

A Cross-Cultural Study on Teachers' Views on Using Plagiarism Detection Tools for Sustainable Education in the Czech and Turkish Contexts

Abdülkadir Kabadayı

<https://orcid.org/0000-0003-4114-5890>
Necmettin Erbakan University, Konya, Turkey

Martin Skutil

<https://orcid.org/0000-0002-9419-6459>
Charles University, Prague, the Czech Republic

Abstract

Plagiarism poses a significant challenge to academic integrity, and the advent of digital technologies has prompted the widespread adoption of plagiarism detection tools. This cross-cultural study investigates teachers' perspectives on the use of plagiarism-detection tools for sustainable education in the contexts of the Czech Republic and Turkey. This research explores how educators in these distinct cultural and educational settings perceive the role of such tools in promoting sustainable education. By examining cross-cultural variations, the research aims to identify commonalities and differences in attitudes toward plagiarism detection and its impact on fostering a sustainable educational environment. Twenty preschool teachers from Turkey and twenty five preschool teachers from the Czech Republic participated in this study. They were required to respond to open-ended questions related to the use of plagiarism detection tools for sustainable education. The study employs a qualitative approach to gather comprehensive insights into teachers' views on plagiarism detection. Participants from both countries share their experiences, concerns, and opinions on the effectiveness and ethical implications of utilizing these tools. As a last remark, some recommendations were made to policymakers, scientists, researchers, and teachers both in the Czech Republic and Turkey.

Keywords: Cross-cultural, plagiarism detection tools, preschool teachers, qualitative study, sustainability, the Czech Republic, Turkey.

Introduction

The advent of the internet has revolutionized the way students can access information, but it has also created new challenges for educators. With a wealth of online resources at their fingertips, students may be tempted to take shortcuts and present others' ideas as their own. This not only undermines the learning process but also erodes the foundation of academic honesty. Academic honesty is the cornerstone of a sustainable education system. It fosters a culture of integrity, trust, and intellectual growth among students, educators, and institutions alike. In the digital age, where information is readily accessible, the challenge of maintaining academic integrity has become more pronounced. Research reported that plagiarism, as well as cheating in general, was increasing at universities (Maslen, 2003; O'Connor, 2002; Zobel & Hamilton, 2002). Plagiarism, the act of presenting someone else's work as one's own, poses a significant threat to the educational ecosystem. To address this issue, the use of plagiarism-detection tools has become a crucial aspect of maintaining academic honesty. In a sustainable education system, fostering creativity, independent thought, and ethical behavior is essential. Plagiarism-detection tools serve as guardians of these values, providing a means to identify and address instances of academic misconduct.

Theoretical Background

In today's digital era, we encounter a growing problem of plagiarism in the higher education environment. To safeguard academic integrity, institutions have begun implementing anti-plagiarism systems. Plagiarism is defined as an act of dishonesty related to authorship and copyright, an injustice against the original author by stealing ideas or text and presenting them as one's own (Vehviläinen et al., 2018; Fraser, 2014). Quah et al. (2012) propose various forms of plagiarism, such as using material from another work without acknowledgment, submitting another person's work without consent, and verbatim paraphrasing from a specific source.

With increasing pressure on students and competition in the higher education environment, plagiarism is becoming more prevalent. Anti-plagiarism systems like Turnitin or Plagscan have emerged as tools for detecting similarities between student works and existing literature. However, some forms of plagiarism may result from inadequate source handling rather than intent (Roig, 1997). This is corroborated by Lim and Huh (2019), who found that students lack sufficient knowledge about plagiarism, and their awareness influences their attitudes

towards it. Awasthi (2019) adds that plagiarism among tertiary-level students is not a new problem, and advancements in information and communication technologies (ICT) make plagiarism easier due to digitally accessible and online materials.

According to Farook and Sultana (2022), research suggests that plagiarism and other forms of academic dishonesty likely relate to various factors, such as attitudes towards unethical behavior, social norms, students' understanding of plagiarism, and the institutional framework for addressing plagiarism. Marsh, et al. (1997) add that explicit engagement with students helps them avoid plagiarism. Students also face challenges adapting to a new environment where their work undergoes thorough analysis. Ahmad et al. (2022) highlight that integrating essential skills, such as paraphrasing, summarizing, synthesis, and citation, to prevent plagiarism requires careful planning and preparation. Karnalim and Chiver (2022), citing Simon et al. (2018), emphasize the importance of educating students about acceptable practices to reduce accidental plagiarism. As confirmed by Landau, et al. (2002), specific examples and feedback on paraphrasing methods can positively impact students' knowledge of plagiarism and motivate them to avoid it. In addition to easy access to online information, insufficient support for students' writing development, and faculty pedagogical capacity limitations in demanding conditions have contributed to the increasing prevalence of plagiarism in recent times (Bailey, 2020).

In light of these challenges and contributions, there is room for further discussion on the optimal use of anti-plagiarism systems in the higher education environment. It is not only a matter of monitoring and control but also supporting and developing students' creativity and independent work skills. As Clarke et al. (2022) also point out, it is crucial to consider the local context, as plagiarism is perceived differently in various states and cultures.

Rationale

Academic plagiarism and dishonesty are not only of interest to teacher education and universities in Turkey and the Czech Republic, but also to students and teacher candidates who do academic studies at universities all over the world for a sustainable teacher education in general. At this point, in order to be able to publish more cleanly and objectively in accordance with ethical rules, international academic journals and books, as well as publishing and printing organizations that publish in the academic field, it is necessary to use plagiarism detection programs in publishing and printing carefully and frequently. Recent developments in technology shape the patterns of production, dissemination, and transmission of education, science, and literature through consumption channels and consumption patterns in an extraordinary way

(Alharthi, 2020; Chua & Lin, 2020). Plagiarism detection software plays a crucial role in maintaining the integrity of the educational system (Arkan & Görür, 2017). It fosters a learning environment where students are encouraged to think critically, produce original work, and uphold academic honesty. By doing so, it contributes to the sustainability and credibility of educational institutions and the quality of education they provide. Plagiarism-detection tools can identify similarities, direct matches, and even paraphrased content, offering educators a comprehensive view of the originality of a given assignment. Furthermore, they provide immediate feedback to both educators and students. This not only allows for timely intervention in cases of plagiarism but also acts as a deterrent. These tools create an opportunity for educators to engage in constructive conversations with students about the importance of academic honesty. Instead of punitive measures alone, educators can use instances of plagiarism as teaching moments, guiding students in proper citation practices and the importance of giving credit to sources. In addition, these efforts are essential to fostering a fair learning environment and ensuring that the educational achievements of students are correctly evaluated and rightfully earned (Gunwoo, et al., 2023). Plagiarism-detection tools can protect academic reputation particular institutions that actively use plagiarism detection tools, which send a clear message about their commitment to academic integrity.

Method

Participants

The Czech Republic is a member country of the European Union and Turkey is a country on the verge of joining the European Union. It is extremely important to determine how much the teachers in Turkey agree with the teachers of the Czech Republic, a member of the European Union, in terms of scientific publications in the field of education. Therefore, 20 preschool teachers who enrolled in the Master program from Turkey and 25 preschool teachers who enrolled in the Master program from the Czech Republic participated in this study. All participants in the sample groups of the study consist of teachers who have taken the course “Scientific Research and Ethics” and are continuing their Master program in the relevant field both in Turkey and the Czech Republic. In this study, preschool teachers in both Turkey and the Czech Republic were considered as the study group because they were an easily accessible sample group. In Turkey, the mean age of the participants was 30 years. The work experience of Turkish teachers was 4–10 years. All teachers work at different preschools, and 15 of them are female, and 5 of them are male.

In the Czech Republic, the mean age of the participants was 23 years. The

work experience of Czech teachers was 1–6 years. All teachers work at different preschools, and 21 of them are female, and 4 of them are male.

All teachers participated voluntarily and signed a written research ethical contract. Both Necmettin Erbakan University in Turkey and Charles University in the Czech Republic are strictly bound on internal legislation related to the scientific ethics. All of the Turkish and Czech teachers participating in the research are receiving post-graduate education at Necmettin Erbakan University and Charles University, the Institute of Educational Sciences. Graduate students studying at the university must take the course “Scientific Research and Ethics” for one semester. This course includes the definition of science and scientific research, the issue of originality in scientific works and basic concepts related to scientific research, methods that can be applied in scientific research, research of printed publications, and the use of databases and access to reliable sources on the internet, the concepts of ethics and publication ethics, plagiarism, self-plagiarism, other violations and sanctions. Preschool education constitutes the initial stage of lifelong learning, and it is therefore essential to enhance its quality. One avenue to achieve this goal is by elevating the professional qualifications of preschool educators, enabling them to create inclusive, stimulating, and motivating learning environments for children. This, in turn, establishes a crucial foundation for high-quality education throughout their lives. The postgraduate follow-up study builds upon current pedagogical and psychological knowledge, responding to research findings, and is initiated based on practical requirements, particularly the interest of graduates from the Bachelor program in Preschool Teaching. The intention is to provide preschool educators with postgraduate education as part of the opportunity for further qualification growth in the field. An integral component of this study involves the development and viva voce of a final thesis, which is consistently grounded in active engagement with specialized print and electronic sources and the implementation of independent research inquiries. All students are obligated to adhere to the principles of academic work, placing significant emphasis on ethical considerations, including the issue of plagiarism.

Procedure

In this study, semi-structured interview questions were used to collect the study data. Interview questions were divided into seven categories including *use of the similarity check program, information pollution, sustainability of using the similarity check program, the reasons for the prevalence of plagiarism among students, operation of the similarity check program, advantages and disadvantages of using similarity check program, and institutional motivation to use similarity check program*. In this study, the qualitative method was used to aggregate the

data handled. Common data collection methods used in qualitative research are focus groups, triads, dyads, in-depth interviews, etc. (Russell & Gregory, 2003; Mcleod, 2019). In this study, content analysis technique was used together with qualitative research method to analyze the aggregated data.

The reliability and validity of the study were provided by the researchers. In a qualitative study, researchers mostly prefer to use the term “trustworthiness” instead of reliability (Lincoln & Guba, 1985) as it can be regarded as a fit between what researchers record as data and what occurs in the natural setting that is being researched, i.e., a degree of accuracy comprehensiveness of coverage (Bogdan & Biklen, 1998). The content validity of the study was ensured through expert opinion. The data handled were presented to the three eminent educators who are experts in the field of assessment and research. In this study, three academicians – one from the Preschool Department, one from the Department of Computer and Instructional Sciences and one from the Department of Educational Sciences – were chosen for each country to ensure content validity. Necessary changes were made in the light of suggestions of the experts. In this study, interviews were organized in native languages and conducted to the participants in their native languages both in Turkey and the Czech Republic. While processing the data, translation – back translation versions of the questions were made by language experts. All interviews were recorded. The authors of this study transcribed all interviews and translated them into English. All interviews were transcribed, coded, and analyzed by two researchers each.

Result

In this part of the study, the data handled through the open-ended questions are analyzed and the explanations of open-ended questions are provided under seven themes.

Use of Similarity Check Program

Which similarity check programs do you use in your studies?

All Turkish participants (100 %) stated that they use the Turnitin similarity check program, while in the Czech Republic, it is not entirely common to submit seminar papers through a plagiarism detection system. Conversely, Bachelor, Master, or Doctoral Theses in Turkey are consistently scrutinized by this system, and the degree of textual similarity with other works is one of the components in assessing the quality of these works. The following initialisms are used further in the paper to refer to the participants of the study: CT denotes Czech Teacher, and TT – Turkish Teacher.

CT11 states: *“We don’t have anything for seminars; the instructors check that.*

However, we had it for the Bachelor Thesis, and we also had it for the Master Thesis. I don't know the name of the program, but I know it checks whether we have not borrowed too many ideas from others, whether we have paraphrased them adequately."

At which educational levels should the similarity check program be used?

Both the Turkish (100 %) and Czech (100 %) teachers put forward that the similarity check program should be used at undergraduate and graduate education levels.

CT14: *"I can imagine that all written assignments we submit go through some system, why not? Personally, it wouldn't bother me."*

CT19: *"Sure, let the Bachelor and Master Theses be checked, but for regular seminars, it doesn't make sense to me. It's an unnecessary complication."*

Which publications should use similarity check programs?

100 percent of the Turkish and 95 percent of the Czech participants emphasized that the similarity program should be used in all kinds of publications homework and students'.

TT 14 (Turkish Teacher): *"Its effective use is necessary for all kinds of media that support academic and social development. I think that written media organs such as newspapers and television, especially academic journals, should use. "*

CT19 states: *"Yeah, it makes sense that we realize we can't just copy something. On the other hand, in many seminars, we are asked for the synthesis of information, and sometimes we just borrow those parts of the text. That's tricky. Besides, when we submit the work through the plagiarism detection system, the evaluation is not immediate; it takes maybe three days, which is a lot."*

CT2 adds: *"It makes sense for theses, either Master or Bachelor. But for seminars, I don't know... our instructors check that anyway. But it's probably true that with the advent of AI, it's quite challenging for them."*

Sustainability of Using Similarity Check Program

Why is the similarity check program necessary in academic studies?

TT8 says: *"The similarity program is necessary to protect the originality of the work and ethical rules. Researchers produce a product by spending great effort and time to contribute to the field. This product should contain the researcher's expressions, filtered through his own. Similarity programs should be used to distinguish between products created with real effort and the copying of already existing information."*

CT9 states: *"Intellectual property is also property. It's about the fact that it's simply not right to steal someone's idea, even if it's intangible. In the course of studying, we just have to demonstrate that we are capable of processing something*

on our own. We create something ourselves and don't just copy it from somewhere."
What changes have occurred in your attitude and behavior towards working before and after using the similarity check program?

95 % of the Turkish teachers emphasized that their attitudes and behaviors were changed when they learned how to use the similarity check program.

TT5: *"Even though I noticed some plagiarism mistakes before using the program, I sometimes ignored them, but now I try to make quotations and references that comply with the rules as much as possible. After using the similarity program, I took care to do more original work in line with the results I received. I realized that I could solve the plagiarism problem very easily thanks to similarity programs. I realized how valuable and labor-intensive a process is to obtain accurate information."*

CT4 states: *"During the study, seminar papers are not monitored by any system. However, instructors continually draw our attention to it, and sometimes they return our work due to insufficient handling of sources. Automatic checking occurs only upon submission of the Master Thesis, where the similarity with other documents is revealed. We need to have it below 5 %, but we all anticipate that requirement."*

Operation of the Similarity Check Program

How do similarities check programs work?

All Turkish participants (100 %) know how to operate the similarity check program as they have a course about it.

TT11 explains: *"By comparing the newly uploaded work with existing studies using the databases it owns, it gives feedback and shows the similarity rate of the work by investigating the connection of the newly uploaded work with them."*

CT17: *"Yes, we had a lecture on that. The principle is essentially straightforward. The systems compare the written text with a database of similar texts, examining the similarity of sentences and phrases. It originates not only from databases of texts but also from the internet."*

How can the similarity check program be further developed in your opinion?

80 % of the Turkish participants are willing to access similarity check programs easily.

TT3 points out: *"It can be made easier to use. Once it is made easier to use, it will be easier to develop. Access to the similarity program can be made easier. And sometimes the study results take a very long time to reach us; the program can be made faster. A national similarity program could also be established."*

CT21: *"I see it. If these programs are user-friendly and fast, it will be easier to use them. So, my concern is to upload the file there and get feedback within a short*

time, on whether my work is okay. Waiting for several days seems too much to me.”

Advantages and Disadvantages of Using the Similarity Check Program

What happens if a study does not use the similarity check program?

97 % of the Turkish 90 % of Czech teachers who participated in the research state that plagiarism will increase if a similarity program is not used in their studies.

TT12 states: *“The theft of information and labor increases in the studies carried out. Studies become repetitive and thus plagiarism rates constantly increase. Scientific research methods and unethical publications and studies cannot be prevented and many studies repeat each other.”*

CT9: *“Essentially, students would be obtaining their degrees without genuine effort, dishonestly. And that is not right. Even though it is sometimes challenging, the principle still holds that something must be done to earn that degree. Of course, there are also legal consequences associated with appropriating others’ ideas.”*

What happens if the similarity check program is used in a study?

Turkish and Czech teachers participating in the research put forward that the quality of all kinds of publications will increase as a result of the use of the similarity program.

TT7 expresses: *“More effort is spent to produce an original work, which increases the quantity and quality of work. In this way, the theft of information and labor is prevented and information pollution is reduced.”*

CT17: *“Control over the result of the student’s work will be ensured. However, given the quantity of academic papers, there may be a misconception of plagiarism because some established phrases cannot be endlessly rewritten and paraphrased differently. People may think alike and use the same expressions.”*

Information Pollution

What is the relationship between environmental pollution and information pollution?

The Turkish and Czech teachers who participated in the research (100 %) were able to establish a close relationship between information pollution and environmental pollution. At this point, participants were asked to make an analogy between information pollution and environmental pollution using metaphors. Just as environmental pollution is a disgusting thing, information pollution is also an unpleasant issue.

TT14 explains: *“Today, information pollution has increased and become as*

harmful as environmental pollution. Today, the two are almost equally harmful. The reasons for environmental pollution include people's unconsciousness and their unwillingness to use their efforts and opportunities for nature. Likewise, information pollution increases due to a lack of awareness and improper use of efforts and opportunities."

CT15: *"Everyone contributes to environmental pollution. If one person were to stop polluting, it wouldn't have a significant effect. It's different with information pollution – there; even one person can make a difference. Information pollution can be much better regulated and rectified."*

What do you think is the extent of information pollution today?

95 % of the Turkish and 90 % Czech teachers emphasize that the rapid spread of technology in the developing and changing world has increased information pollution tremendously.

TT18 puts forward: *"The rapid spread of technology and the availability of the internet in almost every home today have made it significantly easier for people to access information. However, this convenience has also brought with it information pollution. Comments or statements made by people who are not experts in the field can be seen by all humanity as long as they have access permission. When people cannot reach the author or source of the information they obtain, they acquire incorrect information. This situation shows that information pollution can reach serious levels, especially today."*

CT14: *"In today's era of media, tabloids, and the internet, information pollution is truly high."*

How can we prevent this information pollution?

90 % of the Turkish 87 % of Czech teachers who participated in the research emphasized that any kind of publications should be audited in terms of ethics and plagiarism to sustain the honesty.

TT12 emphasizes: *"I think it can be prevented if there is an increase in the number of research that is qualified, original, and within the framework of ethical rules. Information pollution is caused by the misuse of technology such as television, computers, and telephones, where the use of social media is most effective. To prevent information pollution in the first place, content can be filtered before being published in these environments or individuals or institutions that cause information pollution can be made to pay the price."*

CT12 states: *"Critically verify information from multiple sources. That is the only way."*

The Reasons for the Prevalence of Plagiarism Among Students

What are the reasons for the prevalence of plagiarism among students?

85 % of the Turkish and 90 % Czech teachers who participated in the research stated that the reason why plagiarism is common among students is that they can achieve results easily without putting in any effort.

TT19 states: *"I think that our society likes to use ready-made products and there are many individuals in this society who grew up with this idea. I think that students who do not have a developed sense of morality and ethics do this without even knowing that it is information theft. I think taking the easy way is one of the most important reasons. Nowadays, time is saved through someone else's sweat rather than one's labor. I think another reason may be that it is not known in detail by students."*

CT23 argues: *"Well, of course, it's simpler. When I copy something, I have it without any effort. But there are subjects where it makes sense to work with it, where the seminar paper makes sense."*

CT15 maintains: *"Especially at the beginning of my studies, I didn't know how to deal with it. We had some seminars on it, but I probably needed to experience it more. Now, it's fine."*

Institutional Motivation to Use Similarity Check Program

What should educational institutions do to ensure that similarity check programs are widely used among students?

93 % of the Turkish and 85 % of Czech teachers participating in the research emphasize that institutions such as universities should support the use of similarity programs free of charge.

TT20 emphasizes: *"As we know, the use of similarity programs is financially unaffordable for students. To ensure effective use by students, educational institutions need to support this issue. At this point, the program used by the institution should be shared with students and training should be provided on it. For individuals who will do research in the future to avoid plagiarism as much as possible when they enter academic life, they should be taught beforehand about the mistakes they have made or may make, and better quality research should be ensured in the future."*

CT22 states: *"What can the institution do? Provide free access and simply require those checks from us, except for the theses. That could work."*

Discussion

The importance of using technology for teacher education in promoting sustainable education within a cross-cultural context cannot be overstated. Technology serves as a powerful bridge, enabling educators from diverse cultural backgrounds to connect, collaborate, and share unique insights on sustainability. It allows teachers to access global resources, case studies, and strategies that are adaptable to various cultural contexts, enriching their understanding of how sustainability can be effectively taught in different regions. By leveraging digital platforms, teachers can exchange ideas on how cultural values intersect with environmental education, ensuring that sustainability is taught in a culturally relevant way as cross-cultural studies are extremely useful to look at research from different socio-cultural perspectives and understand the whole picture in different international contexts for teacher education and technology use for sustainable development (Pipere et al., 2022; Jurgena et al., 2021; Mirke et al., 2019; Veisson & Kabadayı, 2018; Miškolci, 2016). Moreover, technology fosters inclusivity, allowing for the integration of diverse voices in global discussions on sustainability education. This cross-cultural exchange is vital for addressing global challenges like climate change, as it equips teachers with the knowledge and tools to inspire students from all backgrounds to take action for a sustainable future. Through technology, teacher education programs can cultivate a generation of educators who are not only technologically proficient but also culturally aware, making sustainable education truly global and impactful. In line with this, Purg and Zakrajsek (2009) discussed the Slovenian situation among teachers, learners and schools, showing a need for adopting concrete measures of ESD and incorporating a positive implementation of ICT into this process. Though ICT enable instructors to transform their teaching practices by facilitating student-student and student-teacher interactions and collaboration in meaningful or authentic learning settings, teachers' ICT uses seem to focus more on surface techno-centric skills associated with applications (Makrakis & Kostoulas-Makrakis, 2012). Although computer technology has been recognized for its great potential to enhance teaching and learning, the results of various studies indicate that many early childhood teachers are not ready to integrate computers into the classroom. Possible reasons for teachers' low motivation to use technology in their teaching could stem from a fear of seemingly obscure and dauntingly complex concepts such as e-learning (Nurmilaakso, 2015). Nowadays, active teachers create their own blogs as well as those used by the class, and the use of Facebook has become a popular tool in formal education. The Internet sources provide additional learning material, both for general school education and for higher education (Keinonen et al., 2014). Teachers hold the opinion that a considerable importance in completing learning tasks is on individual work

and on doing it via the internet, using computers in the teaching and learning process (Soobik, 2014). In line with this, teachers' views on using plagiarism detection tools in education are also diverse and nuanced. The adoption and implementation of such tools should take into account the specific needs and values of the educational institution, the culture in which it operates, and the goals of the educational process. An approach that balances the benefits of maintaining academic integrity with concerns about overreliance and privacy is essential for sustainable and effective education. In the pursuit of sustainable education, maintaining academic honesty is paramount. Plagiarism detection tools serve as indispensable guardians of integrity in the face of evolving digital challenges. By leveraging these tools, educational institutions can foster an environment where original thought, ethical behavior, and a commitment to learning thrive. Ultimately, the integration of plagiarism detection tools into educational practices is not just a necessity; it is a proactive step toward shaping a future generation of thinkers and leaders who value intellectual integrity in all aspects of their academic journey.

In this study, in the Czech Republic, of the students attending preschool higher education, 2 % are male and 98 % are female. In the Turkish National educational system, while daycare centers accept 0–3-year-old children, preschool institutions admit 4–6-year-old children for education. In Turkey, preschool institutions are mostly female-dominant (Veisson & Kabadayi, 2018) and comprise 93 % female and 7 % male preschool teachers, which is very common in studies worldwide (Kabadayi, 2010).

Conclusion

Both Turkish and Czech teachers stated that they use the Turnitin similarity check program in their studies. Though there are numerous plagiarism detection tools, Turnitin.com is the most popular software among all the present plagiarism tools used in academia (Walker, 2010).

From the perspective of Turkish and Czech participants, there is a consensus that plagiarism detection systems should be utilized in both undergraduate and postgraduate studies. Some opinions even suggest extending the use of such programs to secondary education. However, divergent views emerge regarding their implementation throughout the study.

While Turkish participants believe in the use of similarity check programs in all scientific and media bodies, the Czech does not have a clear-cut opinion on this issue. On the one hand, they perceive the utilization of plagiarism detection systems positively, seeing it as a means of preventing plagiarism. On the other hand, they are aware of the obstacles these systems bring, both in terms of content and technology.

The aim is to maintain the quality of Bachelor and Master Theses. Students may inadvertently (out of ignorance) present someone else's text as their own, or they may forget to cite borrowed parts. Simultaneously, and no less importantly, such systems help in safeguarding intellectual property. Plagiarism is an increasing problem among undergraduate and postgraduate students (Whittle & Murdoch-Eaton, 2008).

The use of plagiarism detection programs fundamentally does not alter the habits of students. Awareness of plagiarism and its consequences begins in high school and continues to be emphasized throughout higher education. Within university education, issues related to plagiarism are highlighted throughout the entire course of study. Barrett and Malcolm (2006) provided students with training in academic ethics, resource searching, and anti-plagiarism. After the training, the plagiarism rates of the students decreased considerably.

All of the Czech and Turkish respondents, with few exceptions, are aware of how these programs function and are informed about them during their studies. The detection programs are so effective that the software often identifies chance similarities (Tenner, 2005). The plagiarism software features are finding text similarities, paraphrase detection, improper quotation highlighting, multilingual detection findings, automatic recognition of missing and inaccurate citations, and sentence and grammar corrections (Subaveerapandiyana & Nandhakumar, 2023).

Both the Czech and Turkish participants essentially have a clear understanding, and their only remark concerns the processing speed and user-friendliness. Students need faster matching speed so that students can quickly check the plagiarism percentage of their assignment before submitting the final document and improve the software to avoid directly quoting or paraphrasing the text as plagiarized work (Halgamuge, 2017). Programs such as Itenticate and Tournitin are not production tools like the ChatGpt knowledge base, but are only tools that detect plagiarism and executable excess in citations. It seems to be unusual for the participants for reverse engineering to copy this system in those years.

From the perspective of the Czech and Turkish teachers, the discontinuation of using plagiarism detection systems would likely lead to an increase in fraudulent practices in the preparation of written works, potentially impacting the quality of education. Computer-based plagiarism detection has been interesting to academics over the past two decades since using such tools decreases academics' workload via automating the comparison procedure and detecting the similarity of students' works quickly, which the academics need to check for doubtful similarity (Lancaster & Culwin, 2004)

Similar to the students in Turkey, the Czech respondents believe that the utilization of plagiarism detection systems will contribute to the quality of their studies and written assignments subject to such scrutiny. On the other hand, there are also opinions that essentially nothing will change, as these systems

are already in use today, and the pressure to prevent plagiarism is already considerable. Ersan and Uslu (2020) concluded that the science and research ethics course was effective in reducing possible plagiarism behaviors of teacher candidates.

Both the Czech and Turkish respondents perceive the interconnection of the informational and environmental realms as intertwined issues. Information pollution can contribute to the spread of false information and may thus impede efforts aimed at mitigating environmental pollution.

All of the Czech and Turkish respondents agree that information pollution is significant in today's world and continues to increase steadily. This is facilitated by the relentless growth of information sharing, as well as the increasing level of disinformation responding to national and international conflicts and situations. Its impact significantly influences, often negatively, the mood within society. The growth in information technology and accessibility has provided much material to fuel the observed increase in the incidence of plagiarism (McCabe, 2001).

Among the Czech and Turkish respondents, there is a consensus that the only effective defense is an open discussion in society and an emphasis on education and literacy. It has been proven that people with lower levels of education are more susceptible to misinformation, making the importance of schools and quality education crucial today. The only way to defend against information pollution is to learn how to critically evaluate information from multiple sources and not believe everything presented in the media. Hence, students should obtain extensive training in academic writing in the first year of their course to understand and avoid plagiarism (Halgamuge, 2017). The fact that the instructor will check the sources of the submitted assignment, make statements (75.1 %), regarding the sanctions that will be imposed on those who cheat on homework online, give information (67.1 %) and make statements about internet ethics (51.9 %) prevents candidates from tending to plagiarize online (Ersoy & Özden, 2011).

For the Czech and Turkish teachers, the reasons are easily identifiable. The most fundamental reason is the simplification of studies and the processing of required written assignments. In many cases, students perceive the assignments of written papers as unnecessary, not aligning with what they should gain from their education. Another aspect is the lack of knowledge and experience in working with academic sources, even though virtually all educational institutions in the Czech Republic include information in their curriculum on how to avoid plagiarism and work with scholarly texts. It was suggested that the nature of the subject, the individual talent, the learning approach, and the time contribution could affect the individual plagiarism percentage (Yaşar, 2018; Halgamuge, 2017).

Both in the Czech and Turkish Republics, there is currently significant pressure to preserve intellectual property and prevent plagiarism. From this perspective,

students do not perceive it as something new. Currently, there are some free plagiarism detection systems available, but the verification of texts is time-consuming. Some institutions offer the option of preliminary checks for theses and final papers through the Turnitin system, but it is not a standard offering. Therefore, a viable solution appears to be providing free access to the system for checking various types of papers and putting pressure on expediting the feedback process. High internet costs, particularly outside university environments, pose a barrier to accessing digital learning resources, as students often struggle with limited bandwidth, especially when using personal internet services (Mgeni et al., 2019; Mtebe & Gallagher, 2022). To address this issue, the government could reduce internet costs or offer tailored internet bundles for students, promoting equitable access to digital resources nationwide. Additionally, it is worth exploring offline access options, such as zero-rating educational websites to allow free resource access (McBurnie et al., 2020). In addition, academic writing and ethics courses may be compulsory for undergraduate students, and universities should add to the databases of plagiarism/similarity software detection programs as soon as possible and necessary measures can be taken to include them (Ersan & Uslu, 2020).

Recommendations

For a sustainable education, the use of plagiarism detection programs should be mandatory in both undergraduate and graduate programs. Plagiarism detection programs in institutions should be updated to work faster and more effectively. At universities, academic writing and scientific research and ethics courses should be compulsory in both undergraduate and graduate programs for sustainable education. To reduce plagiarism, plagiarism detection programs should be made available to students free of charge at universities. The instructor has to check the sources of the submitted assignment, make statements regarding the sanctions that will be imposed on those who cheat on homework online, give information, and make statements about internet ethics, prevent candidates from tending to plagiarize online for seeking to promote sustainable education.

References

- Ahmad, T. S. A. S., Abedin, N. F. Z., Ahmad, I., Paramasivam, S., & Mustapha, W. Z. W. (2022). Awareness and attitudes of undergraduate students towards plagiarism: Are there any differences between genders? *Asian Journal of University Education*, 18(3), 597–605. <https://doi.org/10.24191/ajue.v18i3.18947>
- Alharthi, M. (2020). Students' attitudes toward the use of technology in online

- courses. *International Journal of Technology in Education (IJTE)*, 3(1), 14–23.
- Arkan, K.S.S., & Görgülü, A. (2017). Plagiarism detection in the learning management system. *Proceedings of the 2017 8th International Conference on Information Technology (ICIT)* (pp. 495–500).
- Awasthi, S. (2019). Plagiarism and academic misconduct: A systematic review. *Journal of Library & Information Technology*, 39(2), 94–100. <https://doi.org/10.14429/djlit.39.2.13622>
- Awasthi, S. (2019). Plagiarism and academic misconduct: A systematic review. *Journal of Library & Information Technology*, 39(2), 94–100. <https://doi.org/10.14429/djlit.39.2.13622>
- Barrett, R., & Malcolm, J. (2006). Embedding plagiarism education in the assessment process. *International Journal for Educational Integrity*, 2(1), 38–45.
- Bailey, J. (2020). 5 Ways COVID-19 is changing academic plagiarism. Plagiarism today. <https://www.plagiarismtoday.com/2020/10/26/5-ways-covid-19-is-changing-academic-plagiarism/>
- Bogdan, R., & Biklen, S. K. (1998). *Qualitative research for education: An introduction to theories and methods*. Allyn and Bacon, Inc.
- Chua, H. W., & Lin, C. Y. (2020). The effect of task-based language teaching in learning motivation. *International Journal on Social and Education Sciences (IJonSES)*, 2(1), 41–48.
- Clarke, O., Chan, W.Y.D., Bukuru, S., Logan, J., & Wong, R. (2023). Assessing knowledge of and attitudes towards plagiarism and the ability to recognize plagiaristic writing among university students in Rwanda. *Higher Education*, 85, 247–263. <https://doi.org/10.1007/s10734-022-00830-y>
- Ersan, C., & Uslu, B. (2020). Can plagiarism detected by software be prevented through education? An experimental study with preschool teacher candidates. *International Journal of Technology in Education and Science (IJTES)*, 4(2), 118–132.
- Ersoy, A., & Özden, M. (2011). Öğretmen Adaylarının Ödevlerinde İnternette İntihal Yapmalarında Öğretim Elemanının Rolüne İlişkin Görüşleri [Preservice teachers' views on plagiarism from internet in their homework]. *İlköğretim Online*, 10(2), 608–619.
- Farooq, R., & Sultana, A. (2022) Measuring students' attitudes toward plagiarism. *Ethics & Behavior*, 32(3), 210–224. <https://doi.org/10.1080/10508422.2020.1860766>
- Fraser, R. (2014). Collaboration, collusion, and plagiarism in computer science course work. *Informatics in Education*, 13(2), 179–195. <https://doi.org/10.15388/infedu.2014.10>
- Gunwoo, L., Jindae, K., Myung-seok, C., Rae-Young, J., & Ryong, L. (2023). Review of code similarity and plagiarism detection research studies, *Applied*

- Sciences*, 13(20), 11358. <https://doi.org/10.3390/app132011358>
- Halgamuge, M. N. (2017). The use and analysis of anti-plagiarism software: Turnitin tool for formative assessment and feedback. *Computer Applications in Engineering Education*, 25(6), 895–909. <https://doi.org/10.1002/cae.21842>
- Jurgena, I., Cēdere, D., Keviša, I., Szerlag, Ó. A., & Jedrzejowska, A. (2021). Opinion of pre-service preschool teachers on responsiveness: A comparative study of Latvian and Polish students in the aspect of sustainable education. *Journal of Teacher Education for Sustainability*, 23(2), 5–17. <https://doi.org/10.2478/jtes-2021-0013>
- Kabadayı, A. (2010). Investigating demographic characteristics and teaching perceptions of Turkish preschool teachers. *Early Child Development and Care*, 180(6), 809–822.
- Karnalim, O., Chivers, S., & Chivers, W. (2023). Reporting less coincidental similarity to educate students about programming plagiarism and collusion. *Computer Science Education*, 34(3), 442–472. <https://doi.org/10.1080/08993408.2023.2178063>
- Keinonen, T., Åbo, M. S., Vilkonis, R., Persson, C., & Åbo, I. P. (2014). Environmental issues in the media- students' perceptions in the three Nordic-Baltic countries. *Journal of Teacher Education for Sustainability*, 16(1), 32–53. <https://doi.org/10.2478/jtes-2014-0002>
- Lancaster, T. & Culwin, F. (2004). Using freely available tools to produce a partially automated plagiarism detection process. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 520–529). Perth. <http://www.ascilite.org.au/conferences/perth04/procs/lancaster.html>
- Landau, J.D., Druen, P.B., & Arcuri, J.A. (2002). Methods for helping students avoid plagiarism. *Teaching of Psychology*, 29(2), 112–115. https://doi.org/10.1207/S15328023TOP2902_06
- Lim, M. S., & Huh, S. (2019). Korean medical students' knowledge about and attitudes towards plagiarism according to their commission of plagiarism. *Science Editing*, 6, 106–111. <https://doi.org/10.6087/kcse.170>
- Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Makrakis, V., & Kostoulas-Makrakis, N. (2012). Course curricular design and development of the M.Sc. programme in the field of ICT in education for sustainable development. *Journal of Teacher Education for Sustainability*, 14(2), 5–40. <https://doi.org/10.2478/v10099-012-0007-7>
- Marsh, R.L., Landau, J.D., & Hicks, J.L. (1997). Contributions of inadequate source monitoring to unconscious plagiarism during idea generation. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 23(4), 886–897. <https://doi.org/10.1037/0278-7393.23.4.886>
- Maslen, G. (2003, June 10). Dirty marks. *The Bulletin*, 18–22.

- McBurnie, C., Adam, T., Kaye, T., & Haßler, B. (2020). *Zero-rating educational content in low- and middle-income countries* (Helpdesk Response No. 8). EdTech Hub. <https://doi.org/10.53832/edtechhub.0004>
- McCabe, D. 2001. While cheating helps some, it's harder to stop others. *Newsday*, November 25.
- Mgeni, M. S., Ismail, M. J., Yunus, S. A., & Haji, H. A. (2019). The contribution of LMS to the learning environment: Views from the State University of Zanzibar. In G. Mendy, S. Ouya, I. Dioum, & O., Thiaré (Eds), *e-infrastructure and e-services for developing countries. AFRICOMM 2018. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, 275. Springer, Cham. https://doi.org/10.1007/978-3-030-16042-5_27
- Mirke, E., Cakula, S., & Tzivian, L. (2019). Measuring teachers-as-learners' digital skills and readiness to study online for successful e-learning experience. *Journal of Teacher Education for Sustainability*, 21(2), 5–16. <https://doi.org/10.2478/jtes-2019-0013>
- Miškolci, J., Armstrong, D., & Spandagou, I. (2016). Teachers' perceptions of the relationship between inclusive education and distributed leadership in two primary schools in Slovakia and New South Wales (Australia). *Journal of Teacher Education for Sustainability*, 18(2), 53–65. <https://doi.org/10.1515/jtes-2016-0014>
- McLeod, S. A. (2019, July 30). Qualitative vs. Quantitative Research. Simply Psychology. <http://www.simplypsychology.org/qualitative-quantitative.html>.
- Mtebe, J., & Gallagher, M. (2022). Continued usage intentions of digital technologies post-pandemic through the Expectation-Confirmation Model: The case of a Tanzanian university. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT)*, 18(1), 125–145.
- Nurmilaakso, M. (2015). How children can support their learning to write and read by computer in the early years of school. *Journal of Teacher Education for Sustainability*, 17(1), 99–107. <https://doi.org/10.1515/jtes-2015-0008>
- O'Connor, S. (2002, October 6). *Electronic plagiarism and its impact on educational quality*. CAVAL electronic plagiarism conference, Melbourne, Australia.
- Pipere, A., Kravale-Pauliņa, M., & Oļehnoviča, E. (2022). Present and future of teacher education admission: Perspectives from Europe. *Journal of Teacher Education for Sustainability*, 24(1), 145–168. <https://doi.org/10.2478/jtes-2022-0011>
- Purg, P., & Zakrajsek, S. (2009). New technologies for sustainable teaching and learning: A case study from Slovenia on diminishing student workload and increasing motivation through ICT. *Journal of Teacher Education for Sustainability*, 11(2), 31–40. <https://doi.org/10.2478/v10099-009-0038-x>
- Quah, C. H., Stewart, N., & Lee, J. W. C. (2012). Attitudes of business students

- toward plagiarism. *Journal of Academic Ethics*, 10(3), 185–199. <https://doi.org/10.1007/s10805-012-9157-4>
- Roig, M. (1997). Can undergraduate students determine whether the text has been plagiarized? *Psychological Record*, 47, 113–122.
- Russell C. K., & Gregory D. M. (2003). Evaluation of qualitative research studies. *Evidence-Based Nursing*, 6(2), 36–40.
- Soobik, M. (2014). Teaching methods influencing the sustainability of the teaching process in technology education in general education schools. *Journal of Teacher Education for Sustainability*, 16(1), 89–101. <https://doi.org/10.2478/jtes-2014-0005>
- Subaveerapandiyar, A., & Nandhakumar, R. (2023). Awareness of plagiarism among student teachers of Indian teacher educational institutions. *Indian Journal of Educational Technology*, 5(2), 44–54. <https://ssrn.com/abstract=4536909>
- Tenner, E. (2005, June). Rise of the plagiosphere: How new tools to detect plagiarism could induce mass writer's block. *Technology Review*, 50–53. <https://www.press.umich.edu/pdf/9780472031955-ch4.pdf>
- Vehviläinen, S., Löfström, E., & Nevgi, A. (2018). Dealing with plagiarism in the academic community: Emotional engagement and moral distress. *Higher Education*, 75, 1–18. <https://doi.org/10.1007/s10734-017-0112-6>
- Veisson, M., & Kabadayı, A. (2018). Exploring the preschool teachers' views on professionalism, quality of education and sustainability: International study in Estonia and Turkey. *Journal of Teacher Education for Sustainability*, 20(2), 5–18. <https://doi.org/10.2478/jtes-2018-0011>
- Walker, J. (2010). Measuring plagiarism: Researching what students do, not what they say they do. *Studies in Higher Education*, 35(1), 41–59. <https://doi.org/10.1080/03075070902912994>
- Whittle, S. R., & Murdoch-Eaton, D. G. (2008). Learning about plagiarism using Turnitin detection software. *Medical Education*, 42(5), 528. <https://doi.org/10.1111/j.1365-2923.2008.03058.x>
- Yaşar, E. (2018). Akademik intihal, nedenleri ve çözüm önerileri [Academic plagiarism, reasons and suggestions for solutions]. *International Journal of Scholars in Education*, 1(1), 34–44.
- Zobel, J., & Hamilton, M. (2002). Managing student plagiarism in large academic departments. *Australian Universities Review*, 45(2), 23–30.

Correspondence concerning this paper should be addressed to Prof. Abdülkadir Kabadayı, Necmettin Erbakan University, Konya, Turkey. Email: akkabadayi03@gmail.com