The Effects of a Debate-Based Awareness Lecture on Cheating in Online Exams

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Abstract—Cheating in online exams has become an undeniable phenomenon throughout universities worldwide. This study examined the effect of a single factor on the scores and essay questions of online exams, helping the researcher identify cheating incidents. This factor was an awareness lecture, conducted in the form of a debate between the instructor and students, about the negative effects and ethics of cheating. The methodology of this study was based on the explanatory sequential approach, in which the researcher conducted the same online exam but with different treatments. Then, semi-structured interviews were conducted with certain students after the course had finished. The study consisted of two groups of students in the same course. Each group was given a different treatment: Group 1 consisted of 33 students who participated in an awareness debate lecture before the online exam, and Group 2 consisted of 31 students who did not participate in an awareness debate lecture. Then, 12 students were randomly recruited from Group 1 to participate in the interviews to explore more insights about the rationalization of cheating in online exams. The results showed that Group 1 had grades averaging (18.23 out of 30), and Group 2 had grades with a significantly higher average (22.1 out of 30). Conclusions and recommendations were presented to better shape the experience of online exams.

Keywords—academic integrity, online exams, cheating attempts, rationalization, debate lecture

1 Introduction

Cheating is a common phenomenon in the academic world, as some students try to obtain an unfair advantage to achieve certain results. Many models have been created to address this problem. However, cheating persists in all countries and at all levels of educational systems. In particular, cheating in online exams has been on the rise since most educational activities shifted online as a reaction to the global COVID-19 pandemic [1].

Information technologies have made cheating much easier. Students today have more opportunities to cheat than their counterparts had a generation ago [2]. In general, there are many forms of academic dishonesty, and each has been documented in an

extensive body of literature. Cheating in online courses, however, has not received proper scholarly attention due to its relative newness.

Online education provides many benefits for both instructors and students. For the former, it can improve enrollment rates, and it can save the latter time and money [2]. On the other hand, information technology allows students to copy other people's work with just one click of their mouse, which has resulted in the formation and proliferation of the modern "copy and paste" culture in the academic world. A number of studies, such as that conducted by King et al. [3], have found that most students consider cheating in online exams much easier than in exams administered in a classroom setting (as cited in Watson & Sottile [2]). However, studies of online cheating behaviors have produced mixed evidence, with some of them indicating that online cheating is more common than in a classroom setting [4], while others claim that either online cheating is less common or that the two are equally common.

To resolve this inconsistency, a survey of 635 students in Appalachia was conducted by Watson and Sottile [2] to analyze two factors: the level of academic dishonesty, and its type in their online and face-to-face classes. Their survey included three parts: self-reported dishonest behaviors, perceptions of cheating, and knowledge of other students behaving dishonestly. The answers regarding self-reported dishonest behaviors showed that 32.1% and 32.7% of students admitted that they had cheated in in-person and online classes, respectively [2]. In was also reported in the study that the two most prevalent dishonest behaviors were the use of instant messaging and getting answers from other students during a quiz or test. Furthermore, students reported that they were twice as likely to be caught cheating, and reported for it, in in-person classrooms than online. The authors recommended that educators and online course designers shift their assessment from objective tests (multi-part tests or quizzes) to more subjective forms of evaluation, such as research papers and essays. Another important recommendation provided by Watson and Sottile [2] was to include a course in moral development and ethical behavior to raise awareness of the negative aspects of cheating.

In general, there are many approaches to reducing the rates of cheating in both online and in-person classrooms. One such approach focuses on eliminating factors that pressure young people to cheat. As mentioned previously, teachers can replace multiple-choice assessments (common enticement for cheating) with writing projects that make students more invested in their work. According to Simmons [5], teachers can also allow students to have one free pass each quarter on assignments they failed to complete outside of class.

The present study explores the effect of an awareness debate lecture about the disadvantages of cheating and to investigate the rationalization behind such act that can negatively affect the academic integrity.

1.1 Research questions

— RQ1: Did the debate lecture have any effect on the students' cheating rate in an online exam?
— RQ2: What is the rationalization of students' attempts to cheat in online exams?

1.2 Research gap

Most previous studies discuss and suggest techniques to narrow the opportunity for and/or the pressure on students to cheat in online exams. However, only a few addresses how students rationalize cheating, especially those studying at Middle Eastern universities. Therefore, this study attempts to highlight the rationalization of cheating in online exams after applying the intervention of an awareness debate lecture.

1.3 Research value

This study seeks to present results that can be valuable to instructors and decision-makers in academic contexts. Accordingly, academic integrity can be maintained by using pre-exam techniques to help reduce cheating attempts; one of these techniques is the awareness debate lecture. In addition, the study illustrates the reasons students cheat by using their rationalizations to summarize and categorize different types of students.

2 Literature review

Whether administered online or in classrooms, college and university examinations should be devoid of cheating to accurately determine students' abilities and maintain academic integrity. Cheating diminishes the credibility of university diplomas and creates an unfair advantage for learners involved in the malpractice. Traditionally, educational institutions have prevented cheating in examinations through student identity checks and supervision. As a result of the COVID-19 pandemic, most colleges relied, and still rely, on digital platforms to administer tests [1]. The risk of cheating in online tests is high since determining the identities of individuals who complete the examinations is difficult. Moreover, the lack of supervision means that learners can access prohibited materials when completing tests. Cases of academic dishonesty are rampant in the Middle East since most students are not educated about cheating and believe that educational institutions do not take stern actions against those who cheat [6].

2.1 Students' perceptions of cheating

Various factors motivate students to cheat in examinations. While some cases of academic dishonesty are unintentional due to insufficient knowledge of behaviors that constitute plagiarism, other incidents are intentional. Birks et al. [7] reported that 90% of the respondents stated that severe punishment would discourage them from cheating in examinations. Other students noted that they would not engage in the malpractice after signing statements of academic honesty. Some students perceive academic dishonesty as an acceptable behavior because they believe that it is caused by external factors, such as school conditions [8]. As a result, learners often take advantage of weak institutional regulations to cheat in examinations. For example, in some instances students were allowed to drop courses to avoid cheating penalties [9]. Consequently, aca-

demic dishonesty (such as cheating, copying, and plagiarism) exists in educational institutions around the world. Jordan [10] indicates that students at universities cheat at least once during their course of study. Information on social and psychological factors that lead to academic dishonesty can help instructors enhance the integrity of examinations [11]. Therefore, effective programs for preventing cheating in tests should be based on students' attitudes.

The desire to succeed in competitive circumstances also motivates learners to engage in examination irregularities. Individuals are expected to score high marks to achieve various objectives, ranging from obtaining admission to elite universities to winning prestigious awards, excelling in job interviews, and gaining coveted promotions. Recent stories of parents who bribed school officials to secure admission to prestigious universities for their children imply that competition for limited opportunities increases the risk of deceit [12]. In educational institutions, the desire to score high grades motivates students to engage in exam cheating. In a review of the main causes of academic dishonesty in higher education institutions, Tabsh et al. [13] established that pressure to score high grades was one of the primary reasons for cheating in tests. Other learners cited inadequate time to complete assignments, difficult courses, and insufficient guidance as justifications for examination irregularities. Colleges should mitigate conditions that enable cheating as students strive to score high grades.

Other studies show that many students are unaware of behaviors that constitute academic misconduct. Many students believe that the main forms of cheating include violating examination rules and seeking others' help when completing assignments [14]. However, academic dishonesty entails a wide range of practices. According to Tayan [6], improper paraphrasing, lack of citations for other authors' work, data falsification, and the use of third parties to complete tests constitute examination irregularities. Educational institutions should educate students on different forms of academic dishonesty to alleviate cheating in examinations.

Furthermore, access to modern information systems encourages students to cheat. A recent case involved students at Harvard University who conspired through Facebook to cheat in a take-home test [15]. Due to the improved use of the Internet and mobile devices, academic dishonesty has become a rampant challenge in schools and colleges. In some cases in China, female students are not allowed to wear bras during baccalaureate examinations to prevent them from sneaking listening devices into examination rooms [15]. The law also stipulates jail time for students who cheat in entrance tests. Despite frequent reports of cheating, only 1% of students are willing to report the cases to their teachers [16]. As information technologies advance, they create more opportunities for students to engage in examination irregularities.

Cheating in educational assessments is also linked to social vices. According to Orosz et al. [17], collaborative cheating and corruption are related because both behaviors are unlawful, entail cooperation between two or more individuals, and violate social values. Therefore, students can cheat in examinations because society tolerates related practices. For instance, a scandal occurred in India in 2015 when some parents attempted to assist their sons and daughters to cheat in tests by breaking into schools to bribe police officers guarding examination centers [17]. Other cases of students' col-

laboration entail seeking third parties' help in completing individual assignments. Fraser [18] shows that collusion is perceived as a less severe form of cheating than other practices such as plagiarism, and some instructors tolerate the behavior. Some research efforts, in the other hand, are directed towards developing student verification systems in online exams with high accuracy [19] to help in addressing vulnerabilities. Learners who believe that society tolerates various unethical activities are likely to engage in academic dishonesty.

2.2 Cheating cases in the Middle East

Various forms of cheating occur among learners in the Middle East. Tayan [6] examined the views of 138 male students at a Saudi university to assess the main forms of academic dishonesty and their primary causes. The findings show that students use different methods to cheat in examinations. Among the respondents, 64% indicated that they have used prohibited devices in examination rooms, 45% have copied other students' answers, and 44.2% have submitted their friends' work [6]. Other types of academic dishonesty revealed in the survey include improper paraphrasing and a lack of citations. Tabsh et al. [13] also indicate that 25% of students disobey copyright policies by illegally duplicating electronic materials or photocopying printed reports. Therefore, Middle Eastern students engage in various activities that compromise the integrity of learning programs.

Most of the learners in Saudi Arabia have insufficient knowledge of the consequences of academic dishonesty. In a study by Tayan [6], 60% of the respondents stated that they did not comprehend penalties for cheating in examinations, while 24% expected a warning if found guilty of academic dishonesty. In contrast, other Middle Eastern countries have reduced cheating in assessments through educational programs. For instance, instructors in Egypt emphasize the importance of ethical examination conduct during lectures to reduce cheating [20]. In Saudi Arabia, cheating frequency varies based on the approaches that different students employ. Tayan [6] shows that 23.6% of learners always pay third parties to complete their examinations, while 43% often collaborate with their peers in individual tests. Educating learners on the penalties for academic dishonesty can help institutions minimize cheating cases in the Middle East.

Other studies show that learners use modern technologies to cheat in tests. In a study by Ahmed [21], 65% of the respondents used various technologies to access prohibited materials when completing assignments. Some learners relied on tablets and smartphones to access online information, while others used calculators in prohibited settings. While students in the Middle East believe that cheating is unlawful, they suggest that schools and colleges need to enhance supervision during tests, punish individuals who engage in academic dishonesty, modify assessment approaches, and share more information on the need to maintain the integrity of assessments [21]. These findings are comparable with the results of studies on cheating in other regions. Ahmed [21] notes that learners in Western universities engage in various forms of academic dishonesty while condemning them for violating their ethical, religious, and cultural beliefs. Effective measures can help educational institutions reduce cheating in examinations.

Culture is also linked to academic dishonesty in the Middle East. For example, McCabe et al. [22] illustrate that collectivist societies tolerate cheating because helping students during assessments is considered a strategy for realizing group interests. Moreover, uncertainty avoidance in collectivist cultures encourages students to cheat since they seek clear information on penalties for their behaviors to engage in ethical conduct. The study by McCabe et al. [22] in Lebanon established a strong relationship between cheating and learners' perceptions of their peers' conduct. As a result, the level of academic dishonesty in that country is significantly higher than in individualistic societies such as the United States. According to McCabe et al. [22], 80% of Lebanese students report one or more cases of cheating compared to 54% in the United States. Many students in the Middle East are likely to cheat in examinations because they feel obliged to help their peers score high grades. Regardless of the rules established to curb examination irregularities, collaborative cheating is tolerated at some institutions [23]. Collectivist values significantly influence students' perceptions of collaborative cheating in examinations.

High rates of cheating are reported at medical schools in the Middle East. Abdulghani et al. [24] conducted a cross-sectional study at a governmental medical college to examine the prevalence of academic dishonesty at the institution. A significant percentage of the respondents admitted to cheating during their studies. However, students with higher GPAs were less likely to engage in examination irregularities than their counterparts with lower GPAs [24]. The findings imply that medical students who perform dismally in their courses perceive cheating as a strategy to enhance their scores. In addition, more male students were involved in examination cheating than female students. Abdulghani et al. [24] explain that female students are apprehensive of the effects of cheating, such as social stigma, while male learners are considered bold and untroubled by the consequences of engaging in academic malpractices. Another key finding of the research is that students staying in university hostels were less likely to cheat than those living with their families. Abdulghani et al. [24] show that family events and social obligations limit opportunities for learners to study. The high percentage of medical students who cheat implies that educational institutions should implement effective plans to enhance the integrity of their programs.

2.3 Academic dishonesty in the Jordanian scope

Educational research on academic dishonesty in Jordan is limited. In a study by Alahmad [25], 63.9% of the participants indicated that their colleges did not provide student education programs on examination irregularities. A small percentage of learners trained in academic integrity noted that they were aware of different examination irregularities. Instructors in Jordan are also not trained in academic dishonesty. Alahmad [25] shows that only 41.7% of tutors have attended seminars on the integrity of student assessment programs. The training content includes strategies for preventing cheating in examinations, definitions of academic dishonesty, and measures for promoting academic integrity. Comprehensive education on academic integrity can improve the credibility of educational programs in Jordan.

As a result of limited training in examination malpractices, cheating in examinations is a major concern in Jordanian schools and colleges. According to Kayed [26], the most prevalent forms of academic dishonesty in the country include impersonation, collaborative cheating through WhatsApp groups, and the use of the Internet to access information. While teachers have devised different techniques to curb cheating, including one-way questions, 30-second questions, authentication, and identification of students before attempting the exam and during the attempt [27], most students who complete unsupervised tests always cheat. Increased cases of cheating diminish the credibility of college programs, as students who would not have passed examinations without cheating are allowed to graduate. Academic dishonesty will widen the gap between expertise and educational qualifications if colleges fail to implement proper prevention plans.

Students cheat in examinations for various reasons. While some believe that the behavior is not punished severely, others perceive collaborative cheating as a cultural obligation. Modern information technologies also enable learners to engage in examination irregularities. Although academic dishonesty is widespread in the Middle East, schools, colleges, and universities should educate students and raise their awareness of the importance of academic integrity to encourage ethical examination conduct.

2.4   Cheating rationalization based on the fraud triangle

Academic integrity usually requires students to do and submit their coursework with the highest quality possible by maintaining a proper standing with the policies in their educational institution [28]. Academic dishonesty, on the other hand, occurs when the academic integrity policy is violated with the wrongdoings.

One of the common methods of analyzing wrongdoings is the Fraud Triangle. This method assumes that there are three elements that cause individuals to commit fraud: pressure, opportunity, and rationalization [29]. While the Fraud Triangle explains the nature of wrongdoings in many spheres, cheating within academia has unique features. For instance, a study found that slightly more than half (53%) of US students think that cheating is not a serious or critical behavior, while 34% of students reported that they have never had discussions with their parents about cheating [29]. Furthermore, 98% students do not see any problem in allowing their friends to copy their assignments [29]. The Fraud Triangle and its' parts can be illustrated as shown in Figure 1.

There are a variety of reasons that push or enable students to cheat. The first is rationalization; the second is pressure, which may emanate from parents or the need to avoid expulsion; and the third is opportunities, which, in this specific context, arise from the nature of the online environment, which provides a lot of freedom for students to engage in academic dishonesty. The motivation for cheating in online exams is mostly associated with the desire to earn good or excellent grades. However, the fraud triangle is not the only method that is used to explain cheating behavior - there are many others, such as Kohlberg's six-stage theory of moral reasoning, as well as studies exploring the role of gender and competitive athletics in the moral reasoning of students [2]. Thus, there are many ways to approach this problem.

Based on the presented literature, the next chapter explains the methodology of this study.
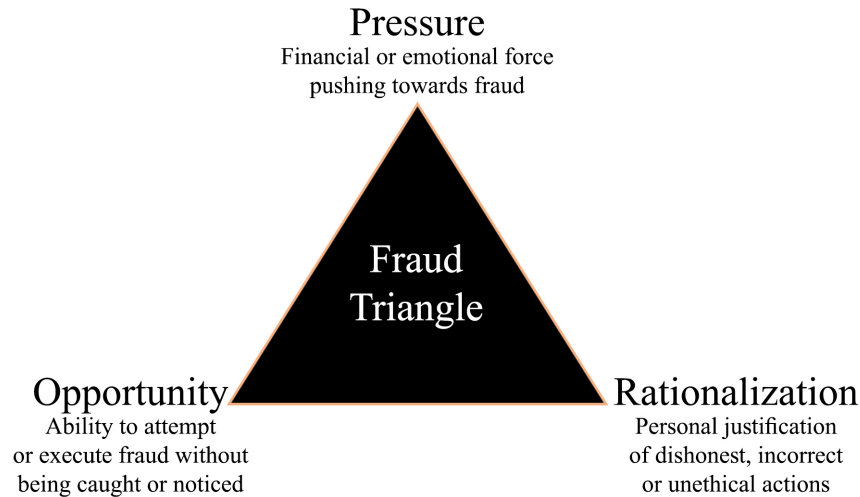
Fig. 1. The Fraud triangle model

3 Methodology

The research problem concerns the lack of studies that explore the rationalization for cheating in online exams in Jordanian universities specifically. To explore and determine the cause of rationalization, this study was conducted using a mixed-method design, namely, the explanatory sequential method. In general, a mixed-method design is an approach used to combine or utilize both quantitative and qualitative forms of data. These forms are often combined in scientific research to better understand a case, issue, or phenomena. The explanatory sequential research design used in this study involved quantitative data collection and analysis, followed by the gathering of qualitative data to substantiate the result of the initial quantitative data. In the case that the quantitative results are unclear, insufficient, or unexpectedly significant or insignificant, the results considered to be outliers may be clarified in the qualitative phase [30]. Since this study seeks to explore the rationalization from information gathered in interviews (qualitative data) for the cheating attempts that happened in online exams (quantitative data), the explanatory method design is reasonable.

Online exams have been increasingly used in fully online courses since the COVID-19 pandemic began [4]. Due to the need to limit cheating cases and maintain the quality of education and academic integrity, efforts of educators and e-learning technicians around the world shifted towards closing the gaps in online exam proctoring and thus trying to limit the opportunity for students to cheat in online exams. However, there was a shortage of efforts that aimed to question and treat the reasons that students use to rationalize cheating attempts. Therefore, the instruments used in this study were online exams and interviews. The study addresses the rationalization behind cheating

by conducting an awareness lecture in the form of a debate between the instructor and students, and then measuring the effect of this lecture based on data gathered from the online exam and from the answers given by the interviews after the exam.

3.1 Population sample

The sample population included undergraduate students at a Middle Eastern university in Jordan, aged 20 years and above, and who were studying full-time at a higher education institution (whether in online, in-person, or blended formats). Taking this type of population into consideration there were no requirements regarding GPA and/or technical capabilities in order ensure a more representative sample of students.

Participants were divided into two groups. The quantitative data were collected from online exams conducted for a total of 64 students who were registered in two different sections of the same course: 33 students in Section 1 (Group 1) and 31 students in Section 2 (Group 2). The qualitative data were then collected from 12 students who were randomly chosen from Group 1 for semi-structured interviews.

3.2 Online exam

The online exam conducted for both groups was based on Moodle, which is a Learning Management System (LMS), and consisted of 29 multiple choice questions (MCQs) and one essay question. The duration of this exam was one hour and 15 minutes (a sample of the exam is show in Appendix A). The students in both groups took the exam using their own computer devices at their homes, with a basic proctoring practice via video call software running simultaneously with the exam. Therefore, each student ran two programs for the online examination: the Moodle web-based platform for completing the exam and Zoom software for live proctoring. The essay question was included in the exam to reveal any evidence of copied answers, since copying answers is considered a form of cheating and a violation to academic integrity [28]. In addition, a number of academic factors were taken into consideration while building the online exam: usefulness, ease of use, low or no cost, and level of satisfaction [31].

3.3 Awareness debate lecture

Based on the above-mentioned evidence, it seems reasonable to create an awareness lecture that would accomplish two key purposes: 1) raise awareness about the negative consequences of cheating in online exams and encourage students to remain honest in their academic work, and 2) increase students' understanding regarding academic integrity, which will also play a key role in making them more self-reliant, persistent, and resilient. One of the best ways to achieve these two purposes is to use the debate technique as a tool in the awareness lecture. Debate can be defined as "the systematic presentation of opposing arguments about a specific issue" [32, 33]. In the course of debate, participants listen and take notes regarding multiple points of view, evaluate each of them, and make judgements.

Therefore, by engaging in a debate during the awareness lecture, students will have an opportunity to examine their views regarding cheating and the way they rationalize this unethical practice. One of the advantages of debate is that it can be conducted online, which is important in the current circumstances, but there are also many other benefits. For instance, debate helps students develop their content expertise [32]. To achieve success in a debate, students have to consult a wide range of sources and find relevant evidence to support their arguments. Another benefit of debate is that it develops critical thinking because it requires students to apply reason to find logical fallacies and elements that either weaken or justify their perspective [32].

Debate also facilitates communication among the participants because they constantly interact with each other and try to prove their points of view. This communicational dynamic results in better knowledge retention compared to reading or listening alone because students associate new knowledge with their emotional experiences during the debate. In fact, allowing students to argue in favor of cheating can be an engaging way to expose their deeply held beliefs about the insignificance of cheating. At the same time, each of these beliefs will be examined and disproved by other students. However, teachers should be careful to maintain a healthy discussion and avoid confrontations between students. Taking all these benefits into consideration, it is clear that debate is an ideal technique for facilitating a deep, honest discussion regarding the effects of cheating in online exams.

With the awareness debate lecture and online exams, the scheme of this study is illustrated in Figure 2.

The effectiveness of debate-based awareness lectures is widely supported by current research. The COVID-19 pandemic has reignited research in the field of academic integrity, as educational institutions have started providing remote services and thus have become increasingly concerned about the honesty of their students. At the same time, there has been a growing shift from strict behavioral sanctioning (expulsion) to developmental sanctioning, which entails a wide range of educational activities, such as writing journals, working with a mentor, participating in special projects, and holding other students accountable to the honor code [34]. The use of awareness lectures is a developmental or soft strategy of dealing with academic misconduct. It can allow educational institutions to prevent cheating in the first place. Alternatively, awareness-based lectures can be used as a supplemental tool for the developmental sanctioning of students who have engaged in minor cheating offenses. Therefore, instead of using strict sanctions and limiting students' educational opportunities, it is more reasonable to allow students to take a probation period to work on their moral judgment and reconsider their priorities. The use of awareness lectures during such probations would be beneficial, especially in the form of debate, because it would give students an opportunity to think deeply about this problem, find workable solutions, and support each other on their paths towards improvement.
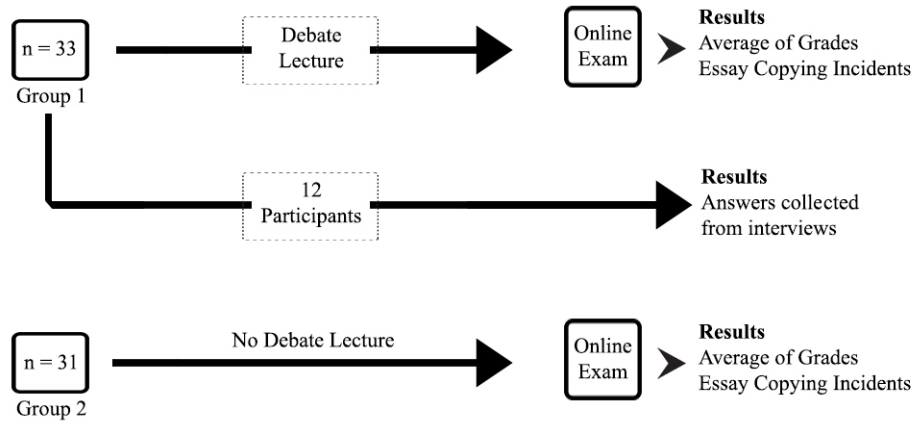
Fig. 2. The scheme of the study

Therefore, debate can enrich students' knowledge as well as help them develop crucial academic skills and personality traits associated with self-reliance, avoiding cheating, thinking critically, and believing in their capacity to achieve better results. Thus, it appears that debate allows students to go beyond mere knowledge acquisition; rather, it gives them the opportunity to consider various ways they can avoid academic dishonesty, discuss these issues with their peers, and strengthen their confidence.

3.4 Interviews

There were two communication methods that the researcher used to recruit students for the study: email invitations sent by the researcher and a public announcement sent by their department. First, the email invitations provided a synopsis of what this study aims to achieve, the value and contribution of the outcomes of this study to the academic integrity and scientific research, and the reason why this study is being conducted. The email was written in English and Arabic to ensure the validity of instruction for interested students. This form of invitation was heavily used to recruit students because they are likely to periodically check their emails on their smartphones [35]. Second, an announcement was made by the department head office on the online page of the course in which the participants were enrolled. The announcement and the email provided identical descriptions of the study and contained the contact information of the researcher and the date, time, and location of the interview. The announcement was also written in Arabic and English.

Participants' reactions and answers were recorded via an audio recorder. The recorded files were stored in an external encrypted hard disk, and this hard disk was locked with a password and securely stored in the researcher's office. The plan was initially to conduct a focus group after the online exam. However, due to COVID-19, the plan was changed, and a one-to-one, semi-structured interview was conducted with each participant individually. The researcher prepared the room for interviews by adhering to strict

health regulations and social distancing guidelines due to the pandemic. A specific appointment was made with each interviewee to conduct the interview. In addition, the participants were handed an assuring statement (through the signed consent form) that their information will be kept confidential, and that it will never be used against them in any way (IRB approval is included in Appendix B).

After all the answers by participating students were recorded and noted, they were first translated from Arabic to English and then transcribed using the intelligent verbatim transcription technique (sample available in Appendix C). An analysis of their answers was conducted and summarized in a response table (sample available in Appendix D).

Finally, all collected evidence was analyzed and discussed in terms of rationalization to answer both research questions, as shown in Figure 3.
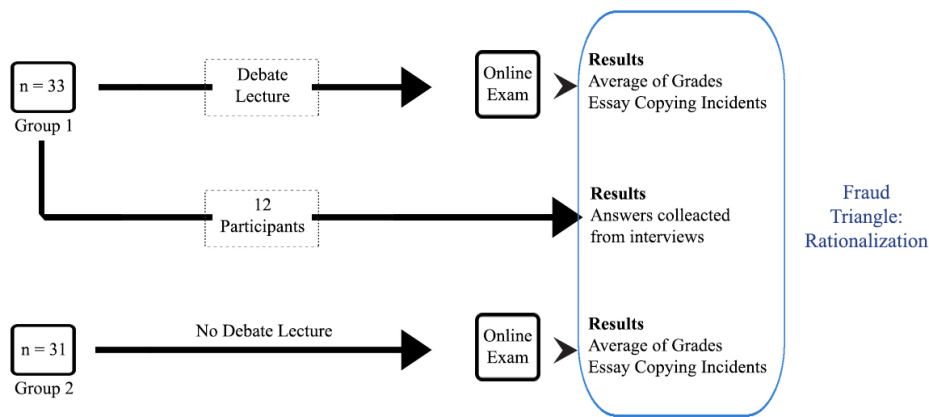
Fig. 3. The scheme of the study, including the analysis

The goal of this explanatory sequential approach was to explore the rationalization behind cheating in online exams as one aspect of the fraud triangle. The average grades of both groups and copied essay answers were the quantitative indications of the effect of the awareness debate lecture, while the answers from interviews indicated the reasons behind cheating attempts.

4   Findings

Based on the sequential explanatory method illustrated in the previous chapter, the findings of this study are divided to two sections: the quantitative findings and qualitative findings. The quantitative findings were collected from the results of the online exams taken by both groups of students (total of 64 students), whereas the quantitative findings were collected from the one-to-one semi-structured interviews conducted with 12 students who were randomly selected from Group 1.

4.1 Quantitative findings

The quantitative findings were applied to a null and an alternative hypothesis.

Null Hypothesis: There is no difference between Group 1 and Group 2.

Alternative Hypothesis: There is a significant difference between Group 1 and Group 2.

A paired sample t-test was used to compare the means of Group 1 and Group 2. The t-test was statistically significant, with the mean of Group 2 (M = 22.10, SD = 6.272) significantly higher than that of Group 1, (M = 18.23, SD = 5.691, $t(30)$ = –2.491, $p <$ 0.05, two-tailed). Therefore, the null hypothesis that there is no difference between Group 1 and Group 2 is rejected. It can be concluded that there is a significant difference between Group 1 and Group 2 in the population, ($p <$ 0.05). Accordingly, the results are summarized in Table 1.

Table 1. Mean difference of Group 1 and Group 2

Groups	N	Mean	SD	t
Group 1	30	18.23	5.691	–2.491
Group 2	30	22.10	6.272	

$p < 0.05$

The mean and standard deviation (SD) for both groups are presented in Figure 4.
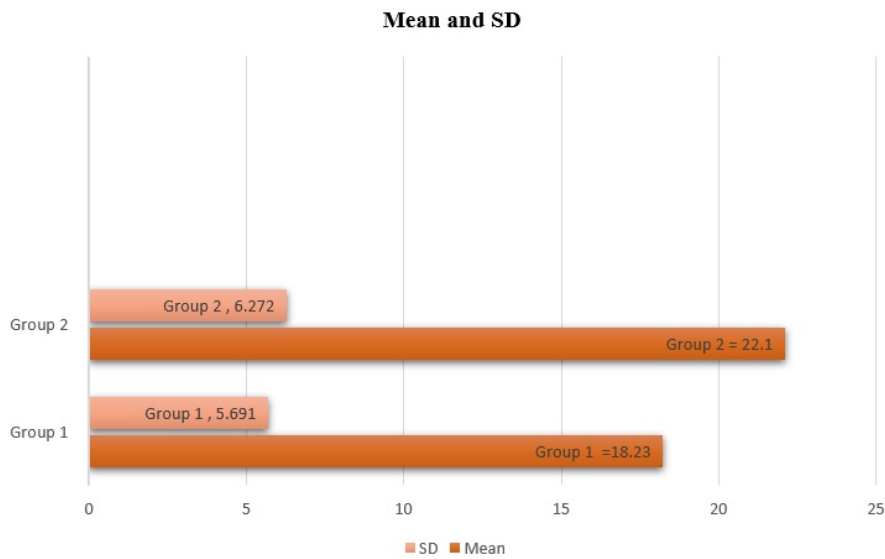
Mean and SD

Fig. 4. The mean and standard deviation of the two groups

Based on the data summarized in Table 1 and Figure 4 above, the online exam results showed that Group 1, who participated in a debate lecture, scored an average of 18.23 out of 30, and Group 2, who did not participate in a debate lecture, averaged 22.1/30. There was a significant difference between the average grades of both groups. An essay

question was also used in the online exam for both groups to determine if there were similarities between answers and thus attempts at copying the answer between students. A sample demonstrating the similarity is shown in Figure 5.
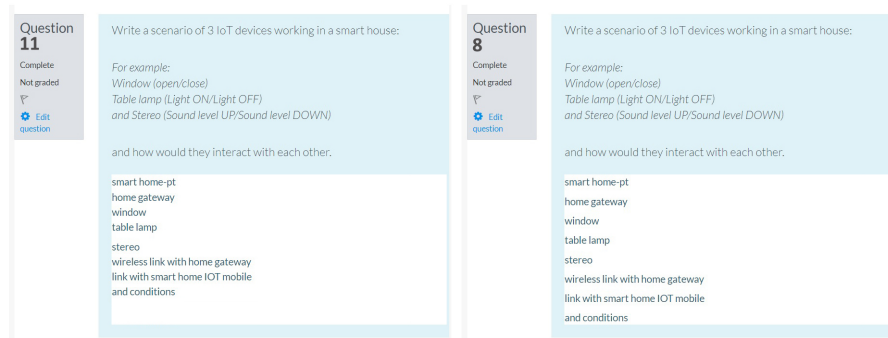
Note: Question numbers are different due to shuffling option applied on each student's attempt

Fig. 5. A sample of a copied answer in the essay question

In Group 1, there was evidence of similar answers to the essay questions found between two students. In Group 2, there was evidence of similar answers between four students. This difference shows that Group 2 had a higher number of copying incidents than Group 1.

4.2 Qualitative findings

The researcher asked 12 students a group of 14 questions each to highlight their overall experience in online exams, further explore their cheating attempts (if any occurred) and reveal the rationalization behind these attempts. The interviews have been transcribed and analyzed to derive a structured group of answers (transcription sample available in Appendix C). The findings are then reported in the response table in Appendix D.

4.3 Experience

The interviewees were asked about the dominant types of questions that appear in online exams, their level of difficulty, possible technical issues they have faced, how they think online and in-person exams compare, and their overall rating of their online exam experience on a 10-point scale. All twelve participants reported MCQs as the dominant type of question, and some participants indicated that essay (nine participants), coding (four participants), and project-based (seven participants) questions were also used. The difficulty of these questions ranged from mostly easy (six participants), to mostly difficult (two participants). However, 4 participants indicated that there was an inequality of difficulty levels among the questions. Regarding the technical issues, students reported that internet disconnections, eLearning platform malfunctions,

webcam issues, and microphone cuts were the main problems faced during online exams. After the participants were asked about how they think online and in-person exams compare, five participants reported that they found no difference between the two, four favored in-person exams, and three favored online exams. Finally, the average rating participants gave the online exam experience was 5.9 out of 10.

4.4   Cheating attempts

The interviewees were asked whether they had ever attempted to cheat in an online exam in their course, the method they used if they had attempted to cheat, and whether they know someone who has cheated in the exam. The findings showed that nine out of twelve participants have attempted to cheat in the online exam in the course used for this study, while three answered that they have never attempted to cheat on the exam. The methods of cheating consisted of checking answers from the book/slides, joining cheating groups on WhatsApp, using open phone calls where the person on the line helps answer the questions, surfing the Internet for answers, and using a remote desktop software to allow someone else to control their computer and answer questions. All participants reported that they know peers who have cheated in online exams.

4.5   Rationalization

Participants were asked about the reasons behind their attempts to cheat, advantages and disadvantages of cheating, their feelings after the attempts to cheat, the possible reasons behind other students' attempts to cheat, and whether the debate lecture had any effect on their perspective about cheating in exams. The findings revealed that rationalization for cheating relies on the following reasons:

1. The student is unsure about the answer, so they need a confirmation to double-check their answer.
2. The student needs to maintain their GPA, prevent it from decreasing, or increase it.
3. The exams are very long, and the student does not have enough time to go through all questions.
4. The student is unable to afford to pay the course fees again should they fail.
5. The student embraces cheating as "fun and smart," and they find joy in breaking the rules.
6. The opportunity to cheat is there. As one of the participants stated, "Other students are doing it too, why shouldn't I?"

On the other hand, participants who reported no attempt of cheating explained their reasons: They had the flexibility to retake the course or receive a pass/fail rather than a letter grade, and they consider cheating in general to be a waste of time and effort. One participant indicated that it was not worth losing their reputation and respect as a student.

Participants also indicated that reasons why other students might cheat could include the feeling of fulfillment that comes with "breaking the rules" and the pressure to maintain or raise one's GPA. These were also considered advantages of cheating. However, eleven participants agreed that attempts to cheat can have a negative impact on academic standing, knowledge acquisition and understanding of the topics covered in any course, time and effort required to pass the exam, trust from potential employers while searching for a job after graduation. Five participants expressed a feeling of regret after cheating, four participants expressed no regret after cheating, and two participants expressed having a sense of fulfillment and achievement after cheating. The debate lecture reinforced the opinions of seven participants against cheating and convinced one participant of the benefits of cheating.

5   Discussion and conclusion

The discussion is based on the quantitative and qualitative results that can answer both research questions presented in Chapter 1.

RQ1: Did the debate lecture have any effect on the students' cheating rate in an online exam?

The quantitative results indicate that the average grades of Group 1 were significantly lower than those of Group 2, meaning that the debate lecture might have altered the perceptions and convictions of the students who participated. In addition, the higher degree of similarity in the essay answers in Group 2 can also support that that group was more willing to cheat by copying answers. This finding could also imply that if Group 2 had participated in a debate lecture before the exam, the attempts to cheat in the online exam would have been fewer.

The students' experience with online exams in general explains the pressure they felt due to the disparity in the difficulty of the questions used within these exams. The technical issues also could have added to the pressure students felt during online exams, leading them to attempt to search for quick answers or copying them from their peers. This type of pressure is apparent from the students' preference for in-person exams. The overall average rating of online exam experience (5.9/10) was not high enough to conclude that students prefer this method of examination.

The methods used to cheat, as indicated by the interviewees, can be used to shape a better, more secure online exam experience. Their answers revealed problems that can be solved by modern exam technologies to maintain academic integrity. However, it is not possible to conclude that all methods of cheating can be stopped, but rather, they can be limited.

RQ2: What is the rationalization of students' attempt to cheat in online exams?

Based on the interviewees' answers, they can be divided into three types:

— Type 1: Students who embrace cheating and consider it a smart way to pass courses
— Type 2: Students who are unsure of the long-term value of cheating but attempted it due to pressure rather than a solid rationalization
— Type 3: Students who embrace academic integrity and consider it part of their good professional standing in their career, both in the short and long term

Based on these conclusions, students' GPAs were checked again after the interviews were analyzed; their GPAs (out of 100) are shown in Table 2.

Table 2. The GPAs of the three types of interviewees

Type 1	Type 2	Type 3
68.4	69.3	66.4
77.1	72.4	67.8
88	77.5	79.8
	94.1	80.2
		92.4

These findings imply that further research can be conducted to investigate the correlation between GPA and students' perceptions of cheating. The correlations and differences between male and female students' perceptions on cheating also provide an opportunity for further research.

In general, students clearly understand that cheating is wrong, yet they consider their cheating behaviors exceptions to the established rule [5]. They cheat to an extent that allows them to preserve their self-image as honest individuals. Therefore, cheating students still consider themselves principled people who need to cheat for legitimate reasons [5]. For example, in many cases, students copy their peers' homework when they do not see value in doing it themselves. In other cases, they focus only on content that is associated with highly important tests while plagiarizing or copying work that is perceived as less important.

However, it is also quite common for students to cheat on assignments that they consider providing high value. Students who exhibit high academic performance and study at top academic institutions may often find themselves in an extremely competitive environment, which pressures them to cheat in order to make their work more outstanding or distinguishable from others. Furthermore, many of such students want to avoid a bad test score, as it might undermine their months of hard work [2, 5, 6]. Cheating behavior can be explained from the perspective of developmental psychology, as adolescents are found to be more active risk takers than older individuals. This natural inclination to take risk and explore their environment pushes many young people to engage in unethical conduct, such as rebelling against rules, experimenting with illicit substances, and cheating in academic settings. Simmons [5] also explains that peer groups in which the culture of academic dishonesty is normalized exert pressure on young people to cheat in order to preserve their social status within such groups. Technology is also a prominent facilitating factor of cheating.

5.1 Recommendations to lower the pressure on students

In general, there are many approaches to reducing the rates of cheating in both online and in-person classrooms. One of which could be to revise the teaching and learning techniques, and provide students with extra resources, trainings, and guidance on how

to improve their learning styles with effective techniques [36]. These learning techniques, as explained by Dunlosky et al. [36], have the potential to support students' learning experience depending on their learning conditions, characteristics, and course material. Improving the learning techniques (e.g. re-reading, highlighting, imagery use, and mock exams) can have the potential to boost students' performance, hence reducing pressure to take an exam in educational context.

Another option is to allow students to drop their lowest score on a homework assignment each quarter. Teachers can also use the strategy of praising students for their progress and effort rather than for simply being smart. Such an approach helps give students the sense that they are making tangible progress and thus inspires them to rely more on their own efforts instead of succumbing to cheating. There is also the option of creating student honor councils, where students can enforce/amend their honor codes and increase one another's awareness of the negative aspects of cheating. Members of these honor councils should be encouraged to teach their honor codes to younger students in order to pass a culture of academic integrity from one generation to the next. It is also possible to limit cheating by activating students' metacognition (thinking about their own thinking habits) and directing it at their motivations and rationalizations for cheating. Finally, cheating can be limited by including direct discussions on this topic into the curriculum. This can be organized in the form of an awareness lecture, a media literacy lesson, or a homework assignment requiring students to reflect on their experiences with cheating.

6 Acknowledgment

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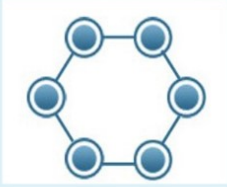
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9 Appendix A

Fig. 6. A sample of the online exam used in this study

10   Appendix B

Fig. 7. The Institutional Review Board (IRB) approval

11   Appendix C

Fig. 8. A sample from the transcription

12   Appendix D

Question	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	Total and AVG
Q1: type of questions?	MCQ Essay Project-based	MCQ Essay Coding	MCQ ESSAY Project based	MCQ Coding	MCQ ESSAY Project based	MCQ Essay	MCQ ESSAY Project based	MCQ ESSAY Project based	MCQ ESSAY Project based	MCQ ESSAY Project based	MCQ Coding	MCQ Coding	12 =MCQ 9 = essay 4 =coding 7 = project based
Q2: Difficulty of questions?	Inequality of difficulty levels.	Mostly easy	Mostly easy	Mostly easy	Inequality of difficulty levels.	Inequality of difficulty levels.	Mostly easy	Mostly easy	Mostly difficult	Mostly easy	Inequality of difficulty levels.	Mostly difficult	6 = Mostly easy 0 = Mostly medium 2 = Mostly difficult 4 = Inequality of difficulty levels.
Q3: technical issue	Internet disconnections eLearning platform malfunctions	Internet disconnections Webcam issues Microphone cuts	Internet disconnections Webcam issues	Internet disconnections Webcam issues Microphone cuts	Internet disconnections Microphone cuts	Webcam issues Microphone cuts	No issues at all.	No issues at all.	Internet disconnections eLearning platform malfunctions Webcam issues Microphone cuts	Internet disconnections Microphone cuts	Internet disconnections eLearning platform malfunctions Webcam issues Microphone cuts	Internet disconnections eLearning platform malfunctions Webcam issues Microphone cuts	2 = No issues at all 9 = Internet disconnections 4 = eLearning platform malfunctions 7 = Webcam issues 8 = Microphone cuts
Q4: perception of online vs face-to-face?	They are both equivalent	Online exams are better	They are both equivalent	Face-to-face exams are better	They are both equivalent	Online exams are better	They are both equivalent	Online exams are better	Face-to-face exams are better	They are both equivalent	Face-to-face exams are better	Face-to-face exams are better	5 = They are both equivalent 4 = Face-to-face exams are better 3 = Online exams are better
Q5: rate of online exam experience	6/10	8/10	8/10	3/10	7/10	8/10	8/10	9/10	1/10	4/10	5/10	4/10	5.9/10
Q6: have you ever cheated?	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9 = Yes 3 = No
Q7: What was the Method?	Checking answers from the book/slides	None	None	Checking answers from the book/slides Surfing the internet for answers Remote desktop	Checking answers from the book/slides Cheating groups on Whatsapp Phone calls Surfing the internet for answers	Checking answers from the book/slides Surfing the internet for answers	Checking answers from the book/slides Cheating groups on Whatsapp Remote desktop	Checking answers from the book/slides Cheating groups on Whatsapp Phone calls Surfing the internet for answers	Cheating groups on Whatsapp Phone calls Surfing the internet for answers	None	Checking answers from the book/slides Cheating groups on Whatsapp Phone calls Surfing the internet for answers Remote desktop	Checking answers from the book/slides Surfing the internet for answers Remote desktop	3 = None 8 = Checking answers from the book/slides 5 = Cheating groups on Whatsapp 4 = Phone calls 7 = Surfing the internet for answers 4= Remote desktop
Q9: Do you know someone who cheated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	12 = Yes 0 = No

Fig. 9. A sample from the response table