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From policy to practice: the regulation and implementation of generative AI in Swedish higher education institutes

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Abstract

Background The rapid development of generative artificial intelligence (GenAI) is reshaping higher education by offering innovative solutions in course design, assessment, and learning experiences. Despite its potential, GenAI integration poses ethical, pedagogical, and practical challenges, but also a risk of academic misconduct. This study explores how Swedish higher education institutions (HEIs) are addressing GenAI through guidelines, policy documents, and public website information.

Methods A qualitative manifest content analysis for objectivity and consistency was conducted on GenAI-related documents and website information from Swedish HEIs. Forty-nine institutions were contacted, with 36 providing relevant data. Data collection involved email correspondence and systematic searches on public websites.

Results Few formal GenAI guidelines exist across Swedish HEIs. Independent institutions were more likely to have established guidelines for both staff and students, whereas universities or university colleges often provided more GenAI-related information on their websites. Five categories were identified: Good academic practice; GenAI use and governance in education; Information governance; Ethical and social impact; and GenAI essentials, the latter unique to websites. Good academic practice was the most emphasized, focusing on transparency, responsibility, and the challenges of GenAI-related misconduct.

Conclusions Taken together, GenAI integration in higher education remains early and uneven, with some institutions implementing formal guidelines while others are still developing policies. This inconsistency calls for national directives to balance GenAI´s benefits with ethical concerns, promote GenAI literacy, and ensure equitable access. Rapid technological change challenges HEIs to update policies that ensure academic integrity and fairness. Future research should foster collaborative policy development among HEIs, policymakers, and technology providers.

Keywords GenAI, Higher education, Policies and guidelines, Public web sites, Teaching and learning

Background

As generative artificial intelligence (GenAI) rapidly develops and plays an increasingly significant role across various sectors, including higher education, it presents new opportunities and challenges (Kamalov et al. 2023). GenAI can be described as "a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments" (H.R.6216 2020). These systems are poised to reshape the delivery of educational content, student learning, and teacher work (Imran et al. 2024). Indeed, the use of GenAI in higher education opens the door to innovative approaches, for instance in course design, student assessment, and collaborative learning. For instance, GenAI-based systems can support course design by suggesting various didactical strategies for processing content or by recommending ways to enhance student-centered learning (Ginting et al. 2024). Additionally, GenAI can assist teachers in providing feedback on student assignments, which allows for more timely and targeted interventions (Chen et al. 2020). Furthermore, GenAI can foster collaboration between students and teachers by creating interactive and engaging learning environments that extend beyond the traditional classrooms, utilizing flexible and dynamic learning platforms (Imran et al. 2024). Despite these promising applications, introducing GenAI technologies such as large language models (LLM), into the academic setting of higher education raises complex ethical, pedagogical, and practical concerns (Cotton et al. 2024).

For students, GenAI can enable more personalized learning experiences, as there are systems that can adapt to individual student needs, such as preference concerning engagement and learning pace (Labadze et al. 2023). While students appreciate GenAI as a valuable resource for their learning, they also express concerns about its potential negative impact. For instance, students use GenAI for writing, summarizing texts, identifying key points in large volumes of information, receiving feedback for improvement, facilitate understanding of content and concepts, and enhancing motivation (Schei et al. 2024; Ansari et al. 2024). However, students have concerns about the accuracy and reliability of GenAI-generated responses, as well as its effects on their learning process, particularly in the development of their critical thinking, discipline and creativity (Reiss 2021; Schei et al. 2024). These concerns are crucial to consider in higher education.

For teachers, GenAI has the potential to automate time-consuming administrative tasks, enabling them to focus more on teaching (Imran et al. 2024). The more teachers use GenAI in their work, the more they recognize its potential and role in their professional development and as an effective teaching tool (Kaplan-Rakowski et al. 2023). It has been shown that teachers use GenAI in their educational work for planning, implementation and assessment (Celik et al. 2022). However, for GenAI to be effectively implemented in education, teachers must be equipped with the necessary knowledge, skills, and confidence to integrate it meaningfully into their teaching practices (Häkkinen et al. 2017; Seufert et al. 2021).

Recognizing GenAI's growing role and impact in education, its integration into the academic context must be approached with careful planning and consideration (Ali et al. 2024). Given the rapid pace at which GenAI technologies evolve, understanding how higher education institutions (HEIs) respond to these developments is essential. HEIs must adapt proactively to technological advances while maintaining their commitment to quality education and ethical standards (Southworth et al. 2023a). This requires the

creation of clear and comprehensive guidance in the use of GenAI in academic contexts, as well as continuous monitoring and evaluation to ensure that these technologies have the intended positive impact on learning outcomes (Chan 2023). Moreover, the presence or absence of institutional guidelines plays a crucial role in shaping responsible GenAI use. Without clear frameworks, educators and students may adopt inconsistent or potentially harmful practices, unintentionally undermining academic integrity or introducing inequities (Floridi et al. 2018; Chan and Hu 2023). Therefore, understanding whether and how HEIs are providing guidance is not only timely, but essential for supporting informed, ethical, and equitable adoption of GenAI in higher education. Thus, the aim of this study was to explore the guidelines, policy documents, and information that Swedish HEIs have developed regarding the use of GenAI in teaching and learning. By compiling the existing guidelines at various institutions, we can gain insight in how GenAI has been adopted in Swedish higher education and the principles that guide its use. This will provide valuable information on the institutional strategies for integrating GenAI and highlight areas where further regulation or clarification may be needed to ensure that GenAI's integration into education is ethical, practical, and pedagogical, thus ensuring academic integrity and fairness.

Methods

Context of study

The Swedish higher education system is governed by the Swedish Higher Education Act (SFS 1992:1434) and the Higher Education Ordinance (1993:100), after amendments in January the 1st, in 2007. Sweden follows the Bologna Process, which ensures the comparability of higher education qualifications across Europe. In line with this, Sweden's credit system is aligned with the European Credit Transfer and Accumulation System (ECTS), where a full academic year (40 weeks of study) corresponds to 60 credits.

Unlike many other European countries, Sweden does not have a nationally standardized grading system. Instead, each HEI determines its own grading scale. Additionally, degrees are awarded without an overall grade, and students are not ranked based on academic performance. While the degree structure and credit system adhere to the Bologna Process, grading practices reflect national policies and institutional autonomy, as outlined in the Swedish Higher Education Act and the Qualifications Framework for the European Higher Education Area (QF-EHEA).

Swedish higher education is structured into three levels: First cycle (undergraduate level); Second cycle (master's level), and Third cycle (doctoral level). These levels provide an academic progression and professional development. Degrees are categorized into general degrees, artistic degrees (fine arts, music, design), and professional degrees (medicine, engineering, teaching), and relate to academic and career pathways. General degrees include the Bachelor's degree from first cycle studies, and Master's degree from second cycle studies.

Admission to higher education in Sweden is subject to general and specific entry requirements, which vary depending on the field of study. These requirements ensure that students possess the necessary prior knowledge to succeed in their chosen programs. In general terms, for first cycle (undergraduate) studies, general entry requirements apply universally across all HEIs. Eligibility can be obtained by completing an upper-secondary school program, adult education at the upper-secondary level, or

through equivalent qualifications, such as relevant work experience or other educational pathways. For second cycle (master's level) studies, the general requirement is a completed first cycle qualification of at least 180 credits or an equivalent foreign degree, whereas for third cycle (doctoral) studies, applicants must hold a second cycle qualification or have completed at least 240 credits, with 60 credits at the second cycle level.

Sweden has 49 higher education institutions, including universities, university colleges, and independent education providers, that are authorized to offer higher education and award diplomas or degrees (all listed at the official website of the Swedish University Chancellor's Office; Universitetskanslerämbetet). Universities are HEIs that have a general authorization to award doctoral degrees. University colleges primarily offer undergraduate and master's programs but can apply for the rights to grant doctoral degrees within specific fields. Independent education institutions are private education providers that can offer higher education but must be accredited to issue official degrees.

As part of this study, all HEIs in Sweden were invited to participate by providing information on their use of GenAI in teaching and learning.

The object of analysis

The object of analysis was HEIs information concerning GenAI in teaching and learning, in form of documents such as guidelines, policies, but also information on HEIs public websites. Forty-nine institutions were contacted via email using the official contact addresses listed on their respective websites, during October 7–14, 2024, and for those with no response a follow-up reminder was sent after two weeks. The email included details about the study along with an invitation to share information on GenAI to students and/or staff. The following questions were posed:

1. Do you have guidelines for the use of GenAI in teaching?
2. If the answer to the previous question is yes, do you have a weblink to it, or could we access the guidelines in another way?
3. Do you have specific guidelines on what is acceptable for students when using GenAI in assignments or examinations?
4. If not, are you working to develop guidelines? If so, what focus areas should be included in the guidelines?

In addition, searches were also performed on all 49 HEIs public websites for information regarding GenAI, between December 9, 2024, and January 5, 2025, and a second time on January 14, 2025. The following search words were used in the search function on the websites: "artificial intelligence", "AI, generative", and "language models". In addition to information retrieved from HEIs public websites, some HEIs provided documents directly through email, whereas others shared links to relevant resources. A manual search to find information that did not come up in the search via the page search function was also conducted by clicking through the pages aimed at students or staff. Thus, the study included texts intended for students and staff that informed or provided guidance on GenAI in relation to teaching and learning, regardless of the specific section or heading under which the information was published. However, content related to ongoing GenAI research projects, courses incorporating GenAI, educational initiatives on GenAI for students or staff, and editorial materials such as interviews where GenAI was the central topic was excluded.

Analysis

A qualitative manifest content analysis was performed to explore formal guidelines and website information on GenAI provided by Swedish HEIs and identify categories in data (Elo and Kyngäs 2008). This method allows for content description without interpretation, making it possible to compare objective differences and similarities. This approach is recommended when the data consists of formal texts where there is no intention to seek an underlying meaning (Elo and Kyngäs 2008).

During the preparation phase, the material was thoroughly read to gain an overall understanding of its content. The data was then coded and organized based on similarities and differences. Recurring words formed the basis of the coding process and were compiled in a coding sheet, allowing for systematic sorting and grouping into subcategories and categories.

Formal documents were analysed first, and the codes that were derived served as a point of departure for analyzing the more extensive material retrieved from institutional websites. However, given the inductive approach, the possibility remained that the website material contained information not identified in the initial analysis. To account for this, separate coding sheets were created for the two data sources.

To ensure consistency in coding, two formal guidelines and four websites were jointly analyzed. Following discussions, the remaining material was systematically divided. Throughout the analysis, codes, subcategories, and categories were continuously reviewed and discussed to ensure conformability and credibility. Prior to the compilation of results, all interpretations and categorizations were critically examined.

Results

In total, 36 of 49 HEIs responded to the email by sending formal guidelines and policy documents on GenAI and responding to the questions. An observation was that this kind of information was rare in universities and university colleges, although some were in the process of developing guidelines (6 of 36). Only one university college had formal guidelines for staff; none had formal guidelines for students. One of the arts institutions had formal guidelines for prospective students on using GenAI in the application process. Independent educational institutions had guidelines to a greater extent. Ten of the independent educational institutes responded, and 3 of these 10 had guidelines or policies for students, whereas 4 of these 10 had guidelines or policies for staff (Table 1).

Concerning HEIs public websites, most universities and university colleges had information on GenAI in teaching and learning. This was not the case for all independent HEIs or art institutions (Table 1). Some HEIs had extensive information on GenAI, its emergence, its deployment in society, and its use by teachers and students. Some HEIs also had information on international guidelines (e.g., UNESCO) and European policy documents. Others had very brief information on GenAI. In these cases, information was often focused on how GenAI can be used by students and what is considered cheating, or IT security and GenAI use within the HEIs IT environment. Markedly, three HEIs with formal guidelines regarding GenAI did not have information on their open websites.

Analysis identified a total of five categories. Four of these categories were common for HEI-provided documents and information on websites: **(a)** Good academic practice, **(b)** GenAI use and governance in education, **(c)** Information governance, and **(d)** Ethical

Table 1 Description of data and availability of formal documents (guidelines or policies) and information on websites regarding generative AI in teaching and learning at Swedish higher education institutions (HEI). The total number of HEIs was 49, 36 responded to the survey about formal guidelines or policy documents. All 49 websites were browsed for information on generative AI in relation to teaching and learning

		University (*n* = 18)	University College (*n* = 12)	Art Institutions (*n* = 5)	Independent Educational Institutions (*n* = 14)	Total (*n* = 49)
Available guidelines or policy documents, *n*	Yes	2	1	1	7	11
	In progress	-	4	-	1	5
	No	8	6	4	2	20
	No response	8	1	-	4	13
Guidelines or policy for students, *n*	Yes	2	-	1	3	6
	In progress	-	4	-	1	5
	No	8	7	4	6	25
Guidelines or policy for staff, *n*	Yes	2	1	-	4	7
	In progress	-	4	-	1	5
	No	8	6	5	5	24
Available information on public website, *n*	Yes	14	10	1	2	27
	No	4	2	4	12	22

Abbreviations: Artificial Intelligence (AI), Higher Education Institution (HEI)

and social impact, whereas one of these was a category unique for information in websites: **(e)** GenAI essentials (Tables 2 and 3).

Good academic practice

In HEIs formal guidelines and policy documents regarding GenAI there were statements about the importance of maintaining academic integrity and being responsible for the material submitted, as a student, as a researcher and as a teacher. All guidelines included writings on plagiarism and cheating. In addition, in 10 of 11 guidelines HEIs had added the need to be transparent about the use of GenAI. All guidelines focused on the risk of students using GenAI in the application process or in examinations, and all but one guideline emphasized that students are responsible for the work they submit.

As for the information on HEIs public websites, Good academic practice was the most common type of information. There was a strong focus on making it clear that everyone, that is, students, staff, and researchers, is held accountable for the material submitted and that it is of great importance to be transparent about how GenAI is used so that academic integrity can be preserved.

The most frequently mentioned term within this category was cheating, which was addressed by 19 HEIs on their websites. Slightly fewer HEIs, 17 in total, included information about academic integrity, while 16 highlighted plagiarisms specifically. Sixteen HEIs also featured guidance on declaring the use of GenAI. However, 18 out of 27 HEIs had specific statements that students are responsible for the material they submit and must, therefore, ensure that it is correct, ethical, and does not violate any regulations.

This category also included information on the challenges of identifying GenAI-related misconduct. While traditional plagiarism detection tools can reveal copied material from existing sources, they are not designed to reliably detect AI-generated content. As current GenAI detection tools remain imprecise and inconsistent, institutions instead emphasize the importance of transparency and academic honesty in communicating GenAI use. This must also be communicated to the students. For instance, eight HEIs

Table 2 Summary of the manifest content analysis of formal guidelines and policy documents for using generative AI (GenAI) in Swedish higher education institutions ($n = 11$)

Code	*n* =	Subcategory	Category
Academic integrity	10	Honesty	Good Academic Practice
Cheating	11		
Plagiarism	11		
Personal responsibility for submitted material	10		
References	4	Transparency	
Declaring use of GenAI	10		
Risk of false information	6	Critical thinking	GenAI Use and Governance in Education
Bias	5		
Limitations	6		
Source criticism	4		
How to design examinations	7	Practical use in teaching and learning	
Communication to students	9		
Recommended use of GenAI	5		
Permitted use	5		
Unpermitted use	1		
The teacher will decide on the use of GenAI	10		
The teacher will secure safe examinations	10		
Personal responsibility for keeping up to date	3	Knowledge Acquisition	
HEIs responsibility to educate on GenAI	2		
GDPR	6	Information Security	Information Governance
Sensitive information	5		
Classified information	1		
Copyright	4	Legal Rights	
Ethical considerations	5	Responsible GenAI Practices	Ethics and Social Impact
Equivalent asset	4		
Reinforcement of prejudices	1	Societal Considerations	
Impact on society	2		

Abbreviations: Artificial Intelligence (AI), General Data Protection Regulation (GDPR), Higher Education Institution (HEI)

stressed that students must be careful with references and citations so that the reader can determine whether the text is valid and credible.

GenAI use and governance in education

In HEIs formal guidelines and policy documents, this category concerned information on how students and teachers can and should use GenAI. It comprised various descriptions on responsibilities regarding its use. There were no explicit guidelines prohibiting GenAI use. However, perspectives varied, ranging from GenAI being generally allowed unless explicitly restricted to GenAI being completely prohibited unless explicitly permitted. However, 10 of 11 HEIs allowed the teacher to decide whether GenAI should be used in the course and, if so, how. This choice was also accompanied by the requirement of ensuring secure examinations and mentioned explicitly in 10 HEIs guidelines. Seven HEIs guidelines included recommendations for teachers on how to design accurate examinations in relation to course content and learning outcomes.

Most guidelines addressed the risk of using GenAI regarding misinformation ($n = 6$) and bias ($n = 5$) or highlighted the need for students to be critical of GenAI-produced material ($n = 4$). This potential problem was added to varying degrees, from being merely mentioned to being well described from different perspectives. These perspectives ranged from warning that the text generated by GenAI may be based on outdated facts,

Table 3 Summary of the manifest content analysis of information on generative AI (GenAI) in teaching and learning on open web pages from Swedish higher education institutions ($n = 27$)

Code	*n* =	Subcategory	Category
What is GenAI?	15	General information	GenAI Essentials
AI tools	14		
How to use GenAI	11		
Guidelines from other organizations	2	Information from others	
Academic integrity	17	Honesty	Good Academic Practice
Cheating	19		
Plagiarism	16		
Personal responsibility for submitted material	18		
References	8	Transparency	
Declaring use of GenAI	16		
Risk of false information	11	Critical thinking	GenAI Use and Governance in Education
Bias	10		
Limitations	13		
Source criticism	14		
How to design examinations	12	Practical use in teaching and learning	
Communication to students	16		
Recommended use of GenAI	13		
Permitted use	12		
Unpermitted use	7		
The teacher will decide on the use of GenAI	9		
The teacher will secure safe examinations	6		
Personal responsibility for keeping up to date	12	Knowledge Acquisition	
HEIs responsibility to educate on GenAI	5		
GDPR	7	Information Security	Information Governance
Sensitive information	17		
Classified information	3		
Copyright	6	Legal Rights	
Ethical considerations	13	Responsible GenAI Practices	Ethics and Social Impact
Equivalent asset	9		
Reinforcement of prejudices	5	Societal Considerations	
Impact on society	3		

Abbreviations: Artificial Intelligence (AI), General Data Protection Regulation (GDPR), Higher Education Institution (HEI)

that GenAI may be trained on inaccurate data, but also that there may be value-based writing that is not necessarily true or ethically justified. No formal guidelines addressed how teaching should be designed to enhance critical thinking and the awareness of these potential biases.

Three HEIs guidelines stipulated that staff and students are responsible for keeping up to date with developments and knowledge in the field of GenAI, without any information or specification on how and to what degree staff and students should be up to date. However, two HEIs added that they are responsible for providing such education.

Information on websites included how teachers and students may or may not approach GenAI in their work within higher education. Students and teachers were informed about different ways that GenAI can be used. Here, 19 (of 27) HEIs focused on different perspectives, with some describing what type of use was generally allowed ($n = 12$), and others describing what type was not allowed ($n = 7$). Some HEIs instead described possible uses without preference for permission ($n = 13$). Some HEIs also had several pages for teachers to refer to where levels of use of GenAI were matched to different suggestions

on how to inform students about the permitted use of GenAI ($n = 16$) in the curricula or instructions for assignments.

Compared to HEIs' formal guidelines and policy documents, information on websites showed less emphasis on teachers' authority to decide how GenAI is used in specific courses ($n = 9$) and their responsibility for ensuring secure examinations ($n = 6$). Here, the focus was more on how use and communication can occur. At some HEI websites ($n = 12$), there was information for teachers to consult on which learning activities or learning outcomes could be suitable for including GenAI and how examinations can be designed. This type of information also includes suggestions on what type of examination may suit different course objectives or what type of examination will be sensitive to the use of GenAI. These suggestions were usually followed by suggestions on communicating this to students to avoid misunderstandings ($n = 16$).

The category of GenAI use and governance in education also included information on the necessity of critical thinking when using GenAI. Thirteen HEIs made information available regarding the limitations of GenAI, and fourteen HEIs included guidance on source criticism. A total of 11 HEIs provided specific information on the risk of false information, while ten addressed the issue of bias.

In addition, there was information on the need for knowledge and skills in using GenAI. Twelve HEIs specifically addressed the personal responsibility of the individual (students and/or staff) to keep up to date with developments in the field of GenAI, whereas five added that it is the HEI's responsibility to provide such education and training.

Information governance

In HEIs formal guidelines and policy documents this category includes statements regarding the handling of information, particularly information shared with the GenAI tool. All guidelines included writings on the risk of sharing sensitive, confidential, or copyrighted material, except for one HEI, that only addressed the application of GenAI in education. Some ($n = 4$) also explained the risk of making information available to unauthorized people and a part of the GenAI tool. Six HEIs referred to the General Data Protection Regulation (GDPR). GDPR is a data privacy law that came into effect in 2018 and applies to all organizations processing personal data of individuals within the European Union (EU) and the European Economic Area (EEA).

Like formal guidelines and policy documents, many HEIs public websites included information on how sensitive ($n = 17$), confidential ($n = 3$), and, or copyrighted information ($n = 6$) should be handled in relation to the use of GenAI. This was a category where the text was rarely elaborated but rather included clear rules or approaches, like referring to GDPR ($n = 7$). However, the amount of information varied between HEIs, but common was information about the risk of sharing personal data, which then risks becoming public knowledge and part of the information the GenAI tool will use in the future.

Some HEIs also addressed copyright ($n = 6$), both from the perspective of not sharing copyrighted material and from the perspective that GenAI cannot claim copyright to the material the tool creates.

Ethical and social impact

Ethical and social impact was an uncommon area elaborated on in the formal documents, but some guidelines ($n = 5$) addressed the potential ethical problems that the use of GenAI may create. Four HEIs had longer statements about how the institution must ensure that students have equal opportunities in their studies and access to GenAI tools. Two HEIs highlighted that teachers must be aware of how GenAI affects and is influenced by society, and one HEI noted that the use of GenAI can reinforce prejudice and inequality.

On HEIs public websites, ethical and social impact was the category that contained the least text. Although, like formal guidelines and policy documents, it was mentioned on several websites ($n = 13$) that there are ethical considerations that must be considered in the use of GenAI, this was not always described further. For those HEIs that had information that focused on the ethical and social impacts of GenAI, issues such as equal access to GenAI tools ($n = 9$), the risk of reinforcing prejudice ($n = 5$), and the impact of GenAI in society ($n = 3$) were addressed.

The right to equal access to GenAI tools was occasionally addressed ($n = 4$) in instructions for teachers, as they could not require students to use GenAI if they did not ensure that all students had this access. Some HEIs also informed that if the teacher expects the students to use a GenAI tool that incurs a cost, this must be clearly communicated before the course starts.

GenAI essentials

An exclusive category for the HEIs public websites was information on GenAI Essentials, which includes descriptions on how GenAI works, is used, and is managed in more general terms. However, this kind of information varied widely between HEIs. Some HEIs ($n = 5$) had extensive information on GenAI as a technology and its deployment in society, while others ($n = 4$) only described specific tools. Other examples of information in this category were suggestions on writing prompts, which GenAI tools can be used for different tasks, and where to find more information.

Of the 27 HEIs that had website information, 15 provided information about what GenAI is on their websites. Fourteen HEIs included information about GenAI tools, while slightly fewer, 11 HEIs, offered guidance on how to use GenAI. Additionally, two HEIs referred to guidelines from external organizations for further guidance.

Discussion

The main findings of this study showed that there are generally few formal guidelines and policy documents regarding GenAI. Some HEIs either lacked formal guidelines or were still developing them, whereas other HEIs more commonly had established guidelines in place for both staff and students. Concerning websites, some HEIs often informed about GenAI, although the type of information varied, whereas other HEIs often lacked information. Formal guidelines were not always available on websites. This indicates a lack of systematic approach by HEIs to GenAI use, which may also reflect the different stages of policy development across different institutions. However, national guidelines are needed to direct this work. The analysis identified five categories. The following four categories common for HEI-provided documents and information on websites: Academic

integrity, GenAI use and governance in education, Information governance, and Ethical and social impact. The fifth category, GenAI essentials, was unique to websites.

The integration of GenAI in HEIs is a developing area that presents both opportunities and challenges. This study highlights that while formal GenAI guidelines and policy documents are still sparse, some HEIs tend to have more formalized guidelines and policies compared to other HEIs, which often provide more extensive GenAI-related information on their websites. This discrepancy may stem from resource availability and varying stages of GenAI policy development. One can only speculate, but resource availability seems to be a major challenge for many HEIs globally. This could be due to limited staffing, budget constraints, and competing priorities often make it difficult to allocate sufficient time and expertise to policy development or revision. Additionally, policy work can be complex and time-consuming, requiring collaboration across multiple departments and alignment with both HEI-specific and external regulations, which further complicates timely preparedness. These challenges are not unique to a specific region but are commonly observed worldwide. This work is guided by national guidelines on GenAI that informs on focal points such as sustainability and trustworthiness (Galindo et al. 2021). However, these are general and HEIs must therefore contextualize formulations for relevance and adequacy.

A prominent finding is the emphasis on academic integrity across all HEIs. The increased range of GenAI tools such as ChatGPT and other generative GenAI systems raises concerns about plagiarism and the authenticity of student work. Several studies have emphasized these challenges, noting that while GenAI can enhance learning, it also poses risks related to academic misconduct (Cotton et al. 2024; Dehouche 2021). Educators often hold dual roles as researchers, and their practices, both ethical and unethical, can significantly influence the behaviours and values of their students (Fanelli 2009). This intersection highlights the importance of aligning academic integrity with research integrity, as the norms modelled in research settings inevitably shape educational environments. As the use of GenAI expands, concerns about transparency, authorship, and responsible use are increasingly relevant across both domains (Anderson and Steneck 2011; Editorial 2023). HEIs' guidelines often highlight the importance of transparency in GenAI use, holding students, teachers, and researchers accountable for their work. In such cases declaring the use of specific GenAI can be important in maintaining academic integrity, ensuring proper attribution, and building trust in educational and research environments. However, the extent to which GenAI can be used and the specific scenarios in which it is appropriate require further discussion (Gulumbe et al. 2024; Friederich and Symons 2023). Clear guidelines may be needed to define acceptable and ethical GenAI use in tasks such as writing, problem-solving assignments, and assessments while addressing potential risks like academic misconduct and over-reliance on GenAI-generated content. Further, recently computational thinking has emerged as one of the key competencies to enable learners to thrive in an GenAI-powered society. By focusing on computational thinking, HEIs can equip students, staff and researchers with the skills to understand and create technology, better preparing them for future challenges (Li et al. 2020).

Interestingly, the study reveals that some HEIs focus more on GenAI literacy, informing and through this educating students and staff on how GenAI works and its potential applications. In contrast, some HEIs emphasize clear regulations and structured

guidelines. This trend aligns with previous research that underscores the necessity of equipping students and educators with GenAI-competencies to foster responsible use, such as creativity and critical thinking (Luckin et al. 2022; Zhai 2022; Southworth et al. 2023b). With this in mind, new forms of assessments are needed that are in line with GenAI-competencies and that also preserves legal certainty in examinations (März et al. 2024).

The rapid development of GenAI technology presents an ongoing challenge for HEIs. A previous study indicates that maintaining up-to-date policies amidst continuous advancements is a significant hurdle (Akgun and Greenhow 2022). The current study further identified five categories in GenAI-related documentation: Good academic practice, GenAI use and governance in education, Information governance, Ethical and social impact, and GenAI essentials, with the latter being unique to public websites. Ethical and social impacts remain underexplored, indicated in another study that calls for more comprehensive discussions on GenAI's broader societal implications (Knox 2020).

The necessity for national guidelines is evident from the study's findings. Without overarching directives, HEIs may struggle with inconsistent GenAI policies, potentially affecting the quality of education and research integrity. It has been highlighted that equitable access to GenAI tools is essential, particularly as GenAI becomes an integral part of education (Chinta et al. 2024). This study reinforces that view, showing that while GenAI use is growing, there may be a gap in ensuring that all students have equal access to these tools.

HEIs also face the challenge of balancing the potential benefits of GenAI with ethical considerations. A study highlighted that while GenAI can personalize learning and enhance administrative efficiency, it also raises concerns about data privacy, bias, and the digital divide (Moorhouse 2024). This study reflects similar concerns, particularly regarding information governance and the handling of sensitive data.

Moreover, the study underscores the importance of GenAI literacy as a crucial component of higher education. As GenAI tools become more accessible, students and staff must be well-versed in their use, limitations, and ethical implications (Zawacki-Richter et al. 2019). The inclusion of GenAI essentials on HEI websites indicates a growing recognition of this need, but the variance in the depth of information provided suggests that more work is needed.

Future research should explore how HEIs can develop dynamic GenAI policies that adapt to technological advancements while maintaining academic integrity. Additionally, studies should investigate the effectiveness of current GenAI policies in addressing ethical risks and promoting equitable access to GenAI tools. Collaborative efforts between HEIs, policymakers, and technology providers will be essential in creating a sustainable GenAI governance framework in education.

Strengths and limitations

This study provides a comprehensive view of the information available on HEIs websites, however, while some HEIs have information on GenAI gathered in specific sections on their public website, making it easy to find, other HEIs may have information on GenAI interspersed in different blocks of information, such as IT security or exam rules, making it harder to search for specifically. Search engines on the different websites may be more or less effective, depending on how HEIs have built their websites. In addition,

information on public websites changes over time and may thus not represent the information available within the organization, as information regarding GenAI in teaching and learning can be available on password-protected pages that could not be accessed. Further, some guidelines were sent via e-mail, which may not represent the full set of institutional policies. It is plausible that respondents selectively shared documents they deemed most appropriate or favorable, rather than providing a comprehensive overview. This selective disclosure could introduce bias. Considering this, information about GenAI may have been missing and this limitation must be considered when interpreting and generalizing the results.

Another limitation of this study is that the materials analyzed, i.e. policy documents and guidelines, are typically written in response to perceived risks or institutional concerns, particularly those related to academic integrity. As such, they are less likely to elaborate on potential opportunities or positive impacts of GenAI in teaching and learning. This may result in a skewed representation of the institutional discourse, where concerns such as misuse and cheating are foregrounded, while potential pedagogical innovations remain underrepresented. This does not necessarily indicate an absence of optimism within the institutions themselves but rather reflects the nature and purpose of the materials selected for analysis.

Nevertheless, this result can be an important contribution to the discussion on how formal guidelines can or should be developed and what factors may be important to address. The result also allows individual HEIs to compare their guidelines or information and decide how to proceed.

Conclusion

This study shows that the integration of GenAI in higher education, in Sweden, remains at an early and uneven stage. While some institutions have formalized guidelines for staff and students, others remain in the developmental phase, highlighting a broader lack of a systematic approach. This discrepancy underscores the urgent need for clear national directives that can help HEIs balance GenAI's benefits with ethical considerations. A consistent emphasis on good academic practice reveals that transparent policies are vital for mitigating risks such as plagiarism and over-reliance on GenAI. Furthermore, the varying focus on GenAI literacy versus strict regulation indicates that HEIs must tailor their approaches according to available resources and specific needs, all while addressing ethical challenges, data privacy, and equitable access. Rapid technological advancements further complicate this landscape, calling for continuous policy updates to ensure fairness and data security. The observed inconsistency across institutions suggests that each HEI is currently developing its own approach in isolation. Therefore, the urgent need for national directives and the call for further research should not be viewed separately, but as complementary efforts that must be coordinated. A national strategy that combines timely policy advice with empirical insights can help ensure both coherence and flexibility in addressing the evolving GenAI landscape. Moreover, given the concerns raised in this study regarding threats to academic integrity, HEIs may need to consider reinforcing traditional assessment practices, such as face-to-face proctored on-site examinations or viva voces, as interim safeguards while more robust digital integrity solutions are developed. Future research should focus on developing dynamic, adaptable policies

through collaborative efforts that safeguard educational integrity as the GenAI environment evolves.

Abbreviations

GenAI	Generative Artificial Intelligence
EEA	European Economic Area
EU	European Union
HEIs	Higher Education Institutions
QF-EHEA	Qualifications Framework for the European Higher Education Area
GDPR	General Data Protection Regulation

Author contributions

NC, MC, AG, AK contributed to the conceptualization, and methodology. CE, HK contributed to data collection, data extraction, data analysis and interpretation. CE, HK, MC, NC wrote the original draft, while AG, AK reviewed the manuscript. Finally, all authors read and revised the manuscript prior to submission. CE, HK contributed equally and have shared first authorship.

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Data availability

Data generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval and consent to participate

Not applicable. Data was either publicly available on institutional websites or when the authors contacted the HEIs they asked to be supplied with or directed to publicly available data.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Statement about originality

The research conducted in this manuscript is original, not presently under consideration for publication elsewhere, free of conflict of interest and conducted by the highest principles of human subject welfare. The authors alone are responsible for the content and writing of the paper.

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Not applicable.

Artificial intelligence

No generative artificial intelligence has been used in any part of the analysis or writing.

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References

H.R.6216 I (2020) National Artificial Intelligence Initiative Act of 2020. Congress.gov

Akgun S, Greenhow C (2022) Artificial intelligence in education: addressing ethical challenges in K-12 settings. AI Ethics 2(3):431–440

Ali O, Murray PA, Momin M, Dwivedi YK, Malik T (2024) The effects of artificial intelligence applications in educational settings: challenges and strategies. Technol Forecast Soc Chang 199:123076. https://doi.org/10.1016/j.techfore.2023.123076

Anderson MS, Steneck NH (2011) The problem of plagiarism. Urologic Oncology: Seminars Original Investigations 29(1):90–94. https://doi.org/10.1016/j.urolonc.2010.09.013

Ansari AN, Ahmad S, Bhutta SM (2024) Mapping the global evidence around the use of ChatGPT in higher education: A systematic scoping review. Educ Inform Technol 29(9):11281–11321

Celik I, Dindar M, Muukkonen H, Järvelä S (2022) The promises and challenges of artificial intelligence for teachers: A systematic review of research. TechTrends 66(4):616–630

Chan CKY (2023) A comprehensive AI policy education framework for university teaching and learning. Int J Educational Technol High Educ 20(1):38. https://doi.org/10.1186/s41239-023-00408-3

Chan CKY, Hu W (2023) Students' voices on generative AI: perceptions, benefits, and challenges in higher education. Int J Educational Technol High Educ 20(1):43. https://doi.org/10.1186/s41239-023-00411-8

Chen L, Chen P, Lin Z (2020) Artificial intelligence in education: A review. Ieee Access 8:75264–75278

Chinta SV, Wang Z, Yin Z, Hoang N, Gonzalez M, Quy TL, Zhang W (2024) FairAIED: Navigating fairness, bias, and ethics in educational AI applications. arXiv preprint arXiv:240718745

Cotton DRE, Cotton PA, Shipway JR (2024) Chatting and cheating: ensuring academic integrity in the era of ChatGPT. Innovations Educ Teach Int 61(2):228–239. https://doi.org/10.1080/14703297.2023.2190148

Dehouche N (2021) Plagiarism in the age of massive generative Pre-trained Transformers (GPT-3). Ethics Sci Environ Politics 21:17–23
Editorial N (2023) Tools such as ChatGPT threaten transparent science; here are our ground rules for their use. Nature 613(7945):612. https://doi.org/10.1038/d41586-023-00191-1
Elo S, Kyngäs H (2008) The qualitative content analysis process. J Adv Nurs 62(1):107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x
Fanelli D (2009) How many scientists fabricate and falsify research?? A systematic review and Meta-Analysis of survey data. PLoS ONE 4(5):e5738. https://doi.org/10.1371/journal.pone.0005738
Floridi L, Cowls J, Beltrametti M, Chatila R, Chazerand P, Dignum V, Luetge C, Madelin R, Pagallo U, Rossi F, Schafer B, Valcke P, Vayena E (2018) AI4People—An ethical framework for a good AI society: opportunities, risks, principles, and recommendations. Mind Mach 28(4):689–707. https://doi.org/10.1007/s11023-018-9482-5
Friederich S, Symons J (2023) Norms for academic writing in the era of advanced artificial intelligence. Digit Soc 2(3):48. https://doi.org/10.1007/s44206-023-00079-7
Galindo L, Perset K, Sheeka F (2021) An overview of national AI strategies and policies
Ginting D, Sabudu D, Barella AM, Woods R, Kemala M (2024) Student-centered learning in the digital age: in-class adaptive instruction and best practices. Int J Eval Res Educ 13(3):2006–2019
Gulumbe BH, Audu SM, Hashim AM (2024) Balancing AI and academic integrity: what are the positions of academic publishers and universities? AI & SOCIETY. https://doi.org/10.1007/s00146-024-01946-8
Häkkinen P, Järvelä S, Mäkitalo-Siegl K, Ahonen A, Näykki P, Valtonen T (2017) Preparing teacher Students for 21 St century learning practices (PREP 21): A framework for enhancing collaborative problem solving and Strategic learning skills. Journal of teacher education
Imran M, Almusharraf N, Abdellatif MS, Abbasova MY (2024) Artificial intelligence in higher education: enhancing learning systems and transforming educational paradigms. Int J Interact Mob Technol (iJIM) 18(18):34–48. https://doi.org/10.3991/ijim.v18i18.49143
Kamalov F, Santandreu Calonge D, Gurrib I (2023) New era of artificial intelligence in education: towards a sustainable multifaceted revolution. Sustainability 15(16):12451
Kaplan-Rakowski R, Grotewold K, Hartwick P, Papin K (2023) Generative AI and teachers' perspectives on its implementation in education. J Interact Learn Res 34(2):313–338
Knox J (2020) Artificial intelligence and education in China. Learn Media Technol 45(3):298–311
Labadze L, Grigolia M, Machaidze L (2023) Role of AI chatbots in education: systematic literature review. Int J Educational Technol High Educ 20(1):56
Li Y, Schoenfeld AH, diSessa AA, Graesser AC, Benson LC, English LD, Duschl RA (2020) Computational thinking is more about thinking than computing. J STEM Educ Res 3(1):1–18. https://doi.org/10.1007/s41979-020-00030-2
Luckin R, Cukurova M, Kent C, Du Boulay B (2022) Empowering educators to be AI-ready. Computers Education: Artif Intell 3:100076
März M, Himmelbauer M, Boldt K, Oksche A (2024) Legal aspects of generative artificial intelligence and large Language models in examinations and theses. GMS J Med Educ 41(4):Doc47
Moorhouse BL (2024) Virtual teaching abroad during initial teacher education: pre-service teachers' professional learning. J Educ Teach 50(3):390–402
Reiss M (2021) The use of AI in education: practicalities and ethical considerations. Lond Rev Educ 19. https://doi.org/10.14324/LRE.19.1.05
Schei OM, Møgelvang A, Ludvigsen K (2024) Perceptions and use of AI chatbots among students in higher education: A scoping review of empirical studies. Educ Sci 14(8):922
Seufert S, Guggemos J, Sailer M (2021) Technology-related knowledge, skills, and attitudes of pre-and in-service teachers: the current situation and emerging trends. Comput Hum Behav 115:106552
Southworth J, Migliaccio K, Glover J, Glover JN, Reed D, McCarty C, Brendemuhl J, Thomas A (2023a) Developing a model for AI across the curriculum: transforming the higher education landscape via innovation in AI literacy. Computers Education: Artif Intell 4:100127. https://doi.org/10.1016/j.caeai.2023.100127
Southworth J, Migliaccio K, Glover J, Reed D, McCarty C, Brendemuhl J, Thomas A (2023b) Developing a model for AI across the curriculum: transforming the higher education landscape via innovation in AI literacy. Computers Education: Artif Intell 4:100127
Zawacki-Richter O, Marín VI, Bond M, Gouverneur F (2019) Systematic review of research on artificial intelligence applications in higher education–where are the educators? Int J Educational Technol High Educ 16(1):1–27
Zhai X (2022) ChatGPT user experience: Implications for education. Available at SSRN 4312418

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