Id: 1939797

Participatory Educational Research (PER)
Vol.13(6), pp. 213-232, November 2026
Available online at http://www.perjournal.com
ISSN: 2148-6123
http://dx.doi.org/10.17275/per.26.85.13.6

# Examining Teachers' Attitudes Towards Artificial Intelligence and Technostress Levels

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**Article history**

**Received:**
29.04.2026

**Received in revised form:**
28.06.2026

**Accepted:**
11.08.2026

**Key words:**
artificial intelligence; technostress; teachers; relational survey

Technostress refers to stress associated with the use of technology. Artificial intelligence (AI) refers to technologies that enable computer systems to perform tasks commonly associated with human intelligence. In recent years, AI has been used in many areas such as problem solving, speech processing, image recognition and image classification, and its use in education has become increasingly widespread. Against this background, the study examined teachers' attitudes towards AI and their technostress levels. Within the scope of the research, a quantitative relational survey design was employed, and the sample consisted of 319 teachers working in schools affiliated with the Ministry of National Education in Türkiye. Data were collected using the General Attitudes towards Artificial Intelligence Scale (GAAIS) and the Teachers' Techno-stress Levels Defining Scale (TTLDS). The findings revealed that teachers reported high levels of positive attitudes towards AI, moderate levels of negative attitudes, and moderate levels of technostress. The data analysis indicated a moderate positive relationship between teachers' technostress levels and their general attitudes towards AI. In addition, teachers' AI attitude scores differed significantly by education level and teaching branch but not by gender or age. It was also found that teachers' scores on the technostress scale differed by gender, age and branch but not by education level.

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## Introduction

The history of artificial intelligence (AI) can be traced to longstanding efforts to develop machines capable of performing functions associated with human intelligence. Modern AI emerged as a distinct field in the 1950s and has developed rapidly alongside advances in computing and related technologies (Penn, 2020; Öztürk & Şahin, 2018). The possibility that machines could exhibit human-like intelligence was famously addressed through what later became known as the Turing Test (French, 2000). Turing's work addressed objections to the possibility of machine intelligence and made an important contribution to the philosophical foundations of AI (Gonçalves, 2020, 2023). The term "artificial intelligence" was first used in The Dartmouth Summer Research Project at Dartmouth College in 1956 (Moor, 2006). Over the next seventy years or so, with advances in technology and computer science, efforts have been made to develop intelligent machines that make decisions and perform tasks similar to human thinking.

AI can be broadly understood as the development of machine-based systems that perform tasks traditionally associated with human intelligence, including learning, reasoning, perception, judgment, analysis, interaction, and decision-making (Boden, 2018; Pirim, 2006; Wang et al., 2019). Through algorithms and computational processes, these systems seek to emulate aspects of human cognitive abilities while enabling machines to learn autonomously, interact with humans and other machines, and respond to uncertainty and changing conditions (Ertel, 2018; Sheikh et al., 2023).

As a result of the introduction of various AI applications in recent years, AI has attracted widespread public attention and has increasingly been incorporated into various professional and everyday contexts. In this context, the widespread public availability of generative AI applications from 2022 onward marked an important development in the broader adoption and visibility of AI technologies. As in many other fields, these technologies are used by students, teachers and administrators in the field of education.

AI applications in education include knowledge-based, data-driven, and logic-based systems. Individualized education, collaborative learning, data mining, teaching and learning aids, education of children with special needs, human-robot interaction, exam creation and evaluation systems are among the areas of application of AI in education. In addition, in the field of education, AI can also be used beyond the classroom for purposes such as curriculum development, assessment management, and institutional cybersecurity (Holmes et al., 2023). Arslan (2020) identified several ways in which AI has the potential to enhance education, grouping them into four areas:

- providing individualized and effective student support,
- enhancing assessment practices,
- supporting differentiated and individualized learning,
- providing automated feedback based on student needs.

The widespread use of technology in almost every field has not only made life easier but has also brought some difficulties for some users. In particular, the necessity to keep up with technological changes and dependence on digital devices can cause tension, anxiety and burnout in individuals (Mahboob & Khan, 2016). These demands may contribute to technostress, a form of stress associated with the rapid development and widespread use of modern technologies (Ayyagari et al., 2011). Technostress may arise from factors such as difficulty adapting to complex technological systems, pressure to remain constantly

connected, and insufficient technological knowledge, and has been associated with anxiety and depression (Chiappetta, 2017; Torales et al., 2022). The concept of "technostress", which was first used in 1984 (Brod, 1984), is basically defined as stress caused by people's use of information and communication systems and other technology products (Berger et al., 2016; Tarafdar et al., 2007).

Factors associated with technostress in human-AI interaction can be categorized as follows (Charalampous et al., 2019; Califf et al., 2020; Xia, 2023):

- Obstructive technostress factors such as feelings of insecurity and complexity; challenging technostress factors such as perceptions of usefulness and technical support provided by the organization
- Psychological factors such as positive or negative psychological reactions, fear, anxiety, threat
- Factors driving interaction outcomes, such as positive or negative impact on behavior

The relationship between teachers' attitudes towards AI and their technostress levels can be considered through the lens of the Technology Acceptance Model (TAM) (Davis, 1989). TAM proposes that individuals' acceptance of technology is primarily shaped by two cognitive constructs: perceived usefulness (PU) and perceived ease of use (PEOU). In the context of AI integration in education, teachers who perceive AI tools as useful for enhancing instructional practices and relatively easy to use may be more likely to develop favorable attitudes towards AI. Conversely, perceptions of AI as complex, unpredictable, or difficult to integrate into existing pedagogical practices may reduce PEOU and contribute to less favorable attitudes. These perceptions may also be relevant to teachers' experiences of technostress, particularly when the demands associated with adopting and using AI are perceived to exceed their available knowledge, skills, or resources. For instance, perceived difficulties in understanding or mastering AI technologies may correspond with dimensions of technostress such as techno-complexity and techno-overload (Tarafdar et al., 2007). Similarly, pressures to adopt AI technologies may intensify the perceived cognitive and role demands associated with technology use (Joo, Lim, & Kim, 2016). Thus, while TAM does not explicitly conceptualize technostress as an outcome of technology acceptance, its emphasis on users' cognitive evaluations of technology provides a useful framework for considering how perceptions of AI may be associated with both attitudes and technostress. Within this framework, greater perceived difficulty or cognitive burden associated with AI use may be related to less favorable attitudes towards AI and higher levels of technostress.

Attitudes towards AI are important for the use of these technologies. In addition, it is known that an individual's level of technostress is an important variable in using and adopting technology. In the literature, it is emphasized that investigating the relationship between technostress and AI is important for the correct and efficient integration of AI tools (Huo & Siau, 2023; Sarfo, 2024). This study aimed to examine teachers' general attitudes towards AI and their technostress levels, investigate differences according to selected demographic and professional variables, and determine the relationship between attitudes towards AI and technostress. In this direction, the research was planned for the following sub-objectives:

- What are teachers' levels of technostress?
- What are teachers' levels of positive attitudes of teachers towards AI?
- What are teachers' levels of negative attitudes of teachers towards AI?

- Do teachers' attitudes towards AI and their technostress levels differ significantly according to gender, age, education level, and teaching branch?
- Is there a significant relationship between teachers' attitudes towards AI and their technostress levels?"

## Method

This study adopted a quantitative relational survey design to examine teachers' attitudes towards AI and their technostress levels. A relational survey design aims to determine the existence and strength of relationships between two or more variables (Bekman, 2022; Creswell, 2014). This design enables researchers to examine the direction and strength of relationships among the variables under investigation (Büyüköztürk et al., 2018; Fowler, 2014).

### *Sample*

The sample consisted of 319 teachers from different teaching branches working in public schools in Türkiye during the 2023–2024 academic year. Participants were recruited using convenience sampling. Convenience sampling is a non-probability sampling technique in which participants are selected primarily based on accessibility, geographical proximity, and willingness to participate (Bryman, 2016).

Gender, age, education level and teaching branch were selected as variables in the research design. These variables have been examined in previous research on technostress and AI and have been identified as potentially relevant factors (Hansen, 2020; Salah-Eddine et al., 2021; Pytel-Kopczyńska & Niedbał, 2023). For age, participants were grouped into two categories (20–39 and 40+) based on the generational classification adopted in the study. Teaching branches were grouped into four categories, taking sample size into consideration: Information Technologies (IT), Primary School, Quantitative Branches, and Verbal Branches. The IT category included teachers in computer and information technology fields; the Primary School category included classroom teachers; Quantitative Branches included Mathematics, Science, Physics, Chemistry, and Biology; and Verbal Branches included Turkish Language Teaching, Literature, Social Studies, History, Geography, English Language Teaching, Religious Studies, Music, and Visual Arts. Demographic information for the sample participants is shown in Table 1.

Table 1. Participants' Demographic Information

| Variable | | n | % |
|---|---|---|---|
| **Gender** | Male | 177 | 55.49 |
| | Female | 142 | 44.51 |
| **Age** | 20 – 39 | 156 | 48.90 |
| | 40+ | 163 | 51.10 |
| **Education Level** | Undergraduate Degree | 219 | 68.65 |
| | Graduate Degree | 100 | 31.35 |
| **Teaching Branch** | Information Technologies (IT) | 82 | 25.7 |
| | Primary School | 38 | 11.91 |
| | Quantitative Branches | 85 | 26.65 |
| | Verbal Branches | 114 | 35.74 |
| **Total** | | 319 | 100 |

As shown in Table 1, participants were relatively evenly distributed by gender and age. Most participants held an undergraduate degree (68.7%). Across teaching branches, the largest

proportion belonged to the Verbal Branches category (35.7%), while the smallest proportion belonged to the Primary School category (11.9%).

### *Data Collection Tools*

In this research, The Teachers' Techno-stress Levels Defining Scale (TTLDS), developed by Çoklar, Efilti, and Şahin (2017), was used to assess teachers' technostress levels. The scale consists of five factors and 28 items on a five-point Likert scale. The five factors are Learning-Teaching Process Oriented, Profession Oriented, Technical Issue Oriented, Personal Oriented, and Social Oriented. The internal consistency coefficient (Cronbach's alpha) for the whole scale is .917, and the Spearman-Brown coefficient is .845. Cronbach's alpha coefficients for the five factors range from .712 to .788. Total scores range from 28 to 140. In the present study, Cronbach's alpha coefficients were .80 for Learning-Teaching Process Oriented, .85 for Profession Oriented, .85 for Technical Issue Oriented, .86 for Personal Oriented, and .73 for Social Oriented. The coefficient for the overall scale was .93.

Teachers' attitudes towards AI were assessed using the General Attitudes towards Artificial Intelligence Scale (GAAIS), developed by Schepman and Rodway (2022) and adapted into Turkish by Kaya et al. (2022). The scale consists of two factors and 20 items rated on a five-point Likert scale. Cronbach's alpha coefficients are .88 for Positive Attitudes and .82 for Negative Attitudes, while the corresponding Spearman-Brown coefficients are .77 and .83, respectively. Total scores range from 20 to 100. In the present study, Cronbach's alpha coefficients were .89 for Positive Attitudes and .84 for Negative Attitudes.

A Personal Information Form was also used to collect participants' demographic information and data on the variables included in the study.

### *Data Collection and Analysis*

The necessary permissions for data collection were obtained from the Provincial Directorate of National Education. Teachers at the schools that agreed to participate were contacted and informed about the purpose of the study and the measurement instruments to be used. Informed consent was also obtained from the participants. Teachers who voluntarily completed the data collection forms in full were included in the study.

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. Firstly, it was examined whether the collected data showed a normal distribution. Normality was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests, skewness and kurtosis values, and visual inspection of histograms and Q–Q plots. The tests of normality results (p value) of TTLDS and GAAIS found .07 and .08 respectively. Then histogram and Q-Q Plot of the scales checked and it was seen that both graphs show the distribution indicates a normal distribution. The skewness coefficient for the TTLDS was .26 and the Kurtosis coefficient was .34; the skewness coefficient for positive attitudes towards AI was -.30 and the kurtosis coefficient was .15; and the skewness coefficient for negative attitudes towards AI was .20 and the kurtosis coefficient was .81. These values fell within the commonly accepted range of −1 to +1, providing support for the assumption of approximate normality (Huck, 2012). Taken together, these results were considered sufficient to support the use of parametric analyses.

Independent-samples t tests were used to examine differences in technostress and attitudes

towards AI according to gender, age, and education level, while one-way ANOVA was used to examine differences according to teaching branch. For significant ANOVA results, the homogeneity of variance assumption was assessed using Levene's test. Scheffé's post hoc test was used when the homogeneity of variance assumption was met, whereas Tamhane's post hoc test was used when this assumption was violated. In addition, Pearson's correlation analysis was used to examine the relationship between teachers' technostress levels and their attitudes towards AI.

## Findings

Teachers' overall and subscale technostress scores were first examined. The descriptive statistics are presented in Table 2.

Table 2. Mean technostress scores

| | n | Min/Max | x̄ | SD | Interval | Level |
|---|---|---|---|---|---|---|
| **Learning-Teaching Process Oriented Technostress** | 319 | 7-35 | 20.53 | 4.70 | 2.93 | Mid |
| **Profession Oriented Technostress** | 319 | 6-30 | 13.50 | 4.33 | 2.25 | Mid |
| **Technical Issue Oriented Technostress** | 319 | 6-30 | 18.02 | 4.63 | 3.00 | Mid |
| **Personal Oriented Technostress** | 319 | 5-25 | 11.63 | 4.07 | 2.33 | Low |
| **Social Oriented Technostress** | 319 | 4-20 | 12.18 | 3.07 | 3.05 | Mid |
| **Technostress Total** | 319 | 28-140 | 75.86 | 16.96 | 2.71 | Mid |

As shown in Table 2, participants reported moderate levels of overall technostress and of Learning-Teaching Process-, Profession-, Technical Issue-, and Social-Oriented Technostress, whereas Personal-Oriented Technostress was low.

The mean scores of teachers' positive and negative attitudes towards AI were analyzed and the findings are given in Table 3.

Table 3. Mean scores of attitudes towards AI

| | n | Min/Max | x̄ | Sd | Interval | Level |
|---|---|---|---|---|---|---|
| **Positive Attitudes Towards AI** | 319 | 12-60 | 45.68 | 7.59 | 3.81 | High |
| **Negative Attitudes Towards AI** | 319 | 8-40 | 25.42 | 5.47 | 3.18 | Mid |

As shown in Table 3, participants reported high levels of positive attitudes toward AI and moderate levels of negative attitudes toward AI.

Independent-samples t tests were conducted to examine differences in attitudes towards AI and technostress levels by gender. The results of the test are shown in Table 4.

Table 4. Comparison of attitudes towards AI and technostress levels according to "gender"

| | | Gender | n | x̄ | SD | df | t | p* |
|---|---|---|---|---|---|---|---|---|
| Attitudes Towards AI | Positive Attitudes Towards AI | Male | 177 | 46.32 | 7.72 | 317 | 1.68 | .095 |
| | | Female | 142 | 44.89 | 7.38 | | | |
| | Negative Attitudes Towards AI | Male | 177 | 25.28 | 5.46 | 317 | .533 | .594 |
| | | Female | 142 | 25.61 | 5.50 | | | |
| Technostress Level | Learning-Teaching Process Oriented Technostress | Male | 177 | 20.40 | 5.02 | 317 | .57 | .570 |
| | | Female | 142 | 20.70 | 4.28 | | | |
| | Profession Oriented Technostress | Male | 177 | 13.41 | 4.43 | 317 | .44 | .663 |
| | | Female | 142 | 13.62 | 4.22 | | | |
| | Technical Issue Oriented Technostress | Male | 177 | 17.83 | 4.73 | 317 | .82 | .412 |
| | | Female | 142 | 18.25 | 4.52 | | | |
| | Personal Oriented Technostress | Male | 177 | 11.06 | 3.95 | 317 | 2.83 | .005* |
| | | Female | 142 | 12.35 | 4.12 | | | |
| | Social Oriented Technostress | Male | 177 | 11.90 | 3.21 | 317 | 1.83 | .068 |
| | | Female | 142 | 12.53 | 2.86 | | | |
| | Technostress Total | Male | 177 | 74.59 | 17.49 | 317 | 1.5 | .135 |
| | | Female | 142 | 77.44 | 16.19 | | | |

* p < .05

When the test results examined, it is seen that there is a significant difference in terms of Personal Oriented Technostress (p < .05). Female teachers have higher levels of Personal Oriented Technostress than male teachers. The corresponding effect size was small (*d* = .32)."

Independent-samples t tests were conducted to examine differences in attitudes towards AI and technostress levels by age variable. The test results are given in Table 5.

Table 5. Comparison of attitudes towards AI and technostress levels according to "age"

| | | Age | n | x̄ | SD | df | t | p* |
|---|---|---|---|---|---|---|---|---|
| Attitudes Towards AI | Positive Attitudes Towards AI | 20-39 | 156 | 46.48 | 7.40 | 317 | 1.85 | .065 |
| | | 40+ | 163 | 44.91 | 7.72 | | | |
| | Negative Attitudes Towards AI | 20-39 | 156 | 25.08 | 5.64 | 317 | 1.11 | .269 |
| | | 40+ | 163 | 25.75 | 5.30 | | | |
| Technostress Level | Learning-Teaching Process Oriented Technostress | 20-39 | 156 | 20.01 | 4.76 | 317 | 1.93 | .055 |
| | | 40+ | 163 | 21.03 | 4.61 | | | |
| | Profession Oriented Technostress | 20-39 | 156 | 12.82 | 4.14 | 317 | 2.77 | .006* |
| | | 40+ | 163 | 14.15 | 4.43 | | | |
| | Technical Issue Oriented Technostress | 20-39 | 156 | 17.75 | 4.69 | 317 | 1.00 | .317 |
| | | 40+ | 163 | 18.27 | 4.58 | | | |
| | Personal Oriented Technostress | 20-39 | 156 | 11.11 | 4.03 | 317 | 2.26 | .024* |
| | | 40+ | 163 | 12.14 | 4.06 | | | |
| | Social Oriented Technostress | 20-39 | 156 | 11.99 | 3.00 | 317 | 1.09 | .276 |
| | | 40+ | 163 | 12.36 | 3.13 | | | |
| | Technostress Total | 20-39 | 156 | 73.68 | 16.67 | 317 | 2.26 | .025* |
| | | 40+ | 163 | 77.95 | 17.02 | | | |

* p < .05

According the examination of teachers' attitudes towards AI and technostress levels regarding "age" variable, significant age-group differences were found for Profession-Oriented Technostress (p < .05, *d* = .31), Personal-Oriented Technostress (p < .05, *d* = .25), and overall technostress (p < .05, *d* = .25). Teachers aged 40 and above have higher levels of Profession Oriented Technostress, Personal Oriented Technostress and general technostress than teachers

under 40. The effect sizes for these differences were small ($d$ = .25–.31).

Independent-samples t tests were conducted to examine differences in attitudes towards AI and technostress levels by education level variable. The results are given in Table 6.

Table 6. Comparison of attitudes towards AI and technostress levels according to "education level"

| | | Education Level | n | x̄ | SD | df | t | p* |
|---|---|---|---|---|---|---|---|---|
| Attitudes Towards AI | Positive Attitudes Towards AI | Undergraduate | 219 | 45.31 | 7.61 | 317 | 1.29 | .199 |
| | | Postgraduate | 100 | 46.49 | 7.53 | | | |
| | Negative Attitudes Towards AI | Undergraduate | 219 | 26.31 | 5.43 | 317 | 1.97 | .05* |
| | | Postgraduate | 100 | 25.02 | 5.48 | | | |
| Technostress Level | Learning-Teaching Process Oriented Technostress | Undergraduate | 219 | 20.46 | 4.48 | 317 | .39 | .700 |
| | | Postgraduate | 100 | 20.68 | 5.18 | | | |
| | Profession Oriented Technostress | Undergraduate | 219 | 13.69 | 4.30 | 317 | 1.18 | .241 |
| | | Postgraduate | 100 | 13.08 | 4.41 | | | |
| | Technical Issue Oriented Technostress | Undergraduate | 219 | 18.13 | 4.49 | 317 | .67 | .506 |
| | | Postgraduate | 100 | 17.76 | 4.95 | | | |
| | Personal Oriented Technostress | Undergraduate | 219 | 11.75 | 3.75 | 317 | .78 | .436 |
| | | Postgraduate | 100 | 11.37 | 4.71 | | | |
| | Social Oriented Technostress | Undergraduate | 219 | 12.28 | 3.03 | 317 | .86 | .390 |
| | | Postgraduate | 100 | 11.96 | 3.15 | | | |
| | Technostress Total | Undergraduate | 219 | 76.32 | 16.45 | 317 | .72 | .474 |
| | | Postgraduate | 100 | 74.85 | 18.07 | | | |

* p < .05

When the test results are examined, it is seen that there is a significant difference in terms of Negative Attitudes Towards AI ($p \leq .05$; $d$ = .24). Teachers with undergraduate education are more negative towards AI than teachers with postgraduate education. The effect size for this difference was small ($d$ = .24).

A one-way ANOVA was conducted to examine differences in attitudes towards AI and technostress levels across teaching branches. The results are given in Table 7.

Table 7. Comparison of attitudes towards AI and technostress levels according to "teaching branch"

| | Source of Variance | Sum of Squares | SD | Mean Square | F | p | Significant Difference ** |
|---|---|---|---|---|---|---|---|
| Positive Attitudes Towards AI | Between Groups | 880.064 | 3 | 293.355 | 5.293 | .001* | 1>2<br>1>3<br>1>4 |
| | Within Groups | 17457.322 | 315 | 55.42 | | | |
| | Total | 18337.386 | 318 | | | | |
| Negative Attitudes Towards AI | Between Groups | 355.106 | 3 | 118.369 | 4.069 | .007* | 3>1 |
| | Within Groups | 9162.762 | 315 | 29.088 | | | |
| | Total | 9517.868 | 318 | | | | |
| Learning-Teaching Process Oriented Technostress | Between Groups | 270.872 | 3 | 90.291 | 4.208 | .006* | 3>1 |
| | Within Groups | 6758.595 | 315 | 21.456 | | | |
| | Total | 7029.467 | 318 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Profession Oriented Technostress** | Between Groups | 49.029 | 3 | 16.343 | .869 | .457 | - |
| | Within Groups | 5922.72 | 315 | 18.802 | | | |
| | Total | 5971.749 | 318 | | | | |
| **Technical Issue Oriented Technostress** | Between Groups | 424.718 | 3 | 141.573 | 6.966 | .000* | 3>1 |
| | Within Groups | 6402.204 | 315 | 20.324 | | | |
| | Total | 6826.922 | 318 | | | | |
| **Personal Oriented Technostress** | Between Groups | 304.515 | 3 | 101.505 | 6.437 | .000* | 2>1<br>3>1 |
| | Within Groups | 4967.573 | 315 | 15.77 | | | |
| | Total | 5272.088 | 318 | | | | |
| **Social Oriented Technostress** | Between Groups | 98.726 | 3 | 32.909 | 3.587 | .014 | 2>1<br>2>4<br>3>1<br>3>4 |
| | Within Groups | 2890.089 | 315 | 9.175 | | | |
| | Total | 2988.815 | 318 | | | | |
| **Technostress Total** | Between Groups | 4829.339 | 3 | 1609.78 | 5.852 | .001* | 2>1<br>3>1 |
| | Within Groups | 86651.313 | 315 | 275.084 | | | |
| | Total | 91480.652 | 318 | | | | |

*p < .05, (1=Information Technologies, 2= Primary School, 3= Quantitative Branches, 4=Verbal Branches)
**Post Hoc: Tamhane

Significant differences across teaching branches were found for positive and negative attitudes towards AI and for all technostress dimensions except Profession-Oriented Technostress. Post hoc comparisons indicated that IT teachers reported more positive and less negative attitudes toward AI than the other groups. They also generally reported lower technostress than primary school and quantitative-branch teachers. Additional differences were observed between primary school, quantitative-branch, and verbal-branch teachers for selected technostress dimensions.

Pearson correlation analysis was conducted to examine the relationships between participants' positive and negative attitudes towards AI and their technostress levels. The test results are shown in Table 8.

Table 8. Correlation between positive and negative attitudes towards AI and technostress levels

| **Measurement** | **PATAI** | **NATAI** | **TT** | **T1** | **T2** | **T3** | **T4** | **T5** |
|---|---|---|---|---|---|---|---|---|
| **PATAI: Positive Attitudes Towards AI** | 1 | -.40 | -.35 | -.30 | -.27 | -.28 | -.29 | -.28 |
| **NATAI: Negative Attitudes Towards AI** | | 1 | .48 | .42 | .43 | .42 | .29 | .38 |
| **TT: Technostress Total** | | | 1 | .83 | .80 | .84 | .82 | .78 |
| **T1: Learning-Teaching Process Oriented Technostress** | | | | 1 | .57 | .61 | .55 | .60 |
| **T2: Profession Oriented Technostress** | | | | | 1 | .52 | .64 | .49 |
| **T3: Technical Issue Oriented Technostress** | | | | | | 1 | .61 | .63 |
| **T4: Personal Oriented Technostress** | | | | | | | 1 | .57 |
| **T5: Social Oriented Technostress** | | | | | | | | 1 |

According to the results, a moderately significant negative correlation was found between the

participants' Positive Attitudes Towards AI (PATAI) and their overall technostress levels (TT) ($r$ = -.35, p < .01). Similarly, negative correlations were detected between positive attitudes and all sub-dimensions of technostress (T1, T2, T3, T4 and T5 with $r$ values ranging from -.27 to -.30). These findings indicate that as teachers' positive perceptions of AI increase, their technostress levels decrease. On the other hand, a moderately significant positive correlation was observed between Negative Attitudes Towards AI (NATAI) and overall technostress (TT) ($r$ = .48, $p$ < .01). Negative attitudes were found to be positively correlated with all other sub-dimensions (T1, T2, T3, T4 and T5 with $r$ values ranging from .29 to .43). Additionally, as expected, a significant negative correlation was detected between positive and negative attitudes towards AI ($r$ = -.40). The association between positive and negative attitudes toward AI corresponded to approximately 16% shared variance ($r^2$ = .16). Overall, these results indicate that more positive attitudes toward AI were associated with lower technostress, whereas more negative attitudes toward AI were generally associated with higher technostress.

## Discussion And Conclusion

In this study, participants reported high levels of positive attitudes towards AI, moderate levels of negative attitudes, and moderate levels of technostress. Attitudes towards AI differed by educational level and teaching branch but not by gender or age, whereas technostress differed by gender, age, and teaching branch but not by educational level. Positive attitudes toward AI were negatively associated with technostress, whereas negative attitudes were positively associated with technostress.

Teachers' positive attitudes towards AI were high and negative attitudes were at medium level. One possible explanation for these findings is the increasing integration and visibility of AI in educational settings. In addition, the potential of AI to reduce workload and support personalized learning may contribute to more favorable attitudes toward these technologies. On the other hand, the fear of losing prestige and becoming devalued, ethical and security concerns, and the feeling of not being able to keep up with developments can be expressed as reasons why negative attitudes remain at a moderate level. There are several studies in the literature that are consistent with these findings (Chen, 2020; Demir-Dülger, 2023; Eyüp & Kayhan, 2023; İçen, 2024; Kebapçı, 2024; Senger, 2024; Uyak et al., 2023; Üretmen, 2024; Wollowski et al., 2017). There are also suggestions in the literature that employees' level of understanding, participation and adoption of AI technology can be further increased through communication, explanation, narration, feedback and encouragement (Braganza et al, 2021; Cheng, Lin & Kong, 2023).

In the study, it was found that teachers' technostress levels were at a medium level. This finding suggests that teachers experience a moderate degree of technostress related to different aspects of their professional and technological practices. The rapid development of technology and its integration into educational processes can create stress for teachers in terms of adapting to new technologies and planning the pedagogical use of these technologies (Dong et al., 2019). These moderate levels may reflect the ongoing demands teachers face in adapting to rapidly evolving technologies, particularly as AI becomes increasingly integrated into educational practice. Several studies have reported findings consistent with these results (Çoklar & Bozyiğit, 2021; Dong et al., 2019; Efilti & Çoklar, 2019; Fidha, 2024; Kaplan, 2021; Lee, 2018; Lee & Kim, 2019; Rey-Merchán & López-Arquillos, 2021; Mokh et al., 2021; Şahan, 2021; Tahiroğlu, 2024; Vural & Tuncer, 2024).

It was found that teachers' attitudes towards AI did not differ significantly according to gender variable. One possible explanation is that shared professional experiences and increasing exposure to digital technologies may contribute to similar attitudes toward AI across genders. This may lead to the development of a common professional attitude regardless of gender. Several studies have reported findings consistent with this finding (Burtgil, 2024; Eyüp & Kayhan, 2023; Holmes et al., 2019; İçen, 2024; Uyak et al., 2023). However, it is seen in the literature that there are also studies in which different results are obtained in the context of gender variable. For example, Karakuş et al. (2023), Kebapçı (2024) and Üretmen (2024) found that male participants had higher AI awareness levels.

Teachers' technostress levels differ significantly according to gender variable. Female teachers had higher levels of personal oriented technostress than male teachers. The observed gender difference may reflect differences in technological experiences, professional demands, or coping processes; however, these factors were not directly examined in the present study. Several studies have reported findings consistent with this result (Arslan & Şahin, 2024; Estrada-Muñoz et al., 2020; Jena & Mahanti, 2014; Kaplan, 2021; Kuday & Akpınar, 2020; Rey-Merchán & López-Arquillos, 2021; Marchiori, Mainardes & Rodrigues, 2019; Penado Abilleira et al., 2021; Shaukat et al., 2022; Solís et al., 2023; Syvänen et al., 2016; Tahiroğlu, 2024; Tanyıldız, 2024; Tarafdar et al., 2011; Tarafdar et al., 2019; Vural & Tuncer, 2024). On the other hand, it is also seen that there are various studies in the literature that conclude that technostress does not differ significantly according to gender variable (Berger et al., 2016; Çoklar & Bozyiğit, 2021; Fidha, 2024; Kılıç, 2023; Li & Wang, 2020; Mokh et al., 2021; Narin, 2024). Overall, previous research has produced inconsistent findings regarding gender differences in technostress.

Teachers' attitudes towards AI do not differ significantly according to age variable. The reason for this may be that people in different age groups may have general knowledge about AI, and the use of AI in education now has a similar level of acceptance across broad age groups. Several studies have reported findings consistent with these findings (Burtgil, 2024; Fidha (2024), Karakuş et al., 2023; Senger, 2024; Uyak et al., 2023). However, Mayer and Fiorella (2021) stated that experienced teachers over a certain age may find it difficult to adapt to innovative technologies such as AI. In addition, Ferikoğlu (2021), İçen (2024), Kebapçı (2024) and Üretmen (2024) found that AI awareness levels differed significantly according to age variable.

Teachers' technostress levels differ significantly according to age variable. Teachers aged 40 and over have higher levels of technostress than teachers under 40. The higher technostress reported by teachers aged 40 and above may be associated with differences in previous exposure to digital technologies, opportunities for technology-related professional development, or familiarity with rapidly changing technological environments. However, these factors were not directly measured in the present study. Several research support these conclusions (Kaya, 2024; Penado Abilleira et al., 2021; Shaukat et al., 2022; Wang et al., 2023). However, Doğrular (2019), Karadeniz (2023) and Yıldız (2023) concluded that there was no difference in the context of age variable.

Teachers' attitudes towards AI differ significantly according to the education level variable. Undergraduate teachers' negative attitudes towards AI are higher than postgraduate teachers'. It is thought that postgraduate education contributes to individuals' critical thinking, analytical skills and field knowledge levels. Teachers with postgraduate qualifications may have had greater exposure to activities such as reviewing research, analyzing data, and

engaging with academic literature. Therefore, differences in education level may have affected individuals' perceptions and usage experiences towards technology, leading to differentiated attitudes towards AI. Several studies have reported findings consistent with this interpretation (Demir-Dülger, 2023; Ferikoğlu, 2021; Holmes et al., 2019; Hwang & Tu, 2021; İçen, 2024; Üretmen, 2024). However, Burtgil (2024) and Uyak et al. (2023) found that AI awareness levels did not differ significantly according to the education level variable.

Teachers' technostress levels do not differ significantly according to the education level variable. The rapid change in technology can affect every teacher in a similar way, regardless of their level of education. Several studies have reported findings consistent with these findings (Doğrular, 2019; Karadeniz, 2023; Kaya, 2024; Kılıç, 2023; Narin, 2024; Şahan, 2021; Tahiroğlu, 2024). Conversely, Hsiao (2017), Krishnan (2017), Rahmadi (2021) and Tarafdar et al. (2011) found that the level of education of the participants leads to a decrease in the level of technostress and is an important criterion for technostress.

Teachers' attitudes towards AI differ significantly according to the teaching branch variable. The positive attitudes of IT teachers towards AI are higher than teachers in other branches. Additionally, the negative attitudes of IT teachers towards AI are lower than teachers in other branches. The fact that IT teachers' perspectives regarding AI differed from other teachers could be attributed to the fact that this branch is closely tied to technology. In the TAM, two key antecedents for technology acceptance are PU and PEOU. From a TAM perspective, IT teachers' greater familiarity with digital technologies may be associated with perceptions of greater ease of use and usefulness. However, these constructs were not directly measured in the present study. Likewise, Ferikoğlu (2021) found that the attitudes of IT teachers towards AI were higher than other branches. However, Burtgil (2024) found that the attitudes of the participants towards AI did not differ significantly according to the branch variable.

Teachers' technostress levels differ significantly according to the teaching branch variable. This finding is also consistent with the observed differences in attitudes towards AI across teaching branches. Technostress levels of IT teachers are lower than other teachers. This is thought to be because it is based on the professional knowledge of IT teachers, their exposure to technology and the nature of the field. While the basic curriculum structures and teaching philosophies of other disciplines have not undergone radical changes for many years, change is a crucial concept in the nature of the IT discipline. IT teachers are generally expected to continually update their technological knowledge and skills as part of their professional practice. Several studies support these findings and perspectives (Arslan & Şahin, 2024; Berger, et al., 2016; Kaplan, 2021; Kuday & Akpınar, 2020; Tanyıldız, 2024). Whereas Syvänen et al. (2016) found that the technostress levels of branch teachers were higher than primary school teachers.

In the study, it was concluded that there is a moderate negative relationship between teachers' positive attitudes towards AI and their negative attitudes, and a moderate negative relationship between their positive attitudes towards AI and their technostress levels. In addition, there is a moderate positive relationship between technostress and negative attitude towards AI. Taken together, these findings indicate that higher technostress was associated with less positive and more negative attitudes towards AI. Previous research has suggested that confidence in one's knowledge and ability to use AI may be associated with greater capacity to manage AI-related technostress and uncertainty (Chang et al., 2024). According to Nastjuk et al. (2024)'s research, organizations might benefit from considering their employees' emotional reactions to AI technology, as well as evaluating negative emotional

reactions and intervening with various techniques to alleviate AI anxiety. Overcoming negative emotions towards AI technology is important for the adoption of AI. Chang et al. (2024) investigated the relationship between technostress and AI adoption among employees from different sectors in China. They concluded that technostress factors triggered AI anxiety and hindered the intention to adopt AI. They also found that employees' confidence in their knowledge, skills or abilities to use AI technology helps them cope with technostress and uncertainty associated with AI. These results support the results of this study.

In the literature, it is stated that the use of AI technologies in education may bring about various concerns such as lack of experience, human substitution, transfer of the teacher role to computers, ethics and privacy (Kim & Kim, 2022; Li & Huang, 2020; McGrath et al, 2023; Regan & Jesse, 2019; Williamson, 2020). In this regard, it may be possible for individuals to have more trust in AI and less fear of it through familiarity with the technology, belief in their technological competence, and increased interaction with digital technologies (Pinto Dos Santos et al., 2019).

Based on the findings obtained in this study, the following recommendations are given.

- Future qualitative or mixed-methods research could explore the factors underlying teachers' positive and negative attitudes towards AI across different teaching branches.
- Experimental studies can be conducted to examine the effects of training programs to increase teachers' knowledge about AI.
- Since technology support plays an important role in coping with technostress and reducing technostress levels (Pirkkalainen et al., 2019), professional development programs could provide teachers with up-to-date knowledge of emerging technologies and practical support for managing technology-related demands.

## Declarations

***Acknowledgments:*** *The authors would like to thank all participants who voluntarily participated in this research.*
***Funding:*** *This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.*
***Ethics Statements:*** *This research presented in this paper has been conducted in accordance with ethical guidelines and standards, including the principles of the Helsinki Declaration. The ethical approval for this research was granted by Selcuk University under decision number 85 – 18.06.2023.*
***Conflict of Interest:*** *No potential conflicts of interest have been reported by the authors.*
***Informed Consent:*** *The rights of participants were respected, and consent was obtained from all individuals included in this research.*
***Data availability:*** *The datasets in this research have been kept confidential and are available from the corresponding author on reasonable request.*

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