrossRef]
83. Riapina, N. Teaching AI-enabled business communication in higher education: A practical framework. *Bus. Prof. Commun. Q.* **2023**, *87*, 511–521. [CrossRef]

84. Hadley, E. Prioritizing policies for furthering responsible artificial intelligence in the United States. In Proceedings of the 2022 IEEE International Conference on Big Data (Big Data), Osaka, Japan, 17–20 December 2022; pp. 5029–5038. [CrossRef]
85. Kallunki, V.; Kinnunen, P.; Pyörälä, E.; Haarala-Muhonen, A.; Katajavuori, N.; Myyry, L. Navigating the evolving landscape of teaching and learning: University faculty and staff perceptions of the artificial intelligence-altered terrain. *Educ. Sci.* **2024**, *14*, 727. [CrossRef]
86. Vetter, M.A.; Lucia, B.; Jiang, J.; Othman, M. Towards a framework for local interrogation of AI ethics: A case study on text generators, academic integrity, and composing with ChatGPT. *Comput. Compos.* **2024**, *71*, 727. [CrossRef]
87. Moore, S.; Lookadoo, K. Communicating clear guidance: Advice for generative AI policy development in higher education. *Bus. Prof. Commun. Q.* **2024**, *87*, 610–629. [CrossRef]
88. Perkins, M.; Roe, J. Decoding academic integrity policies: A corpus linguistics investigation of AI and other technological threats. *High. Educ. Policy* **2024**, *37*, 633–653. [CrossRef]
89. Acosta-Enriquez, B.G.; Ballesteros, M.A.A.; Vargas, C.G.A.P.; Ulloa, M.N.O.; Ulloa, C.R.G.; Romero, J.M.P.; Jaramillo, N.D.G.; Orellana, H.U.C.; Anzoátegui, D.X.A.; Roca, C.L. Knowledge, attitudes, and perceived ethics regarding the use of ChatGPT among Generation Z university students. *Int. J. Educ. Integr.* **2024**, *20*, 10. [CrossRef]
90. Alwahaby, H.; Cukurova, M. Navigating the ethical landscape of multimodal learning analytics: A guiding framework. In *Ethics in Online AI-Based Systems: Risks and Opportunities in Current Technological Trends*; Elsevier: Amsterdam, The Netherlands, 2024; pp. 25–53. [CrossRef]
91. Goldberg, D.; Sobo, E.; Frazee, J.; Hauze, S. Generative AI in higher education: Insights from a campus-wide student survey at a large public university. In Proceedings of the Society for Information Technology & Teacher Education International Conference, Las Vegas, NV, USA, 25 May 2024; Cohen, J., Solano, G., Eds.; Association for the Advancement of Computing in Education (AACE): Las Vegas, NV, USA, 2024.
92. Dotan, R.; Parker, L.S.; Radzilowicz, J. Responsible adoption of generative AI in higher education: Developing a "points to consider" approach based on faculty perspectives. In Proceedings of the 2024 ACM Conference on Fairness, Accountability, and Transparency, Rio de Janeiro, Brazil, 5 June 2024; Association for Computing Machinery: New York, NY, USA, 2024; pp. 2033–2046. [CrossRef]
93. Swist, T.; Buckingham Shum, S.; Gulson, K.N. Co-producing AIED ethics under lockdown: An empirical study of deliberative democracy in action. *Int. J. Artif. Intell. Educ.* **2024**, *34*, 670–705. [CrossRef]
94. Bannister, P.; Peñalver, E.A.; Urbieta, A.S. International students and generative artificial intelligence: A cross-cultural exploration of HE academic integrity policy. *J. Int. Stud.* **2024**, *14*, 149–170. [CrossRef]
95. Chen, K.; Tallant, A.C.; Selig, I. Exploring generative AI literacy in higher education: Student adoption, interaction, evaluation, and ethical perceptions. *Inf. Learn. Sci.* **2024**. [CrossRef]
96. Malik, T.; Dettmer, S.; Hughes, L.; Dwivedi, Y.K. Academia and generative artificial intelligence (GenAI) SWOT analysis: Higher education policy implications. In *Transfer, Diffusion and Adoption of Next-Generation Digital Technologies*; Sharma, S.K., Dwivedi, Y.K., Metri, B., Lal, B., Elbanna, A., Eds.; IFIP Advances in Information and Communication Technology; Springer: Cham, Switzerland, 2024; Volume 698. [CrossRef]
97. Montoya-Cantoral, E.; Espinoza-Suarez, M.S.; Acra-Despradel, C.; Mamani-Calcina, J.; Ponce-Aranibar, M.P.; Villalba-Condori, K.O.; Cardona-Reyes, H. Analysis of institutional policies on the use of ChatGPT in Peruvian universities. In Proceedings of the 2023 XIII International Conference on Virtual Campus (JICV), Porto, Portugal, 25–26 September 2023; pp. 1–4. [CrossRef]
98. Gulumbe, B.H.; Audu, S.M.; Hashim, A.M. Balancing AI and academic integrity: What are the positions of academic publishers and universities? *AI Soc.* **2024**, 1–10. [CrossRef]
99. Kejriwal, M. AI ethics and policy. In *Artificial Intelligence for Industries of the Future*; Future of Business and Finance; Springer: Cham, Switzerland, 2023. [CrossRef]
100. Li, Z.; Dhruv, A.; Jain, V. Ethical considerations in the use of AI for higher education: A comprehensive guide. In Proceedings of the 2024 IEEE 18th International Conference on Semantic Computing (ICSC), Laguna Hills, CA, USA, 5–7 February 2024; pp. 218–223. [CrossRef]
101. Robles, L.E.R.; Ek, J.I. Use of generative artificial intelligence in educational environments: An initial student perspective of the risks and advantages. In Proceedings of the 2024 IEEE Global Engineering Education Conference (EDUCON), Kos Island, Greece, 8–11 May 2024; pp. 1–5. [CrossRef]
102. Nam, B.H.; Bai, Q. ChatGPT and its ethical implications for STEM research and higher education: A media discourse analysis. *IJ STEM Ed.* **2023**, *10*, 1–24. [CrossRef]
103. Watanabe, A. Have courage to use your own mind, with or without AI: The relevance of Kant's enlightenment to higher education in the age of artificial intelligence. *Electron. J. E-Learn.* **2024**, *22*, 46–58. [CrossRef]
104. Duah, J.E.; McGivern, P. How generative artificial intelligence has blurred notions of authorial identity and academic norms in higher education, necessitating clear university usage policies. *Int. J. Inf. Learn. Technol.* **2024**, *41*, 180–193. [CrossRef]

105. da Silva, M.; Ferro, M.; Mourão, E.; Seixas, E.F.R.; Viterbo, J.; Salgado, L.C.C. Ethics and AI in higher education: A study on students' perceptions. In *Information Technology and Systems. ICITS 2024*; Rocha, Á., Ferrás, C., Hochstetter Diez, J., Diéguez Rebolledo, M., Eds.; Lecture Notes in Networks and Systems; Springer: Cham, Switzerland, 2024; Volume 932. [CrossRef]
106. Shi, T.; Blau, E. Contemporary theories of learning and pedagogical approaches for all students to achieve success. In *Optimizing Higher Education Learning Through Activities and Assessments*; Inoue-Smith, Y., McVey, T., Eds.; IGI Global: Hershey, PA, USA, 2020; pp. 20–37. [CrossRef]