

# Teaching in the Age of AI: Understanding University Teachers' Ethical Concerns and Perspectives

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## Abstract

Generative AI and large language models have already changed many areas of society, and education is not an exception. In this paper, we present a study where 302 higher education teachers were surveyed about their experiences, attitudes, and ethical perceptions towards AI in education. The first instance of the survey (N=177) was conducted in late spring 2024, and the second one (N=125) less than a year later, with a focus on technical universities. According to the results, the teachers in general do not really use AI tools in everyday education, although there are a few exceptions who use them quite a lot. The main reason for not using AI may be a lack of proper training, as it seems that the universities either do not offer such training or teachers do not participate in it. Regardless, teachers find teaching AI to students very important, but also seem to agree that the use of AI tools has increased cheating. Moreover, the teachers find the ethical aspects and data security very important when AI is used. In the paper, we provide a detailed look at the results, with focus on ethical aspects, and offer recommendations based on the analysis.

## Keywords

Artificial intelligence, Higher-education, Teachers, Survey, Ethics

## 1. Introduction

The introduction of generally usable large language models in late 2022 quickly changed society in many ways. It has also already affected education. Still, it seems that while teachers are interested in the modern AI tools and willing to try them as part of their education, they typically have little personal experience with actually using the tools [1]. The teachers may have an open mind for adapting such tools, but not enough training to start using them [2]. There are also various ethical issues related to using AI in education, as well as issues with copyright of the produced material, and privacy and data security concerns that dictate what kind of educational usage is possible.

The introduction of LLMs has raised ethical issues, such as those related to student data privacy [3], including the increased risk of information monopolies and the lack of suitable privacy protection regulations. New generative AI tools also present new problems in copyright-related issues [4], the accuracy of the content produced [5], and the transparency of using AI tools in education [6]. The dedicated frameworks addressing the problem, such as FAST (Fairness, Accountability, Transparency, and Ethics [7]), underscore the importance of researching the ethical implications of using AI in education.

In this paper, we present a survey about teachers' experiences, attitudes, and ethical perspectives towards AI (in this context, meaning openly available generative AI tools). The survey was conducted in two instances, with the first instance taking place in late spring of 2024 and the second one less than a year later. The respondents were higher education teachers from universities in Nordic and Baltic countries. The survey consisted of background information and four sections, containing statements about AI usage, training, attitudes and expectations, and ethical perspectives towards AI. In addition,

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the teachers could write open comments to further illustrate how they use (or why they do not use) them in an educational context.

The rest of this article is structured as follows: in the second section, we provide a look at existing literature about AI in education. In the third section, we present the methodology of the study, including survey design, survey instances, and participants, and a look at how the data was analyzed. In the fourth section, we present a detailed look at the analyzed results. In section five, the results are discussed, and some limitations of the study are presented. Finally, conclusions and ideas for future research are given.

## 2. Related Work

It seems that most of the studies about teachers' AI usage focus on specific areas. For example, the adaptation of AI in language teaching has been studied frequently (for example, [8, 9, 10]). This is logical, since the large language models, as the name implies, are made for generating natural language responses (although they are nowadays utilized for generating other types of content as well). Other examples of studies in specific areas could be the ones done in mathematics [11], chemistry [12], or STEM subjects generally [13]. Many studies focusing on teachers' points of view seem to agree that the training of teachers to use AI is important. Since the teachers may lack the motivation to use AI, the training should be motivating and customized to meet the teachers' needs [14].

Teachers' attitudes towards AI naturally play a large role in adapting AI into teaching. Moreover, it seems that teachers' digital competence is associated with their attitudes towards AI [1], which further highlights the need for adequate training. In fact, it seems that the teachers' knowledge about AI directly correlates with positive attitudes towards using AI in education. Still, many teachers see AI as a threat while struggling to identify any specific reason why it is a threat [15]. Teachers' background also affects their attitudes: for example, science teachers may be more positive towards AI than other teachers [16].

One of the biggest concerns related to AI and education is the increasing levels of academic misconduct. This may also be difficult to perceive, as the number of students who use AI tools in non-acceptable ways may be many times higher than the number of students who admit to using them [17]. Moreover, it seems that the tools used to detect plagiarism are not very effective when modern AI tools are used [18]. Once again, teacher competence plays a role in this: if the students are instructed on how they can use AI tools properly in the course context, it is likely that the cheating with the tools also decreases [19]. While AI tools pose risks of academic misconduct, a proactive and ethical attitude by universities can address these concerns [20].

One problem in the adaptation of AI tools may be the lack of ethical guidance. Universities typically have generic policies for adapting AI, which may not be suitable for courses in different contexts [21]. Dabis and Csàki [22] identified important ethical dimensions for adapting AI in universities, including accountability, human oversight, transparency, and inclusiveness; they underline the need for humans to retain moral and legal responsibility in AI-related work. Adapting AI in education is a transformative process that requires addressing ethical concerns such as privacy, bias, and transparency [23].

## 3. Methodology

### 3.1. Survey Questions

The survey consisted of background information (the type of university, teaching and work experience, and pedagogical training) and four sections of statements. The Technology Acceptance Model [24] was used as a basis in formulating the questions, but the focus was shifted more heavily on the ethical concerns and aspects of the teachers. For this, we also utilized our previous experiences in conducting research about the ethical insight in learning analytics [25, 26, 27]. The first section was about teachers' experience using artificial intelligence in teaching, such as whether they had used AI tools for specific

educational purposes. The second section was about the amount of AI-related training they had received in their own institution. In the third section, the teachers were asked about their attitudes and expectations towards the use of AI in their field in the future, including whether they believe that AI will significantly change their field of work in automating or even replacing humans altogether, and the implications of AI in learning and academic misconduct.

The final, and for this paper, the most important section, was about teachers' ethical perspectives. In this section, the teachers were provided with thirteen statements about AI in education. There were questions about data security, copyright issues, and the transparency of using AI from both teachers' and students' points of view. All statements in all four sections were answered in a Likert scale of 1 to 5; individual statements for all sections are listed in the Results section. To ensure the internal validity of the survey, we calculated the Cronbach's alpha value for all questions. The value of  $\alpha = 0.85$  indicates good internal consistency.

### 3.2. Survey Instances and Participants

In this paper, two instances of the survey are included. The first instance was conducted in spring 2024. The survey was aimed at teachers in science universities and universities of applied science in Finland. A total of 177 teachers answered the survey. The link was provided via the existing connections of the authors, meaning that the focus was more in the technical fields (as discussed in detail in the next section). However, as seen in figure 1, there were respondents from diverse areas in higher education.

The second instance was conducted in early spring 2025 and was aimed at teachers in technical universities in Nordic and Baltic countries. A total of 125 teachers answered the second survey, making the total number of teachers participating 302. The questions in the two instances were similar except for one change: in both surveys, we listed a set of AI tools and asked whether the teachers knew or had used them. For the 2025 instance, this section was updated to include new tools. The rationale for conducting the second instance so quickly after the first one was twofold: first, we were interested to see if there were changes in teachers' attitudes or usage, as the progress of the models has been very swift, and new tools are presented all the time. Second, the Nordtek<sup>1</sup> community, which initiated the second instance, was interested to see if the perceptions of technical teachers differ from those of university teachers in general.

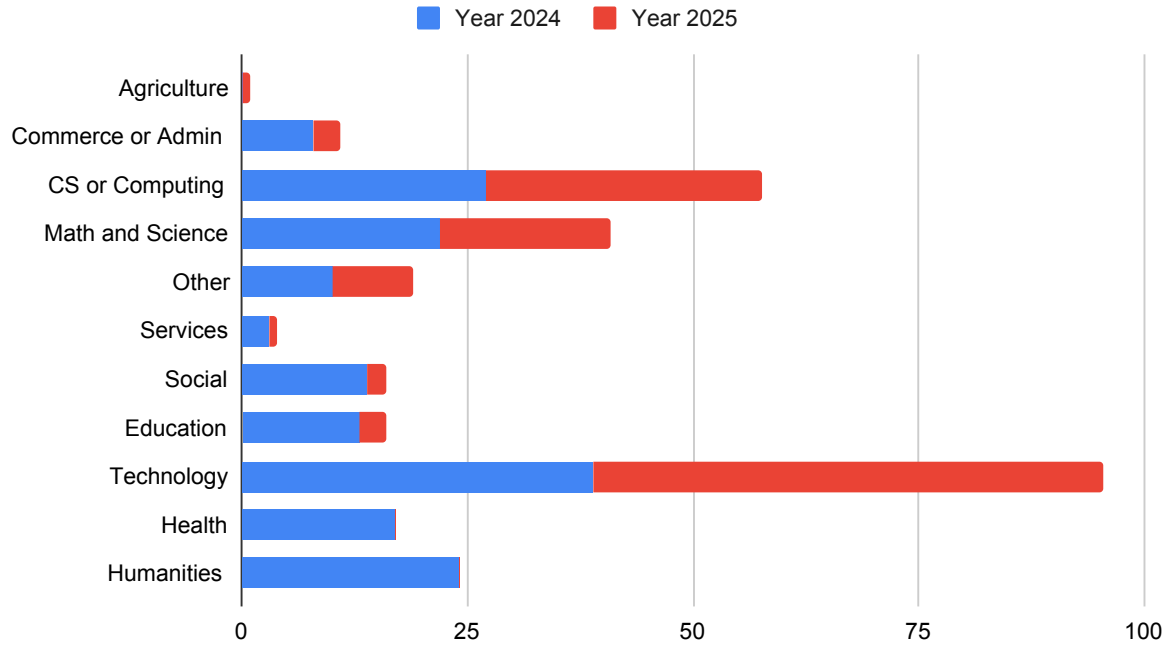
### 3.3. Data Analysis

The data was downloaded as a CSV file from the survey tool and first exported into a spreadsheet application to calculate basic descriptive statistics. For further analysis, Python with SciPy [28] library was used. First, we compared the differences in individual answers between 2024 and 2025 instances for two reasons: first, to find out if there are differences in technically oriented teachers and teachers from mixed fields, and second, to see if the general attitudes had changed from 2024 to 2025. The analysis of usage of specific AI tools, which was reported for the 2024 survey earlier (link suppressed for anonymity), did not reveal anything interesting with the new data. Hence, we decided to exclude reporting it for this article, especially since the focus is on ethical perspectives.

Next, we wanted to see if there were correlations between the perceptions revealed by the ethical questions and the perceptions in other sections. For this, we calculated a correlation matrix between all items in sections 1 to 3 and items in section 4. Finally, we grouped teachers based on different background variables (field of teaching, teaching experience, pedagogical experience, and whether they were from a science university or from a university of applied science). We then calculated the mean scores and differences in the ethical questions for these groups separately.

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<sup>1</sup><https://nordtek.net/>



**Figure 1:** The main area of teaching reported by the teachers at both instances of the survey.

**Table 1**  
Teachers' experience in teaching at the university level.

| Experience         | Survey '24 | Survey '25 | Total |
|--------------------|------------|------------|-------|
| 0 to 2 years       | 13.6%      | 7.2%       | 10.9% |
| 3 to 5 years       | 19.8%      | 8.0%       | 14.9% |
| 6 to 10 years      | 14.7%      | 10.4%      | 12.9% |
| 11 to 20 years     | 25.4%      | 37.6%      | 30.5% |
| More than 20 years | 26.6%      | 36.8%      | 30.8% |

## 4. Results

### 4.1. Demographics

The total number of teachers replying to the two surveys was 302: 177 teachers answered the 2024 survey, and 125 teachers answered the second survey in 2025. 83.4% of the teachers answering were from scientific universities, and the remaining 16.6% from universities of applied sciences. The main area of teaching of all respondents is displayed in Figure 1.

As seen in the Figure, the majority of teachers in both instances were from technology-related areas (including computer science). In the first survey, the background was more diverse, which is natural considering that the second survey was targeted specifically towards technology teachers. Teachers' teaching experience in higher education institutions is displayed in Table 1.

It seems that most of the teachers answering the surveys had more than 10 years of teaching experience (and almost one-third had more than 20 years). We did not ask for other demographic statistics such as age, gender, or location. However, since the survey was sent by email to institutions in Nordic and Baltic countries, it is likely that almost all of the teachers answering the surveys are currently teaching there.

**Table 2**

Teachers' experience in using AI tools for education (1 to 5, 5 highest). The p-values were calculated between 2024 and 2025 instances by using the Mann-Whitney U Test. An asterisk denotes that the difference is statistically significant.

|                                            | Survey '24 | Survey '25 | Total | p-value |
|--------------------------------------------|------------|------------|-------|---------|
| I have used AI to create lecture materials | 2.08       | 2.16       | 2.11  | 0.42    |
| I have used AI to create assignments       | 1.99       | 2.14       | 2.05  | 0.26    |
| I have used AI to assess assignments       | 1.38       | 1.38       | 1.38  | 0.24    |
| I have used AI to guide students           | 1.34       | 1.72       | 1.50  | <0.01*  |
| I have used AI to grade my students        | 1.26       | 1.12       | 1.20  | <0.01*  |
| I have used AI to create lecture videos    | 1.24       | 1.11       | 1.19  | 0.03*   |
| I have used AI to search for information   | 2.82       | 3.29       | 3.01  | <0.01*  |

**Table 3**

The amount of AI-related training the teachers had received in their organization (1 to 5, 5 highest).

|                                                                        | 2024 | 2025 | Total | p-value |
|------------------------------------------------------------------------|------|------|-------|---------|
| I have familiarized myself my organization's AI guidelines             | 3.94 | 3.53 | 3.77  | <0.01*  |
| I have received guidance on the use of AI to create teaching materials | 2.10 | 2.10 | 2.10  | 0.29    |
| I have received guidance on the use of AI to check assignments         | 1.38 | 1.56 | 1.45  | 0.42    |
| I have received guidance on the ethical use of AI in teaching          | 2.43 | 2.60 | 2.50  | 0.26    |
| I have received guidance on the application of AI in my university     | 2.35 | 2.61 | 2.46  | 0.08    |
| I have received other guidance on the use of AI                        | 2.44 | 2.29 | 2.38  | 0.11    |

## 4.2. Experience and Training

In the next sections, we asked the teachers about their experiences in using AI tools in education and how much training they had received for such usage. The answers to the statements about experience were given on a Likert scale from 1 to 5, where 1 was equal to "not at all" and 5 to "very much". The results are displayed in Table 2.

It seems that the teachers had minimal experience in using AI in education. There was a statistically significant increase ( $p < 0.05$ ) in using AI to guide students and to search for information between 2024 and 2025 instances; similarly, there was a significant drop in using AI to grade students, but the usage for grading in 2025 is still minimal. Overall, it seems that teachers hardly use AI in education for anything other than searching for information and creating lecture materials and assignments, although the latter is rare.

We also presented the teachers with statements about the AI-related training they had received. The results (again, answered in a Likert scale from 1 to 5, where 1 = Not at all and 5 = Very much) are displayed in Table 3.

According to the results, the teachers know their organization's AI-related guidelines very well; curiously, it seems that in the technically-focused 2025 instance, the teachers reported knowing them significantly worse than in the 2024 instance. Other than guidelines, it seems that the teachers have received only little training for using AI in education. This is very likely one of the reasons why they don't utilize AI tools in teaching.

## 4.3. Attitudes

In the next section, the teachers were asked about their attitudes and expectations towards AI. The questions were again answered in a 5-step Likert scale where 1 indicated "Totally Disagree" and 5 "Totally agree". The results are displayed in Table 4.

The teachers seem to agree that teaching students AI skills is very important for their future. Moreover, the teachers seem to agree that generally available AI tools increase academic misconduct. On the

**Table 4**

Teachers' attitudes and expectations toward AI (1 to 5, 1 = totally disagree, 5 = totally agree).

|                                                           | Survey '24 | Survey '25 | Total | p-value |
|-----------------------------------------------------------|------------|------------|-------|---------|
| AI has already changed my work significantly              | 2.97       | 2.87       | 2.92  | 0.26    |
| AI will significantly change my work in the coming year   | 3.49       | 3.40       | 3.45  | 0.35    |
| AI will replace me as a teacher                           | 1.43       | 1.47       | 1.45  | 0.06    |
| I will be able to automate my work with AI in the future  | 2.51       | 2.73       | 2.60  | 0.07    |
| AI will replace humans in the field I teach in the future | 1.50       | 1.81       | 1.63  | <0.01*  |
| The development of AI will support learning for all       | 3.17       | 3.38       | 3.25  | 0.05*   |
| Organizations know how to make the best use of AI already | 1.51       | 1.66       | 1.57  | <0.01*  |
| It is essential to teach students AI skills               | 4.20       | 3.78       | 4.02  | <0.01*  |
| The usage of AI tools increases cheating in studies       | 4.05       | 3.98       | 4.02  | 0.11    |

**Table 5**

Teachers' perceptions about ethical, privacy, and data security issues with AI (1 to 5, 1 = totally disagree, 5 = totally agree).

|                                                            | Survey '24 | Survey '25 | Total | p-value |
|------------------------------------------------------------|------------|------------|-------|---------|
| I always consider the ethical use of AI in my teaching     | 3.98       | 3.85       | 3.93  | 0.03*   |
| I consider data protection when using AI                   | 4.25       | 3.92       | 4.12  | <0.01*  |
| I consider privacy when using AI                           | 4.26       | 3.95       | 4.13  | <0.01*  |
| I take copyright into account when using AI                | 3.92       | 3.62       | 3.80  | 0.04*   |
| I read the terms of use of AI services before using them   | 2.26       | 2.22       | 2.25  | 0.45    |
| I always assess the accuracy of the content produced by AI | 4.62       | 4.42       | 4.54  | <0.01*  |
| I will always be honest and transparent about my use of AI | 4.36       | 4.43       | 4.39  | 0.35    |
| I can use AI to support automated reviews                  | 2.42       | 2.29       | 2.36  | 0.27    |
| I think AI increases equality                              | 2.09       | 2.19       | 2.13  | 0.36    |
| I guide my students in the ethical use of AI               | 3.72       | 3.19       | 3.50  | <0.01*  |
| I guide my colleagues in the ethical use of AI             | 3.03       | 2.72       | 2.90  | 0.03*   |
| My students report using AI honestly and transparently     | 2.22       | 2.48       | 2.33  | 0.04*   |
| I know when I'm using a service or a system that uses AI   | 2.81       | 2.99       | 2.88  | 0.11    |

other hand, teachers are positive about AI not replacing either them or people in general in their field in the future (although tech-focused teachers seem to be a little less positive about the latter). Finally, teachers tend to think that while AI will significantly change their work, the development will also support learning for everyone; however, the organizations don't know how to use AI yet.

#### 4.4. Ethical Perspectives

The final section in the survey was about ethical and data security issues related to using AI in education. Again, the statements were answered in a 5-step Likert scale, with 1 equal to "Totally disagree" and 5 equal to "Totally agree". The mean values for both surveys, a combined mean, and the p-value, calculated with the Mann-Whitney U test, measuring the difference between two instances of the survey, are displayed in Table 5.

Teachers seem to be especially careful about assessing the content produced by AI tools, although the tech-focused teachers see this as significantly less important (but still very high, overall). Moreover, teachers seem to be very honest about their use of AI, which may be partly because of their perception of students' unethical use of AI. Most teachers also find data protection, privacy, copyright, and in general, ethics highly important when using AI. Again, tech-focused teachers seem to be less cautious about the first three, while still having a relatively high mean value for all these statements.

We also calculated the Pearson correlations between all ethical statements with all the previous statements in survey sections 1 to 3. There were no strong correlations; the highest was between thinking that AI increases equality and believing that AI development will support learning for everyone



( $r = 0.42$ ). Moreover, believing that AI will automate one's work in the future correlated with using AI to support automated reviews ( $r = 0.38$ ) and thinking that AI increases equality ( $r = 0.37$ ). Finally, it seemed that people who familiarized themselves with the organization's guidelines also considered privacy ( $r = 0.31$ ) and data protection (0.36) more than other teachers. As expected, there was a negative correlation between believing that students report AI usage honestly and believing that using AI increases academic misconduct ( $r = -0.24$ ). Curiously, the teachers who don't always assess the accuracy of the content produced by AI tend to believe slightly more that AI will replace them in the future ( $r = -0.17$ ) than other teachers. All the aforementioned correlations were statistically significant ( $p < 0.01$ ).

Next, we divided all teachers into groups based on some available background variables to see if there are differences in their ethical perceptions. When comparing university teachers with teachers from universities of applied sciences, we found that the first group had a higher mean in almost all ethical statements. The latter had a higher mean in only two statements: in the one for using AI to support automated reviews, and in one for thinking that AI increases equality. Dividing the teachers based on their area of teaching also provided some interesting insights. First, humanities teachers seem to consider the ethical use of AI the most. Education teachers seem to be very cautious about data protection, privacy, and copyrights. They also have the highest belief on their students reporting the use of AI honestly, and guiding colleagues to use AI. Technology teachers find assessing the accuracy of AI-generated content and the transparency of using AI more important than other teachers. Also, CS and computing teachers have the highest belief that they can recognize when they are using an AI tool, which seems quite logical.

We then grouped the teachers based on their experience using two variables: the years they had taught at the university level, and the pedagogical training they had received. It seems that the teachers with the least experience (0 to 2 years) in university-level teaching consider copyright, data privacy, and ethical issues more than all other teachers. On the other hand, the teachers with the most experience (20+ years) take a bigger role in guiding their students and colleagues in using AI. It also seems that the teachers with the most pedagogical training (25 credits or more) are more cautious about ethical issues, copyright, and data protection. They also seem to be the most transparent about their use of AI.

#### **4.5. Open Comments**

At the end of the survey, teachers could leave open-ended comments about AI usage and ethical concerns. Most of the comments were negative and raised concerns about using AI. Some teachers addressed the quality of AI-produced artifacts: One teacher wrote, "AI-generated content in my field is usually of such poor quality that it is easily recognizable." Another teacher stated, "For me, double- and triple-checking AI results is crucial. It fails so often and makes so many mistakes that I find it totally unreliable as a good source of knowledge." Teachers were also concerned about the impact on learning: One teacher said, "AI can significantly worsen learning, and our instruments for measuring it must be reconsidered." Some teachers were more specific about the reasons: "AI gives students a false image of their knowledge and leads to worse learning outcomes", and "AI increases speed but reduces quality. Students do not understand the results it produces, even if they are correct."

Some teachers commented that teaching AI skills to students is important, but only after students have developed sufficient skills in their subject to accurately evaluate the AI's output. Additionally, one teacher expressed concern about teaching AI skills to other teachers: "The university needs to educate teachers. For example, I don't know how to address ethics in AI." Another teacher raised concerns at the AI developer level: "I'm looking forward to proper regulations being developed and enforced on companies creating and using AI tools with respect to data protection, privacy, safety, and copyright." Many teachers were concerned that AI would provide new opportunities for students to cheat, for example, "Now, the opportunity to cheat has increased because of AI," and "AI destroys learning. Students are really cheating." Although there weren't many positive comments, one teacher saw opportunities as well: "AI is fantastic at generating ideas and summaries. Its output sounds good and is a good starting point for my own work."

## 5. Discussion

Teachers seem to consider the ethical perspectives, copyright, and data privacy issues to be very important. This was particularly evident among younger teachers, those with extensive pedagogical training, and educators. Conversely, some teachers found the issues to be overly significant. One teacher mentioned in the open comments that “no one cared about the privacy of Google searches or using Google Translate before,” referencing the fact that these models are also LLMs. Almost all teachers thought it was important to assess the accuracy of AI-generated content and be transparent about using AI. This probably references students’ use of AI tools as well. Nevertheless, teachers rarely guide their students or colleagues in the ethical use of AI; again, educational teachers and those with the most pedagogical training were exceptions.

The open comments also seem to highlight ethical concerns. Teachers are concerned about the quality of AI-produced artifacts and their effect on students. According to some teachers, overusing AI leads to a decline in students’ cognitive skills. In fact, studies (see [29], for example) show similar results. Some teachers reported needing more training, especially in the ethical aspects of AI. They also demanded more responsibility from the companies developing the AI tools regarding ethical and data security issues. Nevertheless, student ethical misconduct seems to be the biggest concern of the respondents. Many teachers think that, since freely and openly available AI tools have made cheating easier, students frequently take advantage of this.

Currently, it seems that teachers are not using AI for education. While using AI tools for information retrieval and idea generation seems common, using them for actual educational purposes is rare. About one-third of teachers have tried using AI tools to create lecture materials or assignments, but very few use them for assessment or grading. Based on teachers’ comments, there seem to be at least two reasons for this: first, teachers don’t think the quality of AI-created materials is high enough for educational use. Second, teachers recognize the technical, ethical, and legal issues involved in using AI tools to assess students’ work. Furthermore, while some teachers report using AI tools frequently for various purposes, others report not using them at all because they are “useless in my field of teaching” or they “don’t have time to learn how to use them.”

One of the main reasons teachers aren’t using AI is likely a lack of proper training. Although teachers seem familiar with their organizations’ AI-related rules and regulations, few have received training on using AI in an educational setting. Eighty-two teachers—less than a third of all respondents—reported having received training to create materials, and only sixteen had been trained to evaluate responses. Alarmingly, only 82 teachers reported receiving guidance on ethically using AI in teaching. Teachers will not use AI if they do not know how to use the tools or how to use them in an ethically sustainable manner. This highlights the need for better training, which is in line with previous studies [14].

Teachers seem to agree that teaching AI tools is essential for the future and that AI will significantly change their work. However, they seem to be quite positive that AI cannot fully replace either them or people in their field in the industry. Only 4 teachers reported believing that AI will replace them in the future. Teachers were also sceptical about organizations’ skills in using AI, which probably reflects their own experiences in their own organizations (but seems to be a wider issue also [21]). Still, the biggest worry seems to be the academic misconduct: two-thirds of the respondents believe that AI increases cheating. In the open comments, teachers reported discarding remote exams or even moving back to pen and paper exams, and in general, difficulties in evaluation and in recognizing the use of AI.

All in all, the teachers’ usage, experiences, and attitudes towards all aspects of AI varied quite a lot. Some teachers seem to find the potential benefits huge and already use the tools for numerous different tasks, while others feel left behind. Many teachers also recognize potential threats and issues. As one teacher commented, “I’m looking forward to proper regulations being developed and enforced on companies creating AI tools and using AI tools with respect to data protection, privacy, safety, and copyright”. Another one added that “The use of AI includes many large ethical threats, which should be considered critically”. A third teacher went as far as “If I could decide, AI would disappear today”. The comments and the analyzed answers in general seem to underline the fact that teachers are not prepared or trained well enough for the big change. As we have probably only seen the first wave of the



changes, the organizations need to take a bigger responsibility for training the teachers and regulating the tools, but also addressing the ethical concerns [22, 23].

There are some limitations to this study that need to be considered. First, we did not include too many background variables. Variables such as age or gender could have provided more insights into the differences of teachers' perspectives; on the other hand, we purposely did not want to collect too much personal information. The sampling can be seen as somewhat biased, as the majority of teachers answering the surveys were from technical areas (including computer science and computing), which very likely has an effect on the results. However, teachers from those fields may also be more likely to answer surveys about AI because of their familiarity with the topic. Finally, we should consider if the survey provided enough possibilities for non-AI-minded teachers to provide their opinion, as one of the teachers commented that "I do not use AI if possible and find the survey weak as it has no option to mention that it disgusts - I sense this is political and therefore not scientific", which surely was not our intention.

## 6. Conclusion and Future Work

AI is very likely here to stay, whether we want to accept it or not. It seems that the teachers are in very different positions regarding their use of AI, as some are very fluent about using the tools, and others are struggling or reluctant to adapt them. Still, the teachers seem to argue that ethical consideration is very important when using AI, but also that academic misconduct is more common because of such tools. More training and better ethical guidelines are needed in the institutions to foster the correct kind of AI usage among teachers and students. In the future, it would be useful to repeat the study as the AI tools and methodology around using them keep changing fast, but also try to get more respondents from diverse areas of education. It would also be interesting to repeat the study at the high school level, for example. Moreover, it would be interesting to utilize something like AILQ, the AI literacy questionnaire [30] to see how the results compare with it.

## Declaration on Generative AI

During the preparation of this work, the authors used Grammarly integrated into Overleaf and DeepL in order to: Grammar and spelling check. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

## References

- [1] H. Galindo-Domínguez, N. Delgado, L. Campo, D. Losada, Relationship between teachers' digital competence and attitudes towards artificial intelligence in education, *International Journal of Educational Research* 126 (2024) 102381.
- [2] C. Fissore, F. Floris, V. Fradiante, M. Marchisio Conte, M. Sacchet, et al., From theory to training: Exploring teachers' attitudes towards artificial intelligence in education, in: *Proceedings of the 16th International Conference on Computer Supported Education*, volume 2, SCITEPRESS–Science and Technology Publications, 2024, pp. 118–127.
- [3] L. Huang, Ethics of artificial intelligence in education: Student privacy and data protection, *Science Insights Education Frontiers* 16 (2023) 2577–2587.
- [4] M. Zahariev, et al., Legal and ethical challenges from copyright perspective of implementing artificial intelligence in education, in: *Conference Proceedings. The Future of Education 2024*, 2024.
- [5] A. Jančařík, O. Dušek, The problem of ai hallucination and how to solve it, in: *European Conference on e-Learning*, doi, volume 10, 2024.
- [6] M. A. Chaudhry, M. Cukurova, R. Luckin, A transparency index framework for ai in education, in: *International conference on artificial intelligence in education*, Springer, 2022, pp. 195–198.

- [7] B. Memarian, T. Doleck, Fairness, accountability, transparency, and ethics (fate) in artificial intelligence (ai) and higher education: A systematic review, *Computers and Education: Artificial Intelligence* 5 (2023) 100152.
- [8] A. Nurjanah, I. N. Salsabila, A. Azzahra, R. Rahayu, N. Marlina, Artificial intelligence (ai) usage in today's teaching and learning process: A review, *Syntax Idea* 6 (2024) 1517–1523.
- [9] F. Huang, Y. Wang, H. Zhang, Modelling generative ai acceptance, perceived teachers' enthusiasm and self-efficacy to english as a foreign language learners' well-being in the digital era, *European Journal of Education* 59 (2024) e12770.
- [10] H. Ji, I. Han, Y. Ko, A systematic review of conversational ai in language education: Focusing on the collaboration with human teachers, *Journal of Research on Technology in Education* 55 (2023) 48–63.
- [11] T. T. Wijaya, M. Su, Y. Cao, R. Weinhandl, T. Houghton, Examining chinese preservice mathematics teachers' adoption of ai chatbots for learning: Unpacking perspectives through the utaut2 model, *Education and Information Technologies* (2024) 1–29.
- [12] R. Blonder, Y. Feldman-Maggor, Ai for chemistry teaching: Responsible ai and ethical considerations, *Chemistry Teacher International* 6 (2024) 385–395.
- [13] M. Beege, C. Hug, J. Nerb, Ai in stem education: The relationship between teacher perceptions and chatgpt use, *Computers in Human Behavior Reports* 16 (2024) 100494.
- [14] Y. Aljemely, Challenges and best practices in training teachers to utilize artificial intelligence: a systematic review, in: *Frontiers in Education*, volume 9, Frontiers Media SA, 2024, p. 1470853.
- [15] O. Yetişensoy, Tomorrow's teachers and artificial intelligence: Exploring attitudes and perceptions of turkish prospective social studies teachers, *Eurasian Journal of Teacher Education* 5 (2024) 1–31.
- [16] O. U. Aktulun, K. Kasapoglu, B. Aydogdu, Comparing turkish pre-service stem and non-stem teachers' attitudes and anxiety toward artificial intelligence., *Journal of Baltic Science Education* 23 (2024) 950–963.
- [17] H. M. Nguyen, D. Goto, Unmasking academic cheating behavior in the artificial intelligence era: Evidence from vietnamese undergraduates, *Education and Information Technologies* 29 (2024) 15999–16025.
- [18] R. K. Goel, M. A. Nelson, Do college anti-plagiarism/cheating policies have teeth in the age of ai? exploratory evidence from the internet, *Managerial and Decision Economics* 45 (2024) 2336–2347.
- [19] D. R. Firth, M. Derendinger, J. Triche, Cheating better with chatgpt: A framework for teaching students when to use chatgpt and other generative ai bots., *Information Systems Education Journal* 22 (2024) 47–60.
- [20] D. R. Cotton, P. A. Cotton, J. R. Shipway, Chatting and cheating: Ensuring academic integrity in the era of chatgpt, *Innovations in education and teaching international* 61 (2024) 228–239.
- [21] M. A. Vetter, B. Lucia, J. Jiang, M. Othman, Towards a framework for local interrogation of ai ethics: A case study on text generators, academic integrity, and composing with chatgpt, *Computers and composition* 71 (2024) 102831.
- [22] A. Dabis, C. Csáki, Ai and ethics: Investigating the first policy responses of higher education institutions to the challenge of generative ai, *Humanities and Social Sciences Communications* 11 (2024) 1–13.
- [23] S. Ray, D. Ray, Artificial intelligence in education: navigating the nexus of innovation and ethics for future learning landscapes, *International Journal of Research-GRANTHAALAYAH* 11 (2024) 163–174.
- [24] N. Marangunić, A. Granić, Technology acceptance model: a literature review from 1986 to 2013, *Universal access in the information society* 14 (2015) 81–95.
- [25] M. Nevaranta, K. Lempinen, E. T. Kaila, Students' perceptions about data safety and ethics in learning analytics, in: *CEUR Workshop Proceedings*, volume 2737, R. Piskac c/o Redaktion Sun SITE, Informatik V, RWTH Aachen, 2020, pp. 23–37.
- [26] M. Nevaranta, K. Lempinen, E. Kaila, Changes in student perceptions of ethics of learning analytics due to the pandemic, in: *Proceedings of the Conference on Technology Ethics*, CEUR-WS, 2021.
- [27] M. Nevaranta, K. Lempinen, E. Kaila, Students' experiences on distance learning during the

pandemic, *Education and New Developments* (2022) 73–77.

- [28] P. Virtanen, R. Gommers, T. E. Oliphant, M. Haberland, T. Reddy, D. Cournapeau, E. Burovski, P. Peterson, W. Weckesser, J. Bright, et al., *Scipy 1.0: fundamental algorithms for scientific computing in python*, *Nature methods* 17 (2020) 261–272.
- [29] N. Kosmyna, E. Hauptmann, Y. T. Yuan, J. Situ, X.-H. Liao, A. V. Beresnitzky, I. Braunstein, P. Maes, *Your brain on chatgpt: Accumulation of cognitive debt when using an ai assistant for essay writing task*, *arXiv preprint arXiv:2506.08872* (2025).
- [30] D. T. K. Ng, W. Wu, J. K. L. Leung, T. K. F. Chiu, S. K. W. Chu, *Design and validation of the ai literacy questionnaire: The affective, behavioural, cognitive and ethical approach*, *British Journal of Educational Technology* 55 (2024) 1082–1104.