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Enhancing ethical behavior in online exams

Abstract

Online exams have become a common tool in the academic didactic process, as well as in most online courses in business. Taking exams in a remote location like home, using ICT tools, brings many challenges to both sides, the learner and the examiner. The aim of this article is to show the challenges in the context of ethical attitudes, trust, and respect for one another. Some results of a broader survey in the form of Computer Aided Web Interviews are presented to highlight students' opinions and expectations, along with the results of personal interviews with academic teachers. In the final part of the article, recommendations are given. The importance of trust and systematic assessment of learners' progress is emphasized.

Keywords: Ethics, e-cheating, cheating, online exams, cheating prevention

JEL Classification: A13

1. Introduction

Due to the COVID-19 pandemic, e-learning tools were rapidly applied or introduced in all schools and universities in Poland, as well as all over the world. It forced a complete change of the whole didactic process in many cases. In terms of evaluation, a sudden need for online testing tools arose. The University of Lodz recommends a mix of the Moodle e-learning platform and MS Teams as a videoconferencing tool. Their technical possibilities allow teachers to set many options to limit the possibilities of cheating among students. However, the fact is, technical security will not guarantee a fair process. The students' attitudes and teachers' trust are the real basis for an honest exam. To make it more possible, it is necessary to know the expectations and abilities of both sides. In this section, some results of a survey concerning this issue are presented.

2. Online exams during isolation

The massive need to use online forms of exams appeared suddenly, so there is little research devoted to this issue. Some appeared at the end of 2020 in response to the new challenges brought by COVID-19, focusing mainly on general ideas on how to prevent cheating (e.g., Harper, Bretag & Rundle, 2020; Suryani, 2020). Few consider trust, dialog, and awareness as potential improvement tools (e.g., Bucciol, Cicognani & Montinari, 2020). More publications on this topic will probably appear in the coming months, making it possible to compare the results. Based on available sources, it can be noticed that cheating in online exams is a global problem. According to a 2017 survey conducted by McAfee among 3900 high school students all over the world, almost half (47%) confirmed that they had seen or heard of another student using a connected device in the classroom to cheat on an exam, quiz, project, or other assignment. What is interesting is that only 21% admitted doing it themselves (Davis, 2017).

Designing online assessments may differ from on-campus examinations (Fontanillas, Carbonell & Catasús, 2016), but the teacher can use new ideas to prevent cheating and assure better reliability. It is also vital to keep appropriate assessments of the students in the overall learning process (Lieberman, 2018). Teachers want to know how to prevent cheating in online exams, so they look for solutions. Simultaneously, students are looking for methods for e-cheating. According to Google Trends, interest in the phrase "cheating online exam" rose significantly in the first half of 2020 (Fig. 1), directly connected with the rise in e-learning interest (Fig. 2).
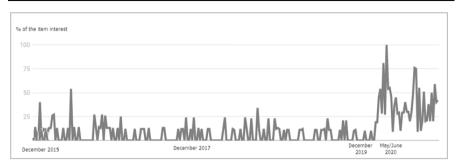
Fig. 1. Interest in the phrase "cheating online exam" 2015–2020

Source: Google trends, https://trends.google.com/trends/explore?date=today%205-y&q=cheating%20online%20exam
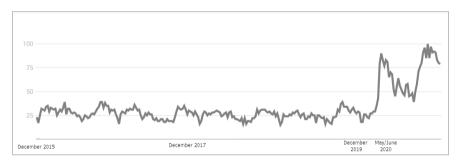accessed: 10 December 2020

Fig. 2. Interest in the phrase "e-learning" 2015–2020

Source: Google trends, https://trends.google.com/trends/explore?date=today%205-y&q=e-learning
accessed: 10 December 2020

To compare the above results with another phrase, "prevent cheating exam", more data is necessary. As Google Trends shows, interest in this phrase is not significant; thus, it will not be included in this article.

3. Cheating methods in the online environment

Cheating in online exams means providing or receiving assistance (without the instructor's authorization) to prepare and submit work for academic evaluation. This includes papers, projects, and tests, as well as presenting somebody else's idea or work as one's own for the purpose of academic evaluation, without proper acknowledgment. Looking over a neighboring student's shoulder to get a look-see at a task solution is no longer "in fashion". Nowadays, cheating is completely different. To clarify what e-cheating is, this article mentions some cases. Even though the article does not focus on online cheating methods, it is worth remem-

bering the most common ones. There are a few ways to cheat during online exams, which are accompanied by some ideas of prevention – as suggested in the table below (Table 1).

Table 1. Cheating in online exams, methods, and prevention

Cheating method	Description	Prevention
Screen sharing	enabling e.g. a friend to access the exam questions simultaneously and answer the questions	Using secure browsers and a proctoring software
Use of advanced electronic devices	Involving cameras and some Bluetooth devices of tiny-sizes, practically undetectable	Live proctoring, auto proctoring, recording the entire session for later analysis
Use of mobile phones	Connecting via smartphones, storing answers and sharing them with friends during the exam	Proctoring service, advanced image recognition technology to identify these devices
Impersonation, false identities	Making someone else take the exam	Multi-level, biometric online authentication methods
Use of external devices	Using hard drives, USBs, Micro SDs, etc.	Safe exam browser not allowing to use any cable, hard drive, or external devices
Third party assistance in the room	Help of a family member or friend staying around, to quickly find the answers.	Software identifying suspicious behavior, either through video or sound
Copying-pasting and other keyboard shortcut	Copying-pasting the responses from documents or notepads, kept ready before the exam	Disabling pasting anything to or from the keyboard through online proctoring service
Intentional logging out of the exam	Pretending intermittent internet connectivity or power cuts	Setting limited number of times a student is allowed to log back onto the system.

Source: own elaboration based on Mercer and Mettl (2020)

Each of the above-mentioned ways of cheating must be applied intentionally, and most are quite easy to use. Taking the technical aspects as the only one that matters, teachers might feel powerless. Thus, a more human-values approach, using ethics, is required. Discussions about cheating during a course and building awareness among students are advised. Extra recommendations on cheating prevention are presented in the last section of the article. Before that, cheating in the context of creativity is discussed.

4. Cheating and creativity

Creativity is considered key to personal and organizational social prosperity (Amabile, 1996, p. 1). Creativity also means much more than gathering knowledge – it leads to the question, "What can we do with our knowledge?" (Papaleontiou-Louca et al., 2014). Creativity is also defined as "The ability to come up with unusual or clever ideas about a given topic or situation, or to devel-

op creative ways to solve a problem" (Schwab & Samans, 2016). Systematic research conducted at Harvard University shows a connection between being creative and being dishonest (Gino & Wiltermuth, 2014). Both these behaviors have something in common – they involve breaking rules. Cheating during exams, though, is a particular case of a different nature. It keeps the mind focused on restorative activities and does not trigger creativity in terms of substantive issues. One could say that this kind of cheating also requires creative abilities, but in our opinion, they also concentrate on downloading resources instead of creating and processing them.

Creativity becomes still more appreciated in personal development. It can be the subject of learning in many ways, and one training method can be e-learning. Udemy, a very popular online learning platform, offers thousands of online courses for adults and students in many areas, including Development, Business, Finance & Accounting, IT & Software, Office Productivity, Personal Development, Design, Marketing, Lifestyle, Photography, Health & Fitness, Music, and Teaching & Academics. In this article, Udemy is used as an example of an e-learning content base that covers creativity courses – 535 of them. By comparison, there are 1295 management courses, 4148 English courses, and 10,000 IT courses. This may reflect the labor market demand for certain skills. Creativity courses appear in specific categories: Personal Development, Personal Transformation, Productivity, Leadership, Personal Finance, Career Development, Parenting & Relationships, Happiness, Religion & Spirituality, Personal Brand Building, Influence, Self Esteem, Stress Management, Memory & Study Skills, Motivation, and Other. The course topics differ significantly, though a few main topic groups can be extracted that contain more detailed titles. In Fig. 3, the number of courses in each category is presented:
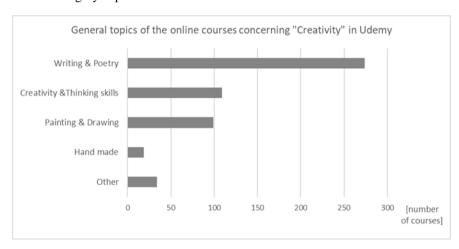

Fig. 3. The number of online courses concerning "creativity" in Udemy

Source: own elaboration, based on data available on udemy.com (December 2020)

One course, entitled "Designing cheat proof online exam,"[1] is aimed at teachers of all levels, from school to university. Coursera, another big MOOC[2] provider, does not currently offer any courses on this topic. The course on Udemy aims to deliver effective learning to students by "transforming conventional exam questions to online exam questions that are effective, cheat-proof and easy to check." It means a lot of effort for the teachers to prepare a new exam system. Instead of focusing on the exam itself, teachers could design the whole didactic process more carefully to give students an effective User Experience (UX). This will also require much creativity from the teachers. We will develop this issue in future works.

Critical thinking and the ability to problem-solve are the most essential competencies for employers. According to a recent survey by the National Association of Colleges and Employers (NACE), these competencies are rated highest (Koc, Kahn, Koncz, Salvadge & Longenberger, 2019) on a scale from 1 (not essential) to 5 (absolutely essential).
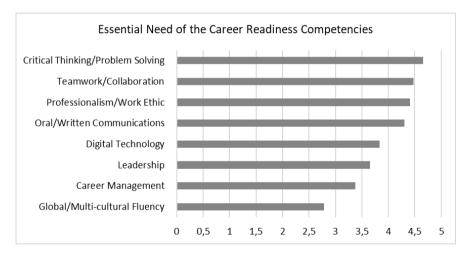

Fig. 4. Employers' rating of the essential need for career readiness competencies

Source: own elaboration based on Koc, Kahn, Koncz, Salvadge & Longenberger (2019)

The above results are confirmed by other research. "The Future of Jobs" a systematic survey conducted by the World Economic Forum, indicates the new reality of the COVID-19 context of 2020, during which learner reskilling and upskilling efforts on personal development are increasingly emphasized. They are predicted to be essential soon on the labor market. In the table below, the key, top skills in three periods are presented.

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[1] https://www.udemy.com/course/designing-cheat-proof-online-exam/ available on 10.12.2020.
[2] Massive Open Online Course.

Table 2. Top skills

In 2025	In 2020	In 2015
Analytical thinking and innovation	Complex Problem Solving	Complex Problem Solving
Active learning and learning strategies	Critical Thinking	Coordinating with Others
Complex problem-solving	Creativity	People Management
Critical thinking and analysis	People Management	Critical Thinking
Creativity, originality and initiative	Coordinating with Others	Negotiation
Leadership and social influence	Emotional Intelligence	Quality Control
Technology use, monitoring and control	Judgement and Decision Making	Service Orientation
Technology design and programming	Service Orientation	Judgement and Decision Making
Resilience, stress tolerance and flexibility	Negotiation	Active Listening
Reasoning, problem-solving and ideation	Cognitive Flexibility	Creativity

Source: World Economic Forum Report, "The Future of Jobs", 2020

In the context of cheating and creativity, it is more advisable to focus on analytical thinking, active learning, and complex problem solving than reconstructing knowledge. Thus, the teachers' effort in preparing the exams should be directed to problem questions, projects, and creative assignments. Another way to verify students' knowledge is through oral exams carried out online. They require admittedly much more time than online tests, but they allow teachers to talk to the students, listen to them, and check their ability to speak out, which is of great importance, too.

Creativity and critical thinking are areas that interpenetrate. A framework that connects them can be Bloom's taxonomy model (Bloom, 1971 and 1974), which guides students' work through six stages of the critical thinking process (Loseby, 2019). In the revised 21st century version of Bloom's model, Knowledge was replaced by Remembering, Synthesis was absorbed by Evaluating, and Creating was added as the peak of the taxonomy. This shows the importance of creativity (Further, Anderson et. al., 2001).

In the revised taxonomy framework, teachers first need to know what names, dates, facts, theories, etc., they want the students to remember, then what concepts and ideas the students should not only recall, but also understand. On the "Applying" level, it is essential to indicate in what situations and to what kind of problems and dilemmas students should be able to apply their skills and knowledge. In the next stage, they would need to analyze how multiple concepts and ideas are connected. "Evaluating" means that the students would know how to use critical thinking tools to make decisions and to justify a statement. The choice of framework includes the rare ability to produce a new or original work. Proper "action words" that describe the cognitive processes of the framework are collected in Table 3.
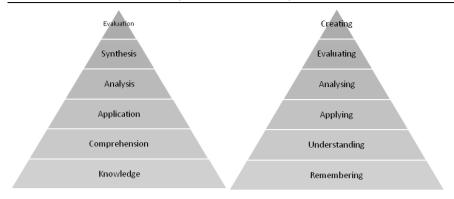
Fig. 5. Bloom's taxonomy model and the revised 21st century taxonomy framework

Source: Anderson et. al. (2001)

Table 3. Action words in each cognitive process according to the revised taxonomy framework

Cognitive process	Action words
Remembering	recognizing, recalling
Understanding	interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining
Applying	executing, implementing
Analyzing	differentiating, organizing, attributing
Evaluating	checking, critiquing
Creating	generating, planning, producing

Source: Anderson et. al (2001)

Cheating is a behavior that accompanies many people from high school towards adult life. As Whitley and Keith-Spiegel report, pupils who cheat at high school do not have barriers in continuing this practice at university; and even later on, in working life, they more often commit dishonesty. The attitude of accepting cheating accompanies many students (Wilson, Krause & Xiang, 2010). To better explain this behavior, Whitley and Keith-Spiegel proposed six primary categories of students' motives to cheat. These are (Whitley & Keith-Spiegel, 2002, p. 23):

(1) performance concerns (failing a course, grade pressure),
(2) external pressure (academic pressure, such as course load),
(3) unfair teachers,
(4) lack of effort,
(5) loyalty (helping a friend),
(6) other factors (viewing cheating as a game).

The motives inspire researchers to find effective ways to limit dishonest, unethical behaviors. As Kayışoğlu and Temel (2017) indicate, there are several recommendations to limit students' cheating willingness. These are:

(1) Identifying intrinsic and extrinsic motives for the students' cheating through qualitative research in order to eliminate them;

(2) Including panels, seminars, and group discussion events on the impacts of cheating on exams to increase students' awareness in teacher training programs;

(3) On-campus exam arrangements to prevent cheating attempts.

The correlation between creativity and cheating among students is a very interesting research issue. The coexistence of and the relationship between creativity and cheating can lead to different results and may make it possible to formulate new conclusions and recommendations regarding the preparation of online exams. We plan to focus on this correlation in further research.

5. Research questions

The survey aimed to investigate students' opinions about the possibilities of carrying out fair online exams. Based on the survey and direct conversations with students, most of them would prefer to sit exams on-campus, but in the online mode, they also notice a chance for relevant evaluation.

The survey contained ten questions, eight of which were one-choice questions, and two were open-ended. The one-choice questions were based on Likert items, each one containing a value categorized from "strongly agree" to "strongly disagree". Eight statements on online training and cheating were presented to the respondents, who indicated how strongly they agreed or disagreed with the statements. For statistical analysis, a numerical value was then assigned to each of the statements. A value of 5 is given to "strongly agree", 2 to "strongly disagree". For the value "hard to say," a value of 99 was given to separate the answers that are neither in the "agree" nor "disagree" group. The last section of the survey was to collect data on students' attitudes and ideas on how to design an online exam process to make it more relevant. It was in a qualitative format.

In the first part of the survey, the respondents stated how they assess online training in general. The last question was open-ended and did not suggest any answer: "How should the teaching process and the online exam be planned to strengthen students' independence and avoid cheating?" About 20% of the students indicated turning the web camera on during an online exam as an effective way to reduce cheating.

The second, parallel part of the study was a series of online interviews with teachers. Their ideas on how to improve the evaluation process are presented at the end of the next section.

6. Results

In the survey, a total of 126 responses were collected. The participants were business undergraduate students enrolled in online courses at the University of Lodz during the spring and fall semesters of 2020.

Over 90% of all the students who took part in the survey judge cheating as unethical (answers: 45% "definitely yes", 46% "somewhat yes"). Sixty-three percent also believe that it is possible to verify the independence of the learners taking the exams online.
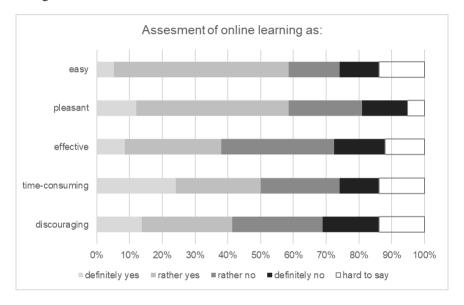

Fig. 6. Assessment of online learning as easy, pleasant, effective, time-consuming, or discouraging.

Source: own elaboration

Over 40% of the respondents say that it is not possible to prepare a fair online exam. Most of them asses online learning as ineffective and boring. At the same time, about 50% of the students gave a clear wish list or even instructions on what they would like online exams to look like. Their suggestions built the following list of proposals:

Give a normal test, not 20 questions in 10 minutes.

Traditional tests, sending photos of the solved tasks within a certain time.

Ideally, a different test would be done for each student, but this is not possible.

More time, no limit of the submission of works.

Checking the activity during classes.

If we did more in the classroom and weren't asked a lot of things, like home-work, we would have more time to prepare for the exams. In many cases, stu-dents also work, and it is harder to reconcile everything with such a distributed schedule.

It is necessary to base the credit of the subject on exercises during the didactic process instead of the collective final exam, which cannot be fully controlled.

The above ideas are only a sample of the answers, but they show the stu-dents' main moods and approaches to online exams.

Additionally, a group of 11 teachers were asked to give a short online inter-view about the online exams. They all admitted that there is a serious problem in verifying student independence when taking the exam. Some of them also point out that they would rather ask problem questions to verify the students' knowledge than give standardized tests. The section below presents selected statements of the interviewed teachers. T1–T6 refers to the number of the teacher interviewed.

T1: "If they [students] know that they are learning for themselves, they will be honest about it. Only, that process starts during an earlier education stage and upbringing."

T2: "Let the test be an opportunity to show what they [students] know, what they have learned, how they think, and not only recalling a remembered rule or definition."

T3: "With the current technology, whether the testing takes place online or in the traditional version does not matter because a clever student can find methods that the Cerberus standing next to it will not know at all. The only question is whether it is the role of the teacher to be a Cerberus? I am far from such an opinion."

T4: "Only 'Open Book' exams and open-ended questions."

T5: "I would give up testing memory in favor of testing the skills of searching, connecting, dividing, and creating, i.e., an exam in thinking, not memory."

T6: "Best not to control at all! The more trust, the less cheating. The less control, the more space for self-discipline. Students cheated during on-campus exams; they will cheat on the online exams... which is much easier and more tempting ..."

These statements are examples of teachers who are conscious of the problem of cheating and who do see solutions. Moreover, they have a friendly attitude. They would be ready or at least open to preparing exams in a new manner. Some other ideas and suggestions not included in this article show that some teachers are less willing to cooperate. We will analyze those cases more carefully in future works.

7. Discussion

Cheating in online exams seems to be a universal problem. Its background is not only the attitude of the students, but it is also conditioned by educational experiences and study rules. Online learning, which is much anonymous, requires a different approach to the evaluation process. In our opinion, it should include the whole course, not only the final test. However, since there are existing rules at universities, teachers are expected to prepare. This section gives some recommendations on the online examination process to reduce cheating.

A question that appeared in the interviews with the teachers was, "How can you plan the examination process to strengthen students' independence and avoid cheating?" Below, some recommendations are proposed based on the students' opinions and ideas. They include both technological and organizational ideas, though they focus on the process and relationship.

(1) Prepare questions that require more creativity than remembering facts or definitions. Finding answers through a simple web search or using the student's own notes should be only the basis. The real challenge will be the explanation, interpretation, analysis, or giving an opinion, i.e., the top levels in Bloom's taxonomy.

(2) Various question types. Reduce the number of multiple-choice or true and false questions in favor of open-ended questions. This practice is much more demanding and means more effort on the teachers' side, as they would have to check every answer "manually". To find the golden mean, a mix of question types should be applied.

(3) Emphasize the importance of the rules and fair play during the course, not only just before the exam. Prepare an "academic integrity contract" that contains a list of forbidden practices. This may also raise doubts about whether we are simply giving the students more cheating inspirations. However the fact is that they usually know a wide range of tricks much earlier than the list appears.

(4) Proper timing arrangement. In line with the time settings that would be appropriate during an on-campus exam, the students should start and end the test approximately at the same time. The LMS (Learning Management System) tools make it possible to set the time individually to ensure that, for example, each student can devote exactly 40 minutes to answering all the questions, no matter if they logged in at the same moment

(which usually depends on the Internet connection). In the cases of different time zone, more sets of tests should be considered.

(5) Create a large question bank. This would make it possible to build many different sets of questions. The question bank should be divided into categories to ensure that the test contains issues proportionally selected or randomly drawn from the topic or difficulty level categories.

(6) Change the question order. Shuffle the answers in multiple-choice questions. It discourages the students from simultaneously share their screens to cooperate with their classmates as they discover that the sequence of questions is different.

(7) Allow the students to take the final test only once, as with real on-campus exams. This should motivate the learners to prepare better for a certain day, not only to try their luck and easily retake the exam if they fail.

(8) Familiarize students with the IT system that will be used during the exam. Introduce the rules concerning the time and submission. It is also advised to use the test settings that automatically close the exam when they exit the system. If there are technical problems, the previous results will be saved, and the teacher can decide whether to let the student continue or not.

(9) Delay the score availability. Even though feedback is appreciated, too much can encourage students to prepare their own knowledge base from the tests. This would not be bad, but the teacher must then prepare new questions every time.

(10) Show only the questions that were answered incorrectly to protect the other answers.

Some teachers also prohibit backtracking, which forces the students to focus on one question at a time, without being able to go back to previous ones. In the light of studies that have been carried out, this practice is very stressful for students and not fair. They pointed out that in traditional exams, they have the right to read the questions then start with the issues they are more confident about, and when they have enough time, they can go back to the more difficult questions. The psychological effect of the consciousness that they have already managed to answer some of the questions can be a critical factor in their success or failure. This is why we do not recommend this practice. It is effective in preventing cheating, but it lacks empathy and is much too stressful. Moreover, it does not allow the students independence.

8. Conclusions

There should be a common effort made to limit unethical behavior in academic evaluation. In our opinion, the actions should go parallel in two directions: ensuring safe, technically well-prepared online exams, and systematically evaluating

the learners' progress during the whole course. As the survey results show, the majority of students would rather take the exams without cheating. The use of forbidden practices very often comes from a mismatch in the educational process. To avoid this and to prevent cheating in online exams, more attention and carefulness should be put into the process design. This requires close cooperation between the academic teachers, university authorities, and government. In future research, we will also investigate intercultural differences in the context of academic dishonesty. This article gave some recommendations to help teachers prepare for evaluation in the challenging time of ubiquitous online learning.

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