

Online examination from the point of view of teachers

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Abstract— *As a result of the COVID19 pandemic, education has been forced into the online space. The delivery of the course material and the assessment of the students' acquired knowledge also had to be solved via online interfaces. At Obuda University, we used the MOODLE system and the MS Teams application to implement online education and examinations. During the research, we got to know the opinions and experiences of the teachers regarding online examinations with the help of an online questionnaire. We were looking for answers from teachers of higher education about their experiences in the online exams:*

- *how suitable the instructors found it to be*
- *would instructors use it even when it is no longer mandatory*
- *what were its positives and negatives*
- *how the teachers made sure of the identity of the students taking the exam*
- *what methods the teachers used to prevent the use of unauthorized devices*
- *from the teachers' point of view, what technical problems arose during the online examinations*

Exams in the online space presented the institutions with many problems to be solved. During the research, we wanted to explore these by interviewing the teachers. In our quantitative research, we asked the teachers of Obuda University. The online questionnaire received 61 responses in the 2nd semester of the 2021/22 academic year.

Keywords— *online exam, higher education, views of instructors.*

I. INTRODUCTION

Online tools were used in higher education even before the turn of the millennium, but they were not yet widely accepted [1]. Online education played an important role due to the impact of the COVID-19 pandemic in the 2020s. Since then, several studies have dealt with the methodological issues of online education, with the impact this form of education had on the lives of universities and students [2] [3] [4] [5] [6].

This completely new situation necessitated the application of new methods and techniques in the field of examinations as well. Many articles have been published on the subject, but we still do not have a sufficient amount of data on their correctness and applicability. It was important during this period to share our experiences. [7] The epidemic situation demanded changes in all areas of life,

and education was no exception. In a very short time, it was necessary to switch from face-to-face education to online form [8]. Conducting the exams online required a lot of preparation from the instructors, and several problems had to be solved [9] [10].

In the course of our research, we asked the teachers' opinions about online exams, and in the essay, we systematized and analyzed the answers we received. The questionnaire contained 19 questions, which were open-ended and closed-ended. There were questions where the answers had to be marked on a 5-item Likert scale. Except for two questions, where the email address can be entered, and where we asked about specific technical problems, it was mandatory to answer the other questions.

II. ANSWERS TO THE QUESTIONNAIRE

A total of 533 teachers work at the 7 faculties of Óbuda University, of which 61 filled out the questionnaire. The staff of 61 also includes external teachers. We also took these into account when analyzing the data, since they used the university systems and filled out a questionnaire related to their university subject. If external teachers are not counted, then university teachers have approx. 10% filled out the questionnaire. This is a relatively low turnout. Among the faculties, the Alba Regia Faculty of Technology received 26 answers, which represents 42.6% of the answers.

A. DEMOGRAPHIC DATA

Among the respondents, the proportion of women and men is 42.6%-57.4%. Regarding the age distribution, 60.7% of the teachers belong to the 43-57 age group. The second largest group is the 28-42-year-olds with 21.3%. Those aged over 58 make up 18% of the respondents, and not a single answer was received from the youngest age group. Two teachers from the group over 65 filled out the questionnaire. For the age groups, we followed the division according to generation. Based on the number of examinees, the picture is very mixed. Groups of over 90 people are quite rare, which was also since most of the respondents came from the Technical Faculty of Alba Regia, and this is where the smaller groups are typically found. Up to 90 people (for groups growing by 10 members), the distribution of groups is very similar.

B. DISTRIBUTION BY EXAMINATION TYPE

As for the type of exam, typically for exams with more than 50 people, the written exam was used, or perhaps a verbal exam was added. For smaller groups, the verbal exam was typical. The majority of respondents, 32.52%, chose the verbal exam, 20.33% preferred the written exam, and 9.15% used a mixture of verbal and written exams.

C. INTERFACE OF THE EXAMINATION

The university recommended Moodle and MS Teams for the exam interface, and this appears in the majority of answers (Figure 1). Moodle was chosen by 55.7% of respondents and MS Teams by 45.9%.

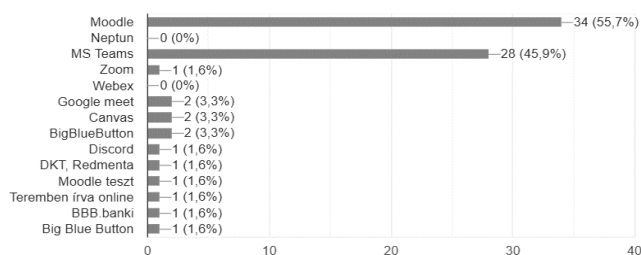


Fig. 1. Distribution according to the surface of the exam

D. VERIFICATION OF STUDENTS' IDENTITY

We expected individual answers to the question about checking the identity of the students. Most people relied on the Moodle login ID and password, which meant the Neptun ID and password since most people used Moodle as the interface. In the verbal exam, the teachers knew the students in the small groups, so no other identification was necessary. For larger groups, students were asked for some form of identification. There was only one teacher who did not deal with this.

E. EVALUATION OF THE ONLINE EXAM AND POSSIBLE FUTURE USE

4.9% of the respondents found the online exam not good at all and 6.6% rather bad (Figure 2). They would not use the online exam later either.

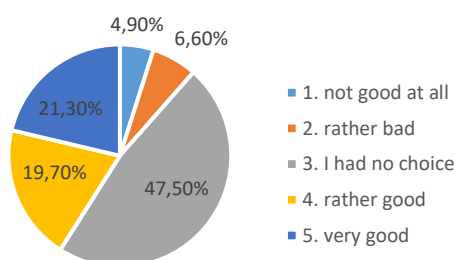


Fig. 2. Distribution according to the favorable opinion of the online exam

Among those who answered that they had no other choice, 73% would not use this form of examination in the future. Of those who answered 4 to this question, only one person would not use this form of examination later. Anyone who liked the online exam will definitely use it in the future, with one uncertain exception. 47.5% of respondents would not use the online exam in the future, 14.8% were unsure, and only 37.7% would use it later.

F. TECHNICAL PROBLEMS

50.8% of the respondents had no technical problems during the online exam, and 44.3% had only minor problems that they could solve themselves. Perhaps this is not surprising from the point of view of technical education. The majority of those with problems drew attention to the shortcomings of the Internet connection. Some instructors mentioned that they had problems with online exams because of Moodle or MS Teams. There were problems with the sound and picture quality, but not in a particularly large number. They would not use the online exam not because of technical problems, but rather because of the lack of personal contact.

G. ONLINE EXAM PREPARATION

Those who needed much less preparation (Figure 3) for the online exam than for the in-person exam would stay with this form of exam later on, and they had no technical problems. Those who needed the same amount of time to prepare for the two types of exams had very few technical problems, yet they wrote that they no longer wanted to use the online exam. A greater proportion of those who require more preparation would choose the personal exam. More than half of the respondents (54.1%) needed more time to prepare for the online exam than for the in-person exam.

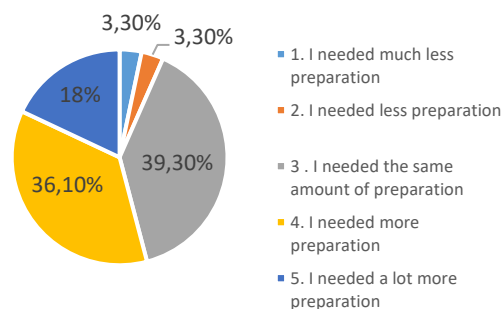


Fig. 3 Distribution of answers based on preparation for the online exam

H. STUDENTS' PERFORMANCE

The teachers who answered that the students performed worse - this is 6,5% of the respondents - in the online exam compared to the personal exam (Figure 4), all needed more preparation. Not sure if they would use this exam in the future. The teachers who thought that the students performed much better (13,1%) all took the exam in the form of a test.

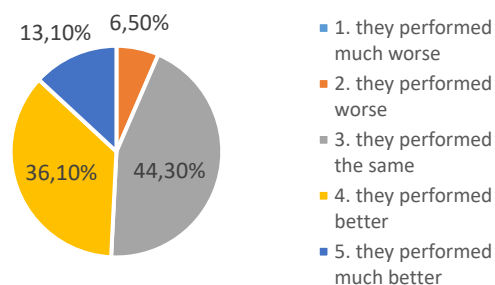


Fig. 4. Distribution based on students' performance

I. APPLIED EXAMINATION METHODS

Among the examination methods used, the most popular are verbal responses via the online interface and the test (Figure 5). This result is also due to the fact that most of the instructors conducted the online exams using Moodle and MS Teams. In general, it can be said that the instructors used several methods together, the verbal response via the online interface was the only method where no other method was already used.

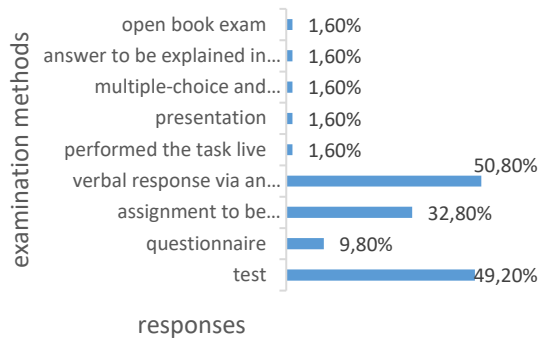


Fig. 5. Distribution according to examination methods

J. METHODS USED TO PREVENT CHEATING

In order to avoid cheating, in the case of tasks and tests to be solved during the exam, most people decided to leave a short time for the solution (Figure 6). Almost no one singled out just one solution, rather a combination of them was used. The fact that the exam was mainly about practical questions was also very popular. After that, the instructors used continuously cameras, and name-based tasks and randomly asked questions in almost the same proportion.

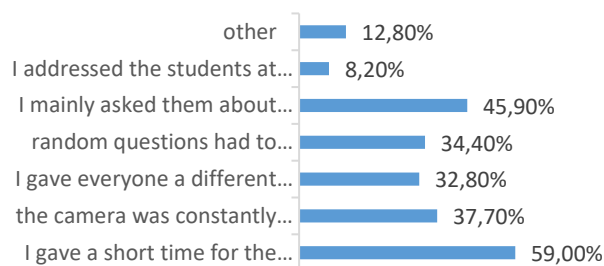


Fig. 6. Distribution according to the methods used to prevent cheating

K. ADVANTAGES AND DISADVANTAGES OF THE ONLINE EXAM

Figure 7 shows the negatives that the teachers experienced with the online exam. The listed reasons were highlighted according to the frequency of the answers. Only 24% of the teachers think that there were no negative aspects of the online exam. Among the negative qualities, 43% of the respondents singled out cheating, the use of other aids, and the possibility of group work as the most critical problem. Surprisingly, 32% of teachers highlighted the impersonal nature of this format as a negative. 27% of the respondents felt that the preparation was much more time-consuming compared to the traditional form of education, but many also added that this would probably only mean extra work in the initial period and that it would improve in

the long term because the prepared tests and tasks in the future can also be used.

Details from the teachers' answers:

- "Lack of personal contact"
- "I am not sure that the result reflects the actual knowledge."
- "Although it was not necessary to prepare more for the verbal exam than before, the preparation of the tests took a lot of time."



Fig. 7. Disadvantages of online exams

20% of the respondents concluded that there is no positive effect of the online exam. Surprisingly, this position was taken by the younger generation, as 45% of these respondents belong to Generation Z, while the remaining 55% belong to Generation Y. Figure 8 shows the advantages of the online exam from the instructor's point of view, also with the help of a word cloud.



Fig. 8. Advantages of the online exams

According to 46% of the respondents, the most advantageous aspect of this form was the comfort, within which the time savings associated with travel, the stress-free environment for teachers and students, and the flexibility were highlighted. 65% of the respondents are from Generation Y. Of those who highlighted this advantage, 35% of them would not gladly use the form of the online exam despite this advantage. 30% of teachers enjoyed the quick, automatic assessment option. Unfortunately, only 11% of the respondents highlighted as a positive the possibility of getting to know and trying different methodologies, which would be very important from an educational point of view. Surprisingly, 60% of those who have drawn attention to this advantage are of the Baby Boomer generation. Details from the teachers' answers:

- "It could be solved from home. Most of the tasks were evaluated automatically, so I spent less time on corrections."
- "There was no need to waste paper."
- "My digital competencies have improved."
- "customizable time frame - in the case of correspondence students, the exam can be organized at the most suitable time for the student."

III. 3. EXAMINATION OF CONNECTIONS

Figure 9 shows that 60% of those who filled out the questionnaire belong to the Y generation. Among the advantages of the online examination, 72% highlighted convenience, flexibility, the possibility of simple and quick evaluation, and the possibility of automation. Based on these, it is not surprising that almost 70% of this age group chose the written exam.

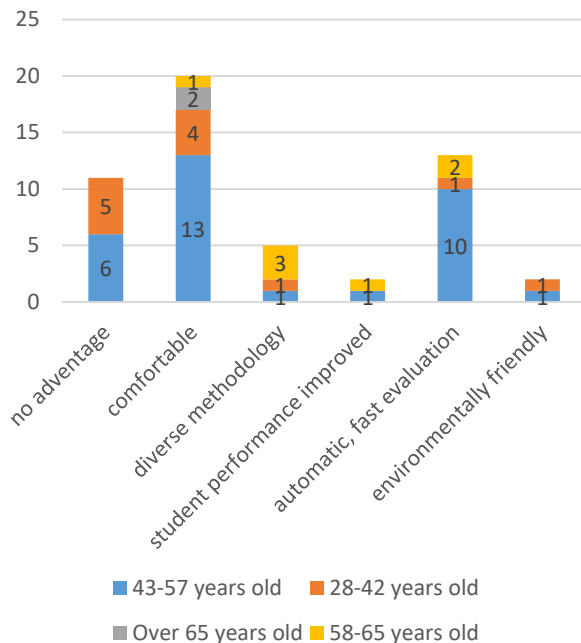


Fig. 9. Generational distribution of the positives of the online exam

Examining the methods used by instructors to check students' identity, we found $r=-0.731$, a strong relationship, which indicates an opposite orientation. So those who do not find the user authorization management options of the platform they use to be sufficient, used video-based, face image, and voice identification instead. Also, the correlation between these two measured variables may point to the exact opposite, that if the possibility of facial verification was not provided or adequate, then they used authorization-based verification of the applications they used.

If we examine the correlation between not checking the identity of the students and the better performance experienced when conducting the online assessment, we find that the correlation is $r=0.342$. This indicates a medium-strength relationship with unidirectional co-movement. So, if the instructors did not find a suitable way of checking, or if they could not use the opportunities provided by digital tools, they believed that it could be concluded that the students had an advantage and thus better results were achieved. On the other hand, looking at the correlation between the more time-consuming preparation and the possibility of joint work as negative factors, $r=-0.367$. From this, it can be concluded that there is a moderately strong correlation in the opposite direction between these two factors, meaning that it was not the efforts to conduct the exam safely that required more time for preparation.

	comfortable	automatic fast	would rather use it	would definitely use it
comfortable	1	-0,444	-0,328	0,270
automatic fast	-0,444	1	0,320	-0,024
would rather use it	-0,328	0,320	1	-0,245
would definitely use it	0,270	-0,024	-0,245	1

Fig 10. Correlation coefficients between the positives highlighted during the online exam and future application

Based on the analysis of the coefficients (Figure 10), $r=-0.444$, comfort, flexibility, home atmosphere, and a stress-free environment as positive characteristics and the positive aspect of using online applications capable of automatic evaluation are moderately strongly related, indicating an opposite relationship in terms of direction. If we add the non-forced use of these variables to the examination in the future, it can be established that the correlation between the automatic evaluation provided by the technique, faster repair, and the future application is $r=-0.024$, so there is no linear relationship, these two characteristics are uncorrelated. So, it is not necessarily because of this feature that instructors would definitely choose the online exam format in the future. When examined with the variable "It would rather apply", $r=0.320$ indicates a medium-strength, one-way relationship.

A. ANALYSIS BY GENDER

For women, the average answer to the question of how nice the online exam was was 3.69, for men it was 3.29. Technical problems produced an average score of 1.57 for both women and men. Examining the preparation time compared to the traditional exam, we found that the average for women was 3.42, while that of men was (Figure 11)

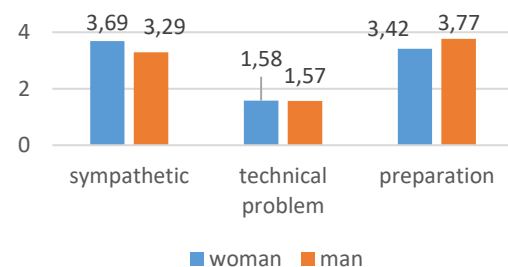


Fig. 11 Analysis by gender

Correlation coefficients:

- Gender-sympathetic: -0.192
- Gender-technical problem: -0.004
- Gender preparation: 0.186

Examining the relationship between a few more parameters:

- Sympathetic-technical problem: -0.138
- Sympathetic preparation: -0.446
- Technical problem preparation: 0.159

It can also be seen from the calculated correlation coefficients that there is no close relationship between the genders and the given aspects. The two parameters between which there is a moderately strong relationship are the preference of the online exam and the time required to prepare for the online exam, $r=-0.446$. This means that the less preparation someone needed to prepare for the online exam, the more enjoyable the online exam was for them.

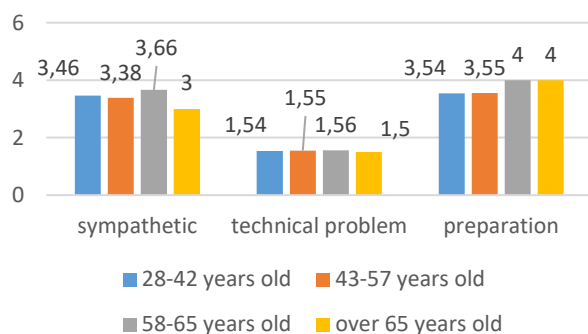
B. ANALYSIS BY AGE

Analyzing likeability, the average for the 28-42 age group is 3.46, for the 43-57-year-old group the average is 3.38, for the 58-64-year-old group the average is 3.66, while for the over 65-year-old group it is 3.0. The technical problems, an average of around 1.5 was found for all age groups. In the case of preparation, an average of 3.5 was obtained for the 28-42 and 43-57 groups, and 4.0 for the 58-64 and over 65 age groups.

Correlation coefficients:

- Between age and sympathy: 0.0
- Between age and technical problem: 0.0
- Between age and preparation: 0.1

Examining the correlation coefficients, we also conclude that there is no correlation between age and the given aspects (sympathetic, technical problem, preparation).



IV. SUMMARY AND FURTHER RESEARCH

During our research, we asked the teachers of Óbuda University about their experiences with online exams. During the analysis by gender, we did not find a strict correlation between the likeability of online exams, the technical problems that arise and the time required to prepare for online exams, and the gender of the respondent. Examining the previous aspects based on age, we again did not find a strict relationship between the respondent's age and the given aspects. Although these results may also be the result of low involvement. Among the negatives of the online exam, most people highlighted the possibility of cheating and the lack of personal contact. Among the positives of the online exam, a surprising number of people mentioned convenience, which in most cases meant getting rid of time-consuming traveling. Based on the responses we

received, it became clear to us that the majority of instructors did not like online testing, but discovered methods they would like to use in the future. Hopefully, in the future, we will have the opportunity to create a safe exam center that meets all needs, which will greatly contribute to increasing the acceptance of this form of the exam.

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