

STATISTICAL ANALYSIS OF THE PREPARATION OF A FUTURE STUDENT DURING THE SARS-COV-2 PANDEMIC (ECONOMIC APPROACH)

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Purpose: The aim of the article is to statistically analyze the preparation of the future student during the SARS-CoV-2 pandemic. The article is based on the answers of this year's high school graduates to the questions asked in the questionnaire regarding the assessment of their knowledge and the work of teachers during online classes. Moreover, prospective students expressed their opinion on the choice of a university and access to information about the fields of study. The article also deals with the financial situation of families during the pandemic and the impact of this situation on the possibility of further education of this year's high school graduates.

Design/methodology/approach: Critical analysis of the literature on the subject allowing to define the term e-education. Analysis of the questionnaire and drawing conclusions based on the statistics.

Findings: When analyzing the questionnaire, it was found that this year's high school graduates are not prepared to start their studies in the coming academic year and the teachers' work according to the survey was not effective. The financial situation of the families of this year's high school graduates does not affect their further education.

Research limitations/implications: The article was based on a statistical survey using the questionnaire method. The analysis of the respondents' answers provided results on the substantive preparation of high school graduates, teachers' work and the financial situation of families. The conclusions from the analysis indicate that this year's high school graduates may become poor students in the future due to the educational deficiencies they indicated. The analysis of the survey results led to the main question that may become the direction for future research, such as considerations on improving the educational process conducted remotely.

Originality/value: The article presents the original statistical study (survey questionnaire). The survey is addressed to secondary school teachers, university teachers and high school students who are planning academic education.

Keywords: statistics, education, sociology, economics, SARS-CoV-2.

Category of the paper: Research paper.

Introduction

Education is one of the most important elements of social life, because from the earliest stage of human development it shapes his personality, worldview and improves skills on many levels (Malewski, 2010, p. 46). The aim of education is, above all, the progress of knowledge, so that in the future, young people will be an added value for society (Muszyński, 2014, pp. 77-87). Correctly, education should take place in science centers designed for this, because young people should have close contact with peers and teachers and the possibility of active participation in school life (Okoń, 2008, p. 383).

The spread of SARS-CoV-2 virus has severely affected education. Many countries, including Poland, have closed schools and decided to transfer education to remote mode, and this form of education may have a number of effects that will be felt for many years (MNiSW, 2020).

The aim of the article is to present the preparation of this year's high school graduates for the further education process and the effects of e-education.

Education during a pandemic SARS-Cov-2

The term e-learning can be defined as a teaching process that takes place outside the school premises, based on the concept of distance learning/distance education (Clarke, 2007, pp. 11-12). E-education is also defined as training or teaching with the use of information technology, which means supporting the didactic process through devices with Internet access (Matusiak, 2011, pp. 59-60). E-education allows you to complete courses, training, and studies, excluding physical presence in the classes and complements the traditional teaching process (Dertln, 2005, pp. 12-15). E-education is a very wide application of electronic technology in the teaching process and has been used since the mid-1980s. E-education is a form of flexible learning combining traditional forms of education with access to automated teaching tools and materials, and the main burden of learning lies with the learner, not the teacher (Hojnacki, 2006, p. 26). The aim of creating e-education was to give the teaching process a new quality, which would improve education, with the use of multimedia ICT tools (Kuźmicz, 2012, p. 130). Solutions for the implementation of e-education are stationary and portable multimedia computers, devices such as palmtop, mobile phones, and learning using the above-mentioned tools can take two basic forms.

The first is CBL (Computer Based Learning), which is based on the use of computers with access to educational content available using data carriers such as CDs, DVD ROMs, pendrives, hard drives, flash memory. In the course of teaching according to the CBL model, there is no

direct exchange of information or dialogue between the student and the teacher. The student's task is to choose a convenient date for him, in which he independently performs tests and exercises on the above-mentioned data carriers, using a personal device to analyze them (Techopedia).

Another form of e-education is WBL (Web Based Learning). It is a form of teaching based on the use of personal computers, telephones, or other devices with access to the Internet or intranet. These materials are sent via the Internet to, for example, an e-mail address indicated by the student, to educational platforms created for students. The WBL model assumes apart from the asynchronous teaching mode the possibility of communication between the teacher and the student. Teaching then takes place in real mode and is conducted by the teacher. WBL is also known as on-line learning. During such a lesson, students communicate with the teacher and with each other using online communication tools such as instant messaging, chats, discussion forums, audio conferences and videoconferences (McKimm, Jollie, & Cantillon, 2003).

The development of information and communication technologies has made it possible for society to have access to educational materials and contact the teacher regardless of the time and place of stay of both parties, and many opportunities for acquiring knowledge and education. However, can transferring learning from schools to the network contribute to the weakening of education as a whole system? Can this year's high school graduates, who spent only a few weeks in schools, be prepared for the matriculation examination as effectively thanks to e-education and stationary education? Will they be an added value for universities, and will they go to university at all? Has the economic situation of households deteriorated enough to become an obstacle to the further development of young people?

A statistical study of the effects of e - education during a pandemic

In order to obtain answers to the above questions, a survey was conducted among high school graduates taking the secondary school-leaving examination in 2021. The research sample was 100 people, and the analysis of the questionnaire was carried out on the basis of the answers provided, the most important questions were taken into account, which will allow to formulate conclusions.

Figure 1 shows the breakdown of the respondents by gender.

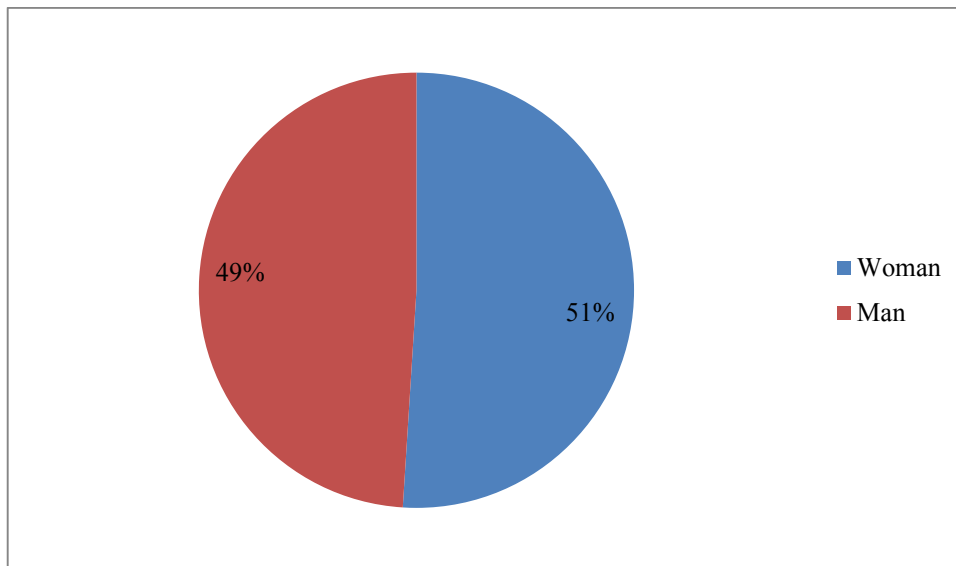


Figure 1. Division of respondents by gender. Source: own study based on a questionnaire survey (n = 100).

Figure 1 shows the division of respondents by gender. 51% of the respondents are women and 49% are men. On the basis of the sample, it can be concluded that a similar number of women and men study in secondary schools.

Figure 2 contains information about the type of school that this year's high school graduates will complete.

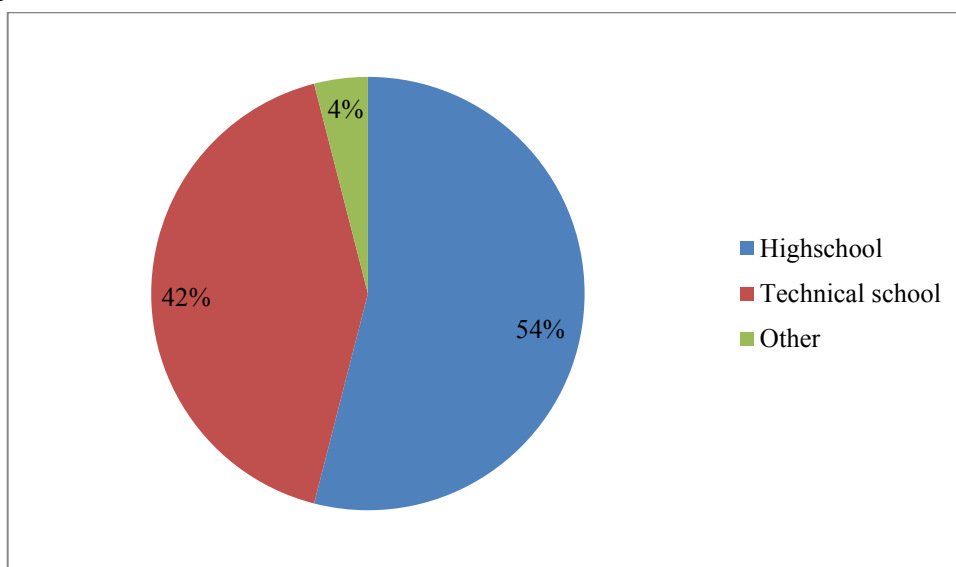


Figure 2. Type of school graduated. Source: own study based on a questionnaire survey (n = 100).

According to the survey, 54% of the respondents declared that they would graduate from a general secondary school this year, 42% indicated a vocational technical school, and 4% were students of other schools than those mentioned. Analyzing Figure 2, it can be concluded that over half of the respondents graduating from general secondary school remain without a learned profession, which is a premise for the choice of further education, including at a university.

Figure 3 is an assessment of the knowledge acquired in school since the start of the pandemic and the transition to online learning.

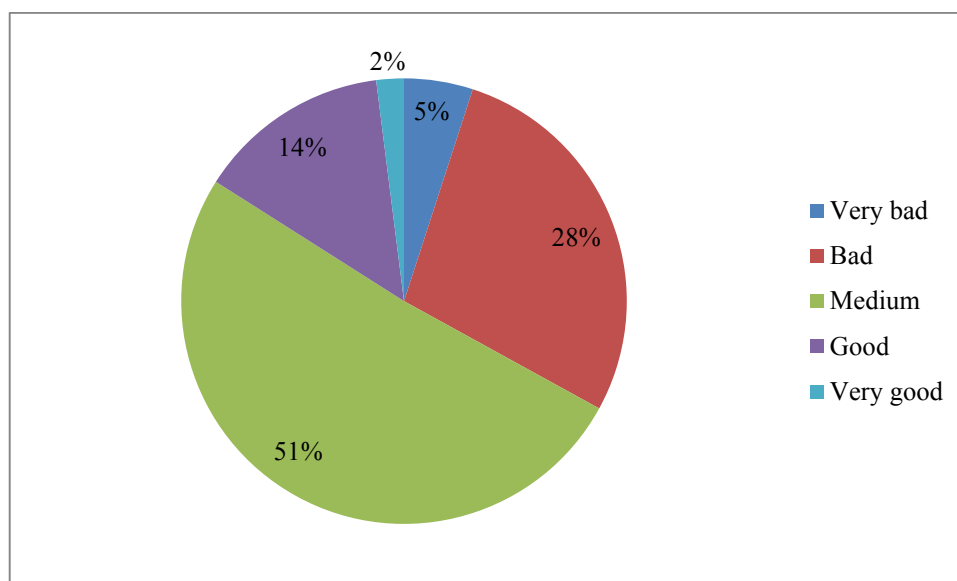


Figure 3. Assessment of the acquired knowledge. Source: own study based on a questionnaire survey (n = 100).

When interpreting Figure 3, it can be concluded that the level of knowledge of secondary school students is generally assessed as unsatisfactory, 51% of respondents assess the knowledge acquired during e-lessons as average, 28% of young people indicate that their knowledge is poor, 14% of respondents estimate their level of knowledge. good knowledge, 5% assess their knowledge very badly from the moment of starting the e-lesson, and only 2% assess their abilities as very good.

Figure 4 presents the answers of high school graduates regarding the place of preparation for the matriculation examination. The respondents were asked if they would feel better prepared for the Matura exam if the lessons were held at school.

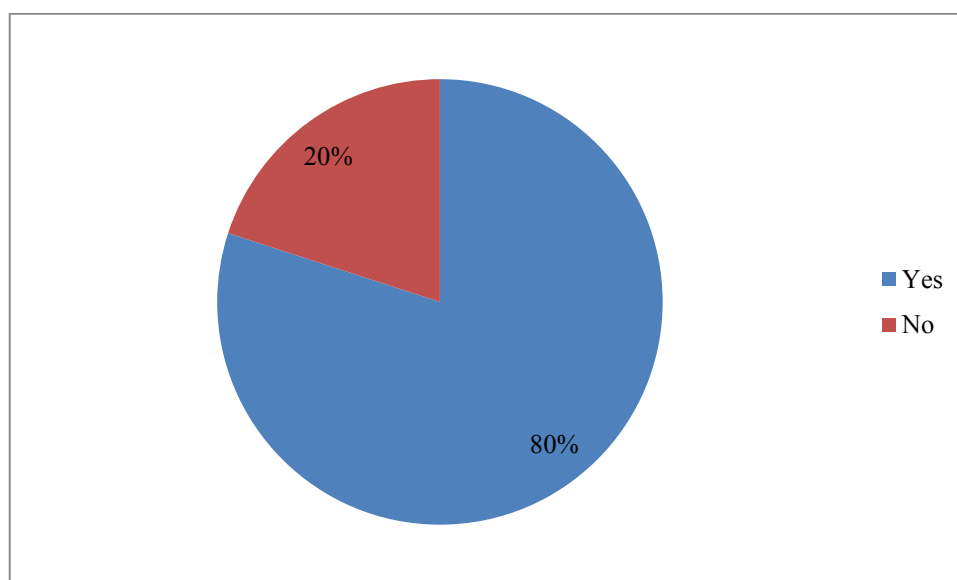


Figure 4. Preparation for the Matura exam, and lessons at school or on-line. Source: own study based on a questionnaire survey (n = 100).

According to high school graduates, preparation for the matura exam should take place at school, as many as 80% of them declared this answer, while 20% believe that regardless of the form of education, they feel equally prepared for this exam.

Figure 5 concerns the evaluation of teachers' performance during a pandemic. The teacher is the person responsible for organizing the lessons as effectively as possible. It is up to the teacher to provide the material in a comprehensible way and to encourage young people to cooperate with the teacher and the rest of the group.

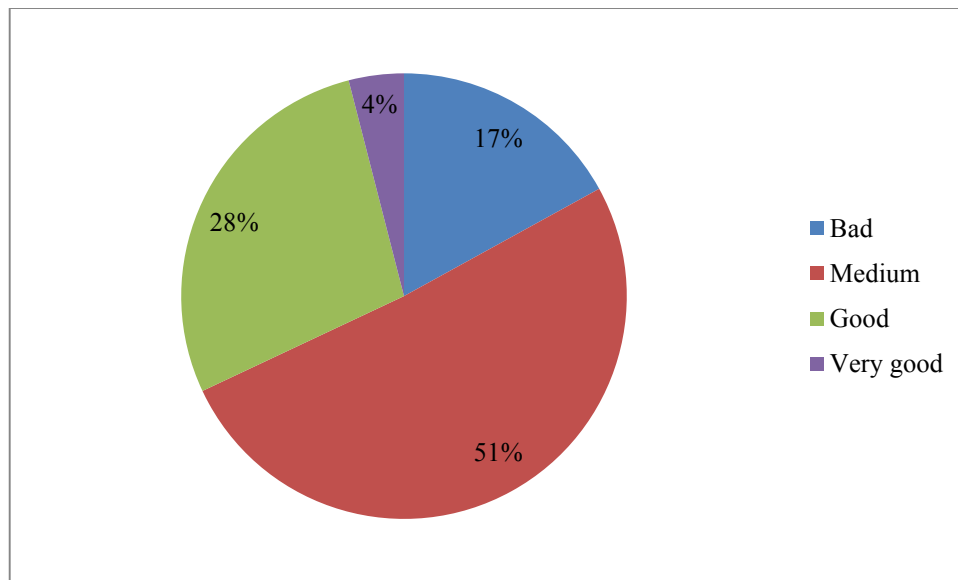


Figure 5. Assessment of the teacher's work during on-line lessons. Source: own study based on a questionnaire survey (n = 100).

In Figure 5, students rated teachers' performance during the pandemic on a four-point scale. 51% of the respondents assessed the teachers' didactic efforts as average, 28% of the students considered that teachers do their job well, 17% of the respondents considered the teachers' work as unsatisfactory, and only 4% assessed the teachers' teaching efforts as very good.

Figure 6 shows the level of students' understanding of the material discussed in online lessons.

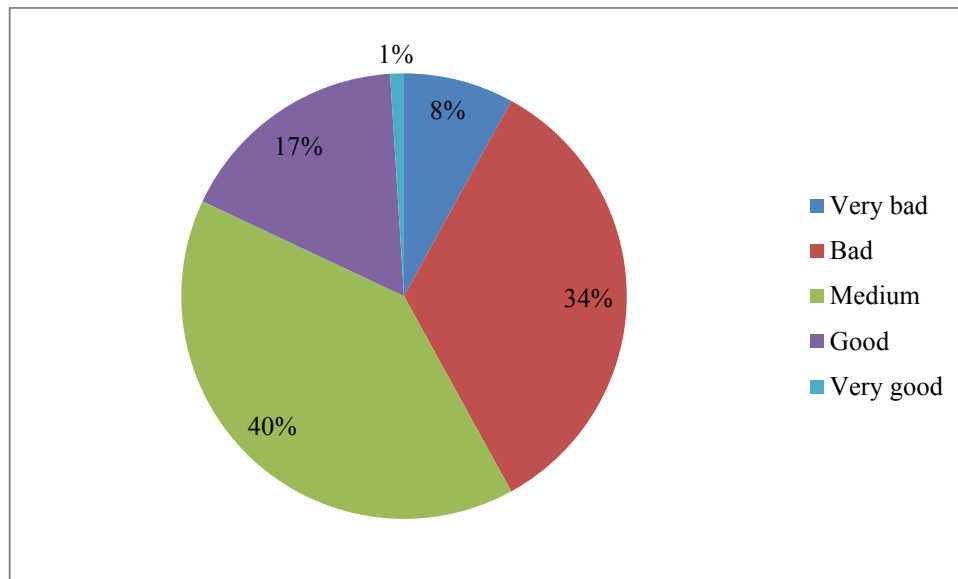


Figure 6. Understanding the material in online lessons. Source: own study based on a questionnaire survey (n = 100).

Figure 6 presents the students' answers to the question concerning the acquisition of material from online lessons aimed at preparing them for passing the matriculation examination. 40% of the respondents assess the understanding of the scope of knowledge with the on-line method on average, 34% of the respondents stated that they do not understand the material from the lessons poorly, 17% evaluate their education at a good level, 8% acquire knowledge from online lessons very well, and 1% the respondents practically did not learn from these lessons.

Figure 7 is an assessment of the substantive preparation by the high school graduate to start studies.

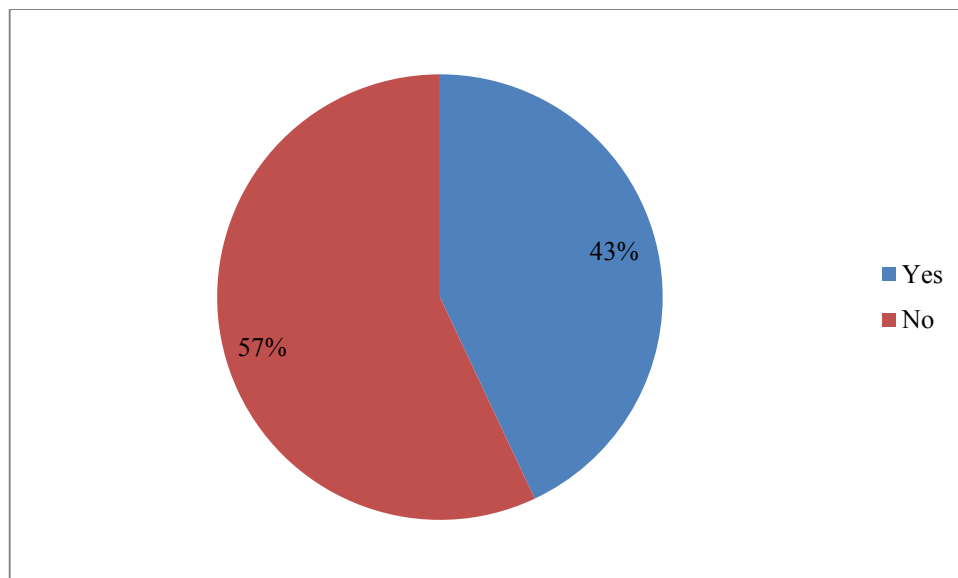


Figure 7. Assessment of substantive preparation before starting studies. Source: own study based on a questionnaire survey (n = 100).

According to the respondents, 57% of people do not feel ready to start studies, the remaining 43% declared that they are ready to undertake further education.

For the purposes of the study, if in the question in Figure 7, the respondent answered "No", then the secondary school graduates were asked to provide the reason why they provided such an answer, as shown in Figure 8.

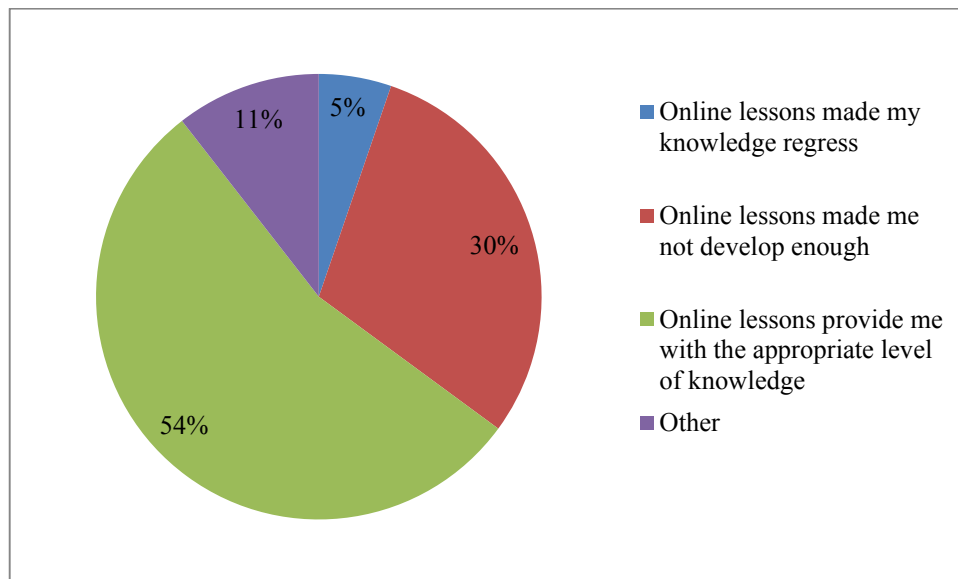


Figure 8. The reasons for the lack of substantive preparation for studies. Source: own study based on a questionnaire survey (n = 100).

When asked about the lack of preparation for starting studies (Figure 8), the respondents indicated the following answers, 54% believe that online lessons do not provide them with sufficient knowledge to feel prepared for the exam, 30% of people say that by introducing online education is not developing enough, 11% of people indicated that they have other reasons not to feel prepared for the baccalaureate, and 5% believe that their knowledge has regressed since the beginning of the pandemic and the change of the education system.

Another question asked of high school graduates was the choice of a university, the answers to which are shown in Figure 9.

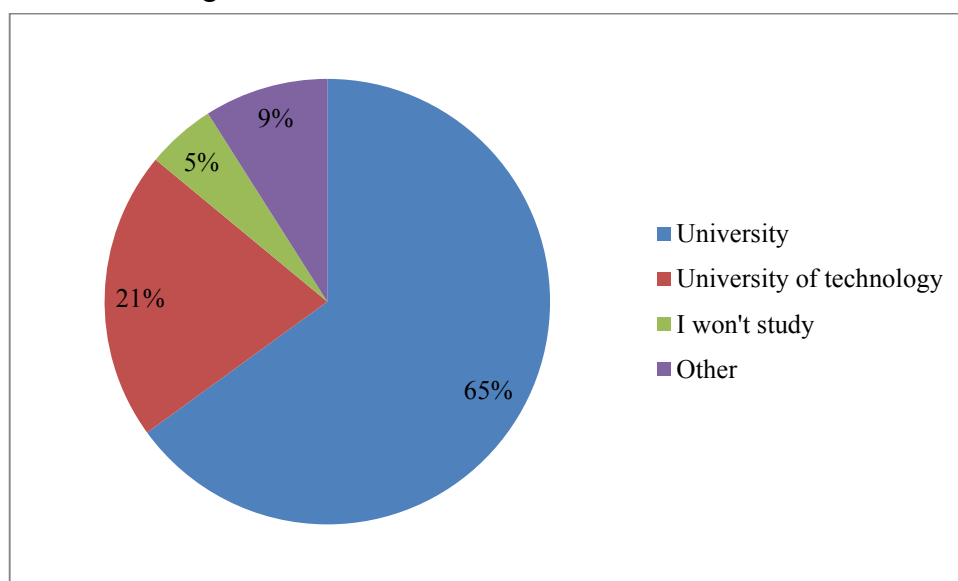


Figure 9. Preferences of high school graduates regarding the choice of higher education institutions. Source: own study based on a questionnaire survey (n = 100).

This year's high school graduates, in response to the question about the choice of university, declared as follows (Figure 9), 65% want to study at the University, 21% intend to choose a polytechnic, 9% of people declare a different form of further education, and 5% of respondents do not plan to go to university.

Information is a valuable resource. It is a source of knowledge and helps in making decisions. When asked if they felt sufficiently well informed about the available fields of study, the respondents replied as follows (Figure 10).

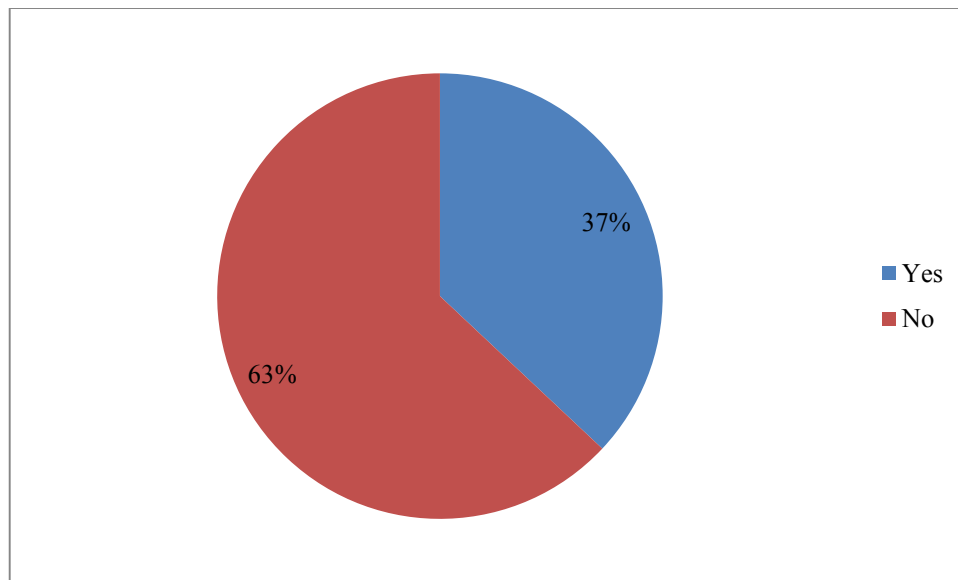


Figure 10. Availability of courses at universities. Source: own study based on a questionnaire survey (n = 100).

Figure 10 shows that only 37% of people feel sufficiently informed about the available fields of study, while as many as 63% of respondents do not have sufficient information about the available fields of study to be able to make a choice.

If the respondents answered the previous question (Figure 10) "No", then in the survey they were asked to indicate the reason for such an answer. The most common answers are shown in Figure 11.

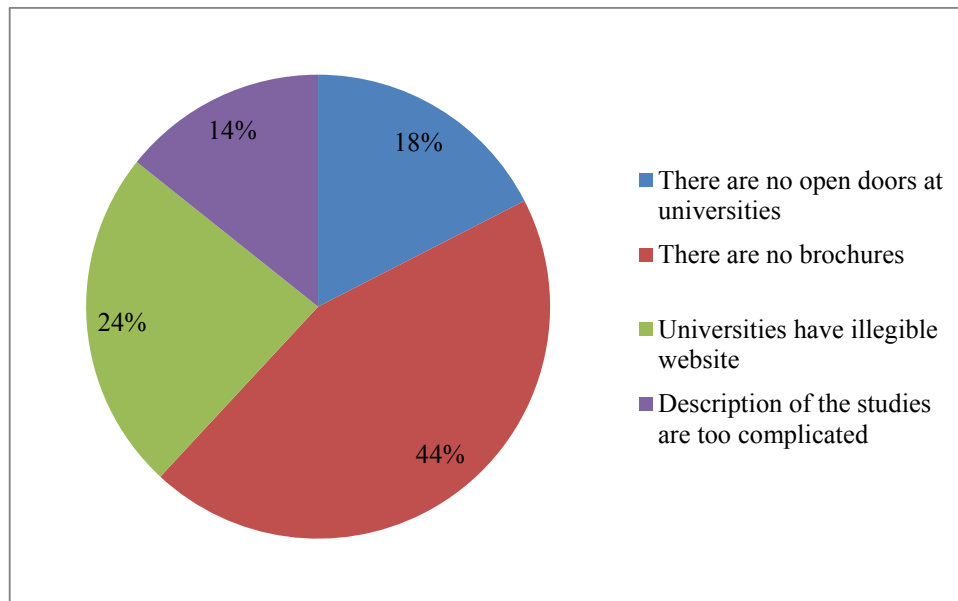


Figure 11. The reasons for the lack of information about the fields of study indicated by high school graduates. Source: own study based on a questionnaire survey (n = 100).

Figure 11 illustrates the answers to the question "Why do you not feel informed/informed about the available fields of study" to which high school graduates answered as follows, the most 44% of people say that there is a lack of information brochures provided by universities to secondary schools, 24% of respondents indicate problems with mobility on the university's website, 18% of students would like to participate in the open days of universities, and 14% of respondents believe that the course descriptions are too complicated, which makes it hard to understand.

It is important to emphasize whether the impact of the pandemic on the financial situation of households is related to the lack of opportunities for further education. Restrictions and restrictions introduced to contain the further spread of the virus may have depleted many households' wallets. The reasons for this could be, inter alia, dismissal or shortening of working hours or the inability to continue business activity.

Figure 12 shows the answer to the question about the correlation of financial conditions with resignation from studies.

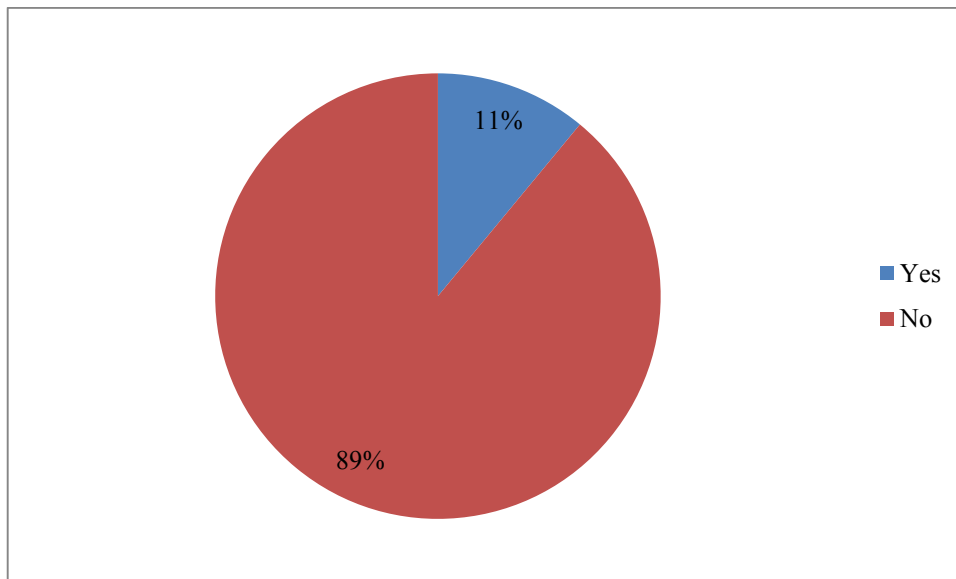


Figure 12. Linking the pandemic to the financial situation of households. Source: own study based on a questionnaire survey (n = 100).

As shown in Figure 12, 89% of respondents will not have to withdraw from studying due to financial conditions, 11% responded that the pandemic had an impact on household finances, and therefore they are forced to withdraw from studies for some time.

Another question addressed to the respondents was to raise the topic of a trip to another city or country. Many young people do not want to study in their hometown and choose to study further away from home. Figure 13 provides the answer to the question whether the pandemic prevented the respondents from going abroad to study outside their home.

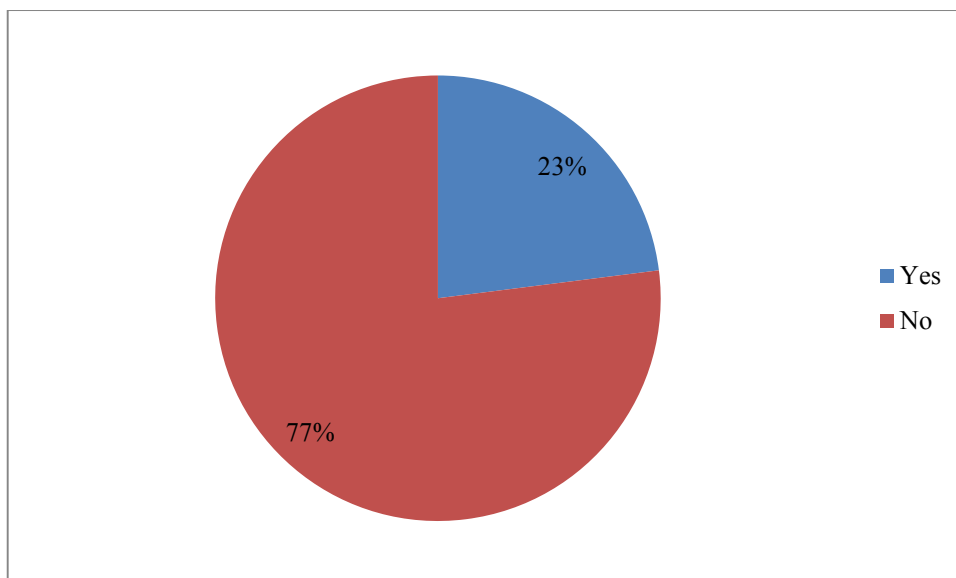


Figure 13. Impact of the pandemic on the possibility of going to study in another city or country. Source: own study based on a questionnaire survey (n = 100).

According to this year's high school graduates, as many as 73% of them will have the opportunity to go to study in another city or country (Figure 13), while 23% of those surveyed by the pandemic will not be able to do so.

The last question analysed is whether the funds that were to be allocated to further education will be spent in a different way. Figure 14 presents the responses of the respondents.

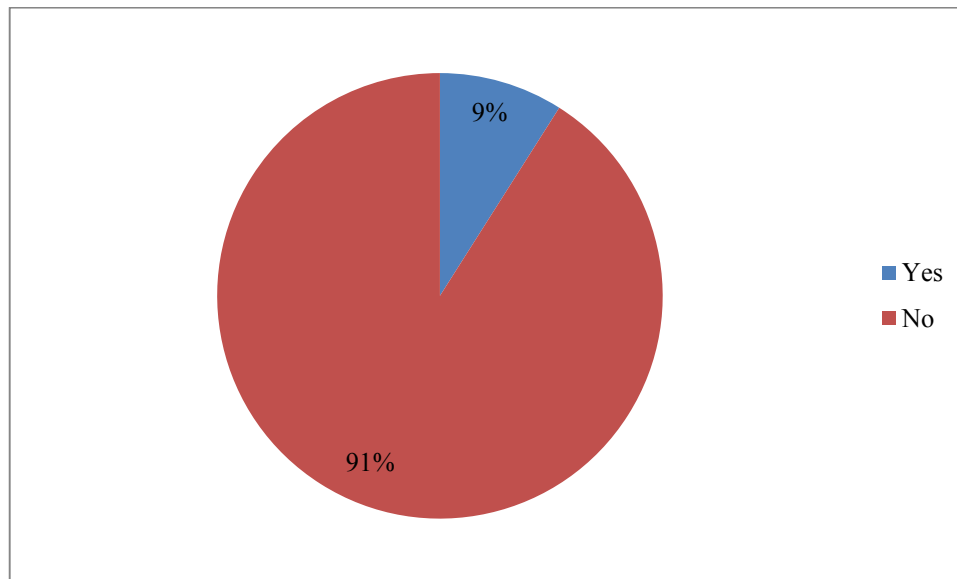


Figure 14. Allocation of funds for purposes other than studies. Source: own study based on a questionnaire survey (n = 100).

As shown in Figure 14, 91% of respondents believed that the pandemic did not affect the spending of funds earmarked for studies for other purposes, 9% of people said that the pandemic funds allocated to further education had to be used for other expenditure.

Summary

Summing up, the analysis shows that more than half (54%) of the respondents are high school graduates who will graduate from general secondary school this year. This is a prerequisite for considering their studies as this type of secondary school does not provide them with a specific profession.

For many high school students graduating from high school, enrolment is a huge step towards adulthood. It is important that this year's high school graduates are open to development and self-improvement while simultaneously learning the material they have learned in high school. This year, only 5% of the respondents from a sample of 100 people assessed their level of knowledge as very good, as many as 28% of the respondents stated that their knowledge was low, and 51% of high school graduates assessed themselves as average students. The aforementioned assessment of the state of knowledge may become a milestone for the decision to start studies. Another problem that may affect the decision regarding further education is the fact that as many as 80% of this year's high school graduates declared that they would feel better prepared for the matriculation examination if they were studying at school.

Moreover, the work of teachers conducting on-line lessons was assessed by the respondents as average (51%). The difference between a very good (4%) and a bad (17%) grade is also disturbing, as it amounts to as much as 13 percentage points, the survey result may indicate at this point that teachers are not prepared to conduct effective classes remotely, which may result in perhaps the same disturbing results of the material assimilated by the students. As far as online lessons are concerned, as many as 34% of this year's high school graduates do not understand the presented scope of issues applicable in this exam, and only 1% of them considered that they had fully absorbed the material.

The considerations presented so far show that as a result of the pandemic, due to which the stationary education system, later transformed into a remote part of high school graduates, may withdraw from studying, as many as 57% of respondents considered that they did not feel sufficiently prepared for it, indicating that on-line did not provide them with a sufficient level of knowledge (54%).

The vast majority of high school graduates are planning to go to the University (65%), the polytechnic was indicated by much less respondents (21%). The survey analysis shows that 63% of future students do not feel sufficiently informed about the available fields of study, indicating the lack of information in the form of brochures sent to secondary schools (44%) as the main reason for the lack of knowledge about a given university.

Referring to the financial situation of Polish families and the impact of the pandemic on the household budget, as many as 89% of this year's high school graduates admitted that for reasons related to the pandemic, they will not have to give up their studies, while the remaining 11% will be forced to withdraw from further education for some time. High school graduates who planned to go to study in another city or country declared that due to financial reasons related to the pandemic, 23% of them would not be able to achieve this goal, and 9% of respondents said that the funds that were to be allocated to their further education will be spent on meeting the basic needs of their families.

The results of the study indicate that this year's high school graduates may become poor students in the future who, due to educational deficiencies originating from high school, may not be able to cope with the academic mode of education. As a result, many of them may resign from studies during the academic year. The question that arises is whether secondary school teachers are able to improve the educational process remotely enough to make it more effective in the future if online education is required again. At this point, a question can also be asked whether the choice of a university over a polytechnic is dictated by a poorly efficient remote education system.

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