

Perceived Effectiveness of Turnitin® in Detecting Plagiarism in Presentation Slides¹

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Abstract

This cross-sectional survey study investigates students' perceptions of the effectiveness of Turnitin in detecting plagiarism in academic presentation slides. The data was collected online from 311 students studying at a prominent English-medium instruction university in Turkey. The findings indicated that more than half of them believed in the effectiveness of Turnitin in detecting plagiarism in presentations. Students perceived themselves as academically honest when preparing their presentations. They were also aware of the importance of using Turnitin in a required presentation skills course to detect plagiarism. This research can add to the literature since, unlike research on detecting plagiarism in writing, the literature on the use of Turnitin in presentations is not rich and diverse.

Keywords: *Plagiarism; Plagiarism detection; Academic honesty; Turnitin; Presentations*

Introduction

In student presentations prepared for university courses, what used to be the norm some 20 years ago was preparing transparencies to be presented on overhead projectors, yet with the advancements in educational technology, it is not uncommon for classrooms in Turkey, even at state-funded universities to be well-equipped with a projector and a computer. This being the case, students are expected to prepare PowerPoint presentations during their university years. Some English-medium universities in Turkey offer courses focusing on speaking skills with academic presentation skills as a major component. Similar to sites with anonymous servers where students can engage in 'plagiarized essay trafficking', slide sharing sites have also become available for students who choose not to prepare their own slides for their presentations, who choose to 'plagiarize'. Simply put, plagiarism is cheating with the intention of using someone else's work as your own without citing the original source and taking credit for someone else's work (Anderson & Steneck, 2011). The websites which ease plagiarism make it possible for students to reach an abundance of slides on a wide range of topics at varying English language levels. The spread of such sites in support of plagiarism or in support of making more resources accessible for internet users, created a need for plagiarism detection programs to widen their scopes, and to improve their detection methods, constantly rewriting their algorithms.

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Plagiarism Detection by Turnitin

Academic ethics especially bears importance since it is a gatekeeper for any profession. Plagiarism has been defined, redefined and fought against in the academic world ever since documented research started to be valued. Turnitin, the internet-based originality checking service was launched in 1997 to check files against its database in addition to the content of other websites with the aim of securing academic integrity (Turnitin.com, 2018). Turnitin is a commercial product that detects and deters plagiarism by showing a matching overview and similarity index, embraced in many countries around the world (Bruton & Childers, 2016; Henderson, 2008; Sutherland-Smith & Carr, 2005). It is one of the most commonly referred to programs for plagiarism detection at university level all around the world (Bruton & Childers, 2016; Henderson, 2008; Sutherland-Smith & Carr, 2005). In the university at which this research was conducted, Turnitin has long been used for a number of purposes, such as collecting assignments, giving feedback on assignments, but mainly for detecting plagiarism. In addition to essay type assignments, it has been widely used with student presentations, too, since one of the objectives of the Academic English courses at English medium universities is to raise an awareness of academic integrity: a long lasting process that requires a lot of effort put into it. That is, 'academic socialization is a long-term and complex process that requires practice and apprenticeship not of semesters, but years' (Pennington, 2010, p. 148). This statement very clearly puts forward the idea that avoiding plagiarism needs to be taught throughout the university years because of the complexity of instructed academic integrity. Hence, university instructors are responsible for creating methods of discouraging plagiarism, while at the same time improving the likelihood of detecting it in order to deter students from plagiarizing.

Detecting Plagiarism in Presentations by Turnitin

Turnitin is used especially in student essays but also in other types of assignments, including presentations (Bruton & Childers, 2016; Henderson, 2008; Sutherland-Smith & Carr, 2005). Yet, this well-developed program comes with its shortcomings too when it comes to detecting plagiarism when PowerPoint slides are uploaded into the system. Students who want to avoid high similarity rates on Turnitin upload the pictures of the text on their slides so that the program is unable to compare the content with other slides uploaded on the program or with sources available online. In student presentations the program was not observed to be as effective as it is with student essays since Turnitin identified the text on the pictures as pictures, and could not detect the similarities of slides. Hence, instructors need to give the benefit of doubt when checking the similarity percentages of the slides uploaded on Turnitin. This being the case, rather than the 'percentage of similarity', the 'content of the similarity' matters. As can be seen from this example, students develop assumptions, expectations and knowledge of technology when they intend to cheat a program, or get away with unethical misconduct in their academic work. That is why the stakeholders in education have a significant role in how they act toward technology (Introna & Hayes, 2011).

Plagiarism, a Learning Strategy or Cheating?

There are different forms of plagiarism, including unacknowledged copying and unattributed paraphrasing (Hu & Lei, 2016). The concept of plagiarism might be perceived differently in different cultures. Especially in Asian contexts, where imitating a model is the main learning

method, students may find themselves plagiarizing unintentionally when they are in fact trying to produce work that looks and sounds like that of their professors. Matelene (1985, p. 803) cites a student directly expressing this very idea. The student apparently very naively confesses that her plagiarism was totally unintentional and on the contrary, that she had good intentions of working hard. In her words: 'After our teacher's explanation, we understand that in *her country or some others* plagiarism is forbidden.... However, in our country things are a little different. We may perhaps call what our teachers call 'plagiarism' as 'imitation'. The striking and representative exemplary quotation displays the perception of imitation from a different perspective. Although Matelene reported the cultural importance of different perceptions on plagiarism in the 1980, the overlap between the study methods in some cultures, such as 'imitation' and the western understanding of plagiarizing which does not tolerate imitation, is still prevalent. Imitation is sometimes encouraged in education especially for beginners. As can be inferred, some cultures may have even more difficulty than others in fully comprehending the extent and content of this 'imitation' (Bruton & Childers, 2016). Such learning strategies can be mistaken for plagiarism. Hence, it was observed that a tendency towards plagiarism and the tolerance of it are predictors of differences between cultures (Bruton & Childers, 2016).

Reasons behind Plagiarism

Most university students plagiarize because they are inexperienced in producing source-based writing (Hayes & Introna, 2015). The move toward membership in a discourse community is not a smooth and fast one. It is a long and hard road that students need to take towards creating their own work crediting previous work in the field appropriately. Students write reports during their university years trying to sound a bit more formal, using the jargon of their fields and experiencing written language norms. Whether it be unintentional or intentional, the chunks of phrases they 'borrow' might include expression of ideas or data that does not belong to them in the first place. After all, 'imitation' is one way of learning in many cultures as mentioned previously. The attempt to imitate academic language may put the authenticity of the product at stake. Howard (1999) also claims that plagiarism is sometimes used as a means of learning unfamiliar language and ideas. In the Turkish context, one student cited in *Nature* (Yilmaz, 2007) states that he does borrow sentences especially for his introductions in his articles to make them sound more elaborate. Similar to the above claim on different perceptions of plagiarism in different cultures, Sreenivasan (as cited in Brumfiel, 2007) suggests that in some cultures, plagiarism is not discouraged since it is not considered to be 'deplorable'.

Finally, easy and cheap access to a surplus of academic sources on the internet is the most determinant reason behind plagiarism today (Graham-Matheson & Starr, 2013). The academic sources available to open access are ever-increasing, and making use of academic work without crediting the source is an almost 'effortless' way of cheating (Singh, Mangalaraj, & Taneja, 2011). Yet, the more the plagiarism methods develop, the better the detection methods become because of the need that emerges to improve the efficiency of detection programs. So, technology that makes online sources easily accessible, also makes them available to be used when trying to detect plagiarism (Kenny, 2007).

Plagiarism takes place in various ways. When quoting a source, while deletion of some words can be categorized as plagiarism, insertion of words and/or phrases to the original quote would also be called plagiarism even if they distort the overall meaning. Vega, Tello, Gomez, and Pineda (2013) have identified varying methods of plagiarizing. 'Transportation' is one other method of

plagiarizing. In transportation, portions of a certain text are transported and relocated in another text to make the whole work look and sound authentic rather than borrowed. It is also not uncommon for students to make reference to a single quote citing an entire book. In another method, students might use their own work several times for different purposes, hiding the fact that they are reusing their old work, which is called 'self-plagiarism' (Anderson & Steneck, 2011). Another method of plagiarizing is called 'translation plagiarism' which is not crediting the original writer but the translator as the owner of the work. Yet another way is with unpublished work. Sometimes for editing or revising reasons, unpublished work is shared confidentially, and can still be used without crediting the author. When this academic misconduct is committed, using the right to access the source confidentially, it is called 'unpublished plagiarism' (Anderson & Steneck, 2011).

No matter how plagiarism is committed, it is unethical and should be discouraged in the academic world by referring to the justifications behind crediting authors and also by using detection techniques, such as the Turnitin program. The above mentioned methods are all applicable to not only essay type work, but also academic presentations. In the literature, rather than punitive actions, a pedagogical approach is suggested by many scholars when dealing with plagiarism cases. Pecorari asserts that 'learning is rarely a straight line from input to mastery (2003, p. 320). Learning academic integrity, it seems, takes longer than expected for university students, since the course-related resources online are very easily accessible today and are unlimited, some of them being 'essayland.com', 'slideshare.net', 'cheathouse.com'. While the intention of some sites may not be to promote unethical behavior, their practical use may very well ease copying of someone else's work.

The Turkish Context

The reason why the present study was conducted is because the issue of avoiding plagiarism has been a serious concern in the Turkish tertiary education context. One study that reviewed the methodology and results of the previous studies on plagiarism in the Turkish context acknowledges that the awareness of legal and ethical concerns has risen among Turkish researchers, but in the study it is stated that there is still a limited amount of research on students' perceptions of plagiarism (Gokmenoglu, 2017). Gokmenoglu refers to the most comprehensive plagiarism-related project conducted in Turkey by the team of Education Policy Research and Application Centre of one of the most prominent universities of Turkey by examining 470 master's theses and 130 doctoral dissertations published between 2007 and 2016 in Turkey. There was "heavy plagiarism" in 34% of the theses; and the rate was even higher at private universities (46%).

Previous studies conducted on Turkish students on perceptions towards plagiarism are not numerous. One former study investigated the influence of gender on not 'plagiarism' in particular, but unethical computer use in a largely populated state university in Turkey (Akbulut, Uysal, Odabasi, & Kuzu, 2008). Another study conducted in the Turkish university context analyzes the perceptions of 40 students in an academic writing course (Kose & Arikan, 2011). The results bear importance since anti-plagiarism software, such as the one this study focuses on is found to be useful in reducing plagiarism cases. Yet another study in the Turkish university context about academic dishonesty analyzed the individual and institutional factors contributing to plagiarism (Akbulut, Sendag, Birinci, Kilicer, Sahin, & Odabasi, 2008). It is claimed that 'If the institution does not take necessary precautions to prevent academic dishonesty, this constitutes

a flaw in the institutional policy and a handicap regarding the prestige of the institution' (Akbulut et al., 2008). In the Turkish context Eret and Ok (2014) in their research examined the tendencies of teacher candidates to plagiarize using the Internet, and found out that 'gender, department and length of computer use were significant factors that affecting the participants' tendencies to plagiarize. In addition to these, time constraints, workload and the difficulty of assignments also were the determining factors affecting teacher candidates' tendency to plagiarize.

While the literature is rich in the types and methods of different kinds of plagiarism in written work, there seems to be a gap in studying the plagiarism of slides used in spoken academic presentations. Hence, this study focuses on the effectiveness of Turnitin, used in a required academic oral presentation skills course, where students have to upload all the slides they use during the semester and in their final exam presentations. Their perceptions of the effectiveness of the program bear a significant importance since one of the factors that deters them from cheating is how they perceive the effectiveness of the detection program. That is to say, the reflection of social practices on information technology, depend on the reactions of people to the technology developed. In the case of plagiarism detection, the system can be assumed to work on the condition that students perceive it as effective. Yet, since any detection program will come with its shortcomings, at this point, the students must be taught that the concept of academic integrity bears even more importance. In fact, students' perception of the effectiveness of the plagiarism detection program, plays a significant role in the actual effectiveness of the program. Bearing this in mind, this paper aims to portray the perceptions of the students about the effectiveness of Turnitin in detecting plagiarism in slides.

In the light of these concerns and issues, the main research question that guides the current study is: What are students' perceptions of the effectiveness of Turnitin in detecting plagiarism in slides?

Methodology

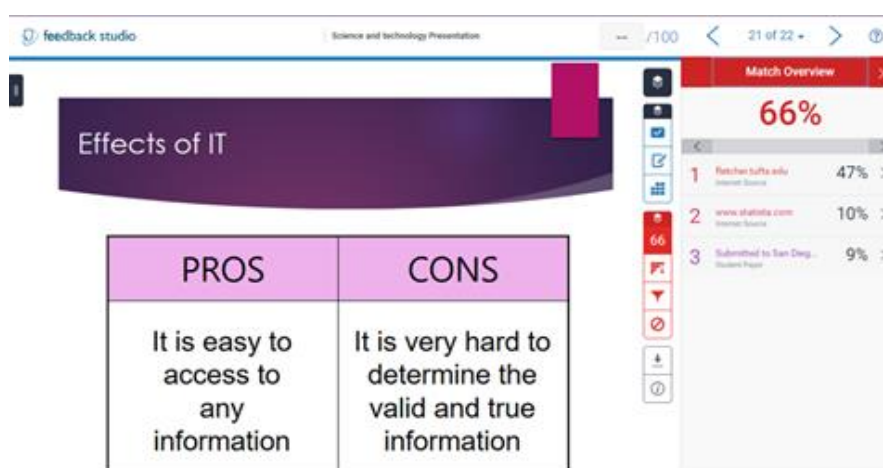
This study aimed to investigate students' perceptions of the effectiveness of Turnitin program in detecting plagiarism in academic presentations. The research design and context, the data collection instrument and procedure, and the statistical analysis of the collected data are presented below.

Research Design

This study was designed as a survey study in which investigators administer a survey to a sample or population to describe the attitudes, opinions, behaviors, or characteristics of the population (Creswell, 2012). Its focus was directed more toward learning about a population and less on relating variables or predicting outcomes. Surveys in research are used to describe trends, determine individual opinions, and provide useful information to evaluate course materials (Creswell, 2012; Fraenkel, Wallen, & Hyun, 2012). The present study was a survey study since it examines the participants' experiences and opinions about the use of Turnitin. Specifically, this is a type of cross-sectional survey research design in which the data is collected at one point in time.

Research Context

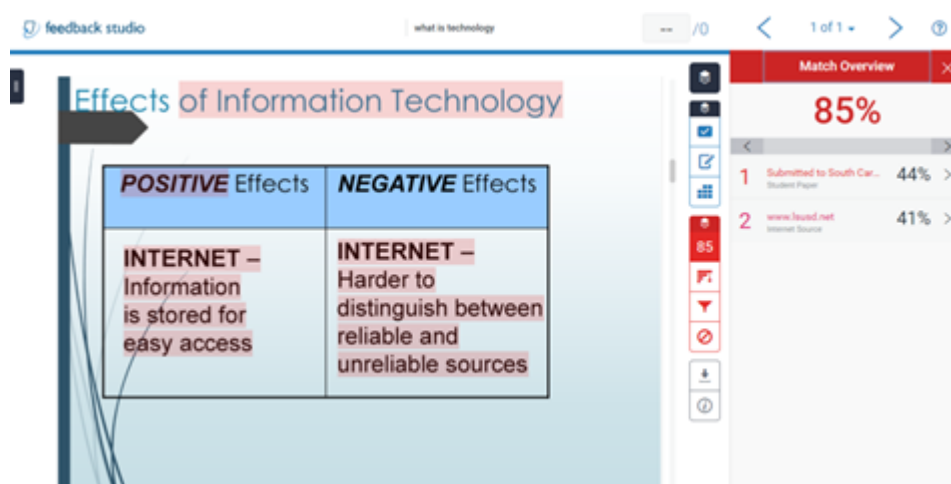
The study was conducted in the Academic Oral Presentation Skills course in the 2016-2017 academic year at one of the most prominent English-medium universities of Turkey. The course in which this study was conducted is a required speaking-oriented course designed with the aim of equipping students with the essential speaking skills they need to cope with the English language as a medium of instruction. The course revolved around two main focuses: academic speaking and presentation skills, and is offered by about 20 instructors each semester based on the same course syllabus to about 1200 students. Each semester students present two main presentations in addition to the final presentation that accounts for their final exam grade, and upload their slides on Turnitin. Sample screenshots of students' presentations uploaded on Turnitin are provided in Figure 1 and Figure 2.



The screenshot shows a presentation slide titled "Effects of IT" with a table comparing pros and cons. The Turnitin Match Overview sidebar on the right indicates a 66% match score. The table content is as follows:

PROS	CONS
It is easy to access to any information	It is very hard to determine the valid and true information

Figure 1. A Sample Screenshot of Students' Presentation Uploaded to Turnitin



The screenshot shows a presentation slide titled "Effects of Information Technology" with a table comparing positive and negative effects. The Turnitin Match Overview sidebar on the right indicates an 85% match score. The table content is as follows:

POSITIVE Effects	NEGATIVE Effects
INTERNET – Information is stored for easy access	INTERNET – Harder to distinguish between reliable and unreliable sources

Figure 2. Another Sample Screenshot of Students' Presentation Uploaded to Turnitin

The presentations are about the themes in the course book, mind, art, marketing, science and technology. Because the course was designed as a theme-based course, the presentation topics

revolve around these four themes of the course which causes many presentation topics to be exactly the same or to be overlapping. This raises a concern for plagiarism. The instructors spend time and effort during the course to define and discourage plagiarism by elaborating on the reasons behind its rationale and also by emphasizing the risks of being detected by Turnitin.

Participants

The set of participants in the study were mostly second year students from various departments who were taking a compulsory academic presentation skills course offered by the Department of Modern Languages (Freshman English). All participants had taken two other academic English courses, the prerequisites of the course that the research was conducted in. Thus, they were already familiar with the concept of plagiarism in writing academic essays, yet even more emphasis was given in the presentation skills course curriculum to raise students' sensitivity towards plagiarism.

Demographic information of the participants is provided in Table 1. As it can be seen, the participants included 311 students (143 females, 168 males). They were selected based on the convenience sampling method, a type of nonprobability sampling method based on the criteria of being readily available, accessible, and willing to participate (Creswell, 2012). The participants were informed about the study, and its process, and that their participation was voluntary. All their personal information was kept anonymous throughout the study.

Table 1. Demographic Information of the Participants

Variable	Frequency	Percentage Value
Gender		
Female	143	46.0
Male	168	54.0
Discipline (Department)		
Engineering	166	53.4
Arts and Sciences	70	22.5
Education	26	8.4
Architecture	24	7.7
Political Sciences and Administrative Duties	23	7.4
Experience in Turnitin		
Experienced	295	94.9
Inexperienced	16	5.1
Total	311	100.0

As for the demographics of the participants, their age ranged from 18 to 43. They were mostly between the ages 21-24, followed by 17-20. They were studying in (from the highest participants accessed to the least) the Faculty of Engineering (n=166, 54%), Arts and Sciences (n=70, 23%), Education (n=26, 8%), Architecture (n=24, 8%), and Political Sciences and Public Administration (n=23, 7%). Two of the participants did not indicate their department information. That the data was collected from a heterogeneous sample makes the results of the present study more generalizable.

Only a small portion of the participants (n=16, ~5%) had never used Turnitin before, while the majority (n=295, ~95%) had already used it in some course they took before. They already had

used Turnitin mostly in English language courses, English for Academic Purposes I, English for Academic Purposes II, in addition to the courses Anthropology, Introduction to Politics, Society and Culture, e-Government, Introduction to Chemical Engineering, Research Methods, Social and Developmental Psychology, etc. It can be inferred that in the past, they used Turnitin mostly in the courses that required writing assignments.

Data Collection Instrument and Procedure

The data collection instrument was a self-developed survey prepared by benefitting from the existing literature and then finalized after taking three experts' opinions about its clarity, scope, and the content before the instrument was finalized.

The instrument includes two sections, including 4 items for demographics, and 15 items about the focus of the research, questions related to the perceived effectiveness of Turnitin in detecting plagiarism in slides. The second part included two types of questions. There were 4 multiple-choice items, and the remaining 11 items were in 5-point Likert type response format from 1: strongly disagree to 5: strongly agree.

The data was collected online through Google Forms in the academic year of 2016-2017. The collected data was analyzed with descriptive statistics (mean, standard deviations, and frequencies). The data was analyzed through the software *IBM SPSS version 24*. The next section provides the findings retrieved from the data in detail.

Results

The research question '*What are students' perceptions of the effectiveness of Turnitin in detecting plagiarism in slides?*' was investigated with descriptive statistics. The findings from Likert type items related to students' perceptions about the effectiveness of Turnitin in preventing plagiarism in presentations are indicated in Table 2.

Table 2. Descriptive Statistics

Likert-type Items	M	SD
1- I think it is very easy to upload presentations on Turnitin.	4.22	.94
2- I understand the benefits of using Turnitin in 211.	3.63	1.21
3- I understand the reasons behind using Turnitin in 211.	4.14	1.02
4- Using Turnitin made me much more aware of how to avoid plagiarism when presenting.	3.65	1.24
5- Using Turnitin made me feel relieved because the authenticity of my presentation was approved.	3.51	1.18
6- If I plagiarize, I would feel uncomfortable.	4.40	1.00
7- If I plagiarize, I'm unfair to the other students.	4.04	1.21
8- If I plagiarize, I'm unfair to the writer of the source.	4.16	1.17
9- If I plagiarize, I'm unfair to myself.	4.06	1.22
10- If I plagiarize, I'm unfair to my teacher.	4.17	1.32

According to Table 2, the highest mean score of students belonged to the item in which it is stated that it is very easy to upload presentations on Turnitin ($M=4.22$, $SD=.94$). As for the statement about understanding the benefits of Turnitin in courses that require research, the mean score was 3.63 over 5.00. The mean score of the statement on students' understanding the reasons why they use Turnitin was higher ($M=4.14$). The descriptive statistics also indicated that other higher mean scores that reflected agreement belonged to the following items: 'If I plagiarize, I would feel uncomfortable', 'If I plagiarize, I'm unfair to my teacher!', and 'If I plagiarize, I'm unfair to the writer of the source'. The lowest mean score belonged to the item 'Using Turnitin made me feel relieved because the authenticity of my presentation was approved'.

The findings indicated that of 311 students, 42% of them think that Turnitin is very effective in preventing plagiarism in presentations. Moreover, 40% of them think that Turnitin is occasionally effective in preventing plagiarism in presentations. On the contrary, only 8% of them think the opposite, that Turnitin is not effective at all in detecting plagiarism in slides. Therefore, it can be inferred from these results that the majority of the students think that Turnitin is usually effective to make students behave honestly when they prepare their presentations.

In addition, the majority of the students (65%) stated that Turnitin makes them aware of the importance of academic ethics when preparing a presentation. Similarly, 64% of them declared that Turnitin makes them more aware of the importance of citing a source that they borrow information from in their presentations. The other issue is students' being afraid of being penalized. Of all the participants, 35% stated that they don't plagiarize in their presentations because they are afraid they would be penalized when Turnitin shows a high similarity rate. Interestingly, 28% of them stated that Turnitin makes them develop new methods of plagiarizing. Most students (67%) think that they have no concern about using Turnitin for their assignments in the Academic Oral Presentation Skills course. Regarding the effect of Turnitin on the relationship of students with their instructors, while most students (60%) think that it does not have any positive or negative effect on the relationship with their instructors, 11% said that it affects their relationship with their instructor negatively since they feel that they are not trusted. The next section discusses the results of the research and concludes the study.

Discussion and Conclusion

This study investigated students' perceptions of the effectiveness of Turnitin in detecting plagiarism in their presentations. With this aim, 311 undergraduate students took an online, self-developed survey which includes demographic questions, and items about their perceptions on Turnitin in detecting plagiarism in presentations. The data was analyzed with descriptive statistics. The study concluded that most students declared that Turnitin made them much more aware of the importance of ethical issues when benefitting from a source and helped decrease plagiarism cases, which corroborates with some earlier studies (Graham-Matheson & Starr, 2013; Halgamuge, 2017). One of the interesting points retrieved from students' responses is that a quarter of the students declared that, they learned new methods of plagiarizing to be able to cheat the program, which is a curious feature of plagiarism detection algorithms that needs to be considered by program writers. Instructors, too, may benefit from this confession and should not oversee the fact that detection methods are still open to be cheated or

manipulated by students. The power of Turnitin in effectively identifying new methods of cheating must, therefore, be questioned.

The findings also showed that some students think that Turnitin is not effective. The reason could be unintelligent content matching or including a directly quoted text without quotation marks or reference information (Halgamuge, 2017). One of the intriguing results may be students' being afraid of being penalized. Hence, we can conclude from the results of this research that by detecting or deterring students' cheating in presentation slides, Turnitin does work efficiently towards its intended aim. The results indicated that one third of the students are afraid that they would be penalized, and therefore do not plagiarize.

More than half of the students declared that Turnitin does not have any positive or negative effect on their relationship with the course instructor, whereas some others stated that it affects their relationship negatively since instructors feel that they are not to be trusted. Although few students think so, it could be taken into consideration when explaining the rationale behind using Turnitin to students before they are asked to upload their work on Turnitin. When instructors try to prevent and decrease plagiarism cases, they may unintentionally sound distrustful, which may not be welcomed by students. In order to prevent this damage, some training and educational workshops could be organized for the students to explain the importance of behaving academically honest and not cheating by plagiarizing. When the students are aware of the importance of the ethical issues, and how to benefit from sources and cite them appropriately, it is more likely for them to avoid unethical behavior when producing academic work, including presentations. An earlier study concluded that students usually do not really know what plagiarism is beyond the most blatant instances (Blum, 2009; Bruton & Childers, 2016; McCabe, Treviño, & Butterfield, 2001; Power, 2009; Risquez, O'Dwyer, & Ledwith, 2013). Even instructors and lecturers can have different viewpoints in their understanding of the concept of plagiarism (Bruton & Childers, 2016; Flint, Clegg, & Macdonald, 2006; Roig, 2001). Therefore, the solution could be to discuss and teach what plagiarism is and reach a consensus about this fuzzy concept. Moreover, formal policies that deter plagiarism could be embraced by educational institutions.

This study with its scope and context can contribute to the literature since most studies focused particularly on the use and effect of Turnitin in writing assignments and essays (Halgamuge, 2017), only in some disciplines or on a small group of people in the universities (Graham-Matheson & Starr, 2013), whereas this study focused on students' perceptions of the effectiveness of Turnitin in detecting plagiarism in their presentation slides. Most importantly, rather than written assignments and essays, this study focused on its use for academic presentations, and indicated how its effectiveness is perceived by students when they are required to upload slides on Turnitin. The results are enlightening for the higher education institution the study was conducted at. The results are promising also for the program developers and administrators since Turnitin is a very strong deterrent in dishonesty instances even in presentations according to the attitudes of the students surveyed. Integrating plagiarism detection programs into academic contexts seems to be efficient in raising awareness and deterring students from plagiarizing.

A few potential limitations could be considered in further research. First, as well as students' perspectives, instructors' perceptions should also be explored when a concept that is culturally diverse in meaning is under inspection. The sample size of the current study is limited to the accessible, voluntary students enrolled in the course in which the research was conducted.

Many more participants from diverse backgrounds could be studied in diverse settings to draw a general picture of this issue. Moreover, students could be interviewed for a detailed explanation of the reasons why they plagiarize and on their opinions about the effectiveness of Turnitin in deterring plagiarism. In this way, their reasons for plagiarizing could be better understood, and more applicable solutions and precautions can be taken. Finally, longitudinal studies could be conducted to have a better understanding about the effectiveness of Turnitin in deterring plagiarism, examining students' cheating behaviors and the change in their dishonesty.

Finally, it cannot be denied that the extensive prevalence and use of information and communication technology lead to unethical uses of accessible data online, which caused the normalization of using sources without citing them. Plagiarism has become the bleeding wound in educational settings in today's information society (Graham-Matheson & Starr, 2013). As the results of this study also reveal, software programs help both the instructors and learners to prevent or at least deter plagiarism.

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