

Subjective Factors Determining the Development of Online Self-study Skills During the Global COVID-19 Pandemic - from The Perspective of Students' Experiences*

Joanna KRZYŻAK

The Cracow University of Economics, Cracow, Poland
ORCID: 0000-0002-8230-3552

Jolanta WALAS-TREBACZ

The Cracow University of Economics, Cracow, Poland
ORCID: 0000-0002-8266-8922

Correspondence should be addressed to: Joanna KRZYŻAK; krzyzakj@uek.krakow.pl

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Abstract

The publication includes a theoretical part that describes in a synthetic way selected subjective factors determining the development of self-study skills in the online environment, and a practical part, which focuses on the analysis of the results of a survey conducted among students of Cracow's universities.

The study was conducted using a compiled questionnaire after the first year of crisis education at the end of the summer semester of the 2020/2021 academic year. The survey form was sent to the respondents using the CAWI (computer-assisted web interview) technique using the Google Forms application. In the study participated 825 people. The respondents voluntarily and anonymously expressed their opinion on: active participation in the learning process, internal motivation and commitment, discipline and determination in organizing time for learning, the level of self-management and time management skills as well as attitude to remote study during and after the pandemic finished. The statistical analysis of the collected results was performed with the use of the Statistica PL 13.3 package.

The purpose of this study is therefore an attempt to determine whether, in the opinion of the surveyed students, remote study during crisis education was conducive to the development of their self-learning skills, from the point of view of subjective factors. In addition, the study presents recommendations for the improvement of the process of independent self-study in the online environment. This study will be useful for researchers and educators interested in the issues of factors influencing the process of independent learning.

Keywords: Students, Crisis Remote Education, Self-Education Skills, Distance Learning, Emergency E-Learning, Covid-19, Media Multitasking.

Introduction

In the 21st century, the importance of independent and effective lifelong learning has increased, which is caused by the demand for highly qualified employees in the knowledge-based economy (KBE). The consequence of this state of affairs is the awareness of the permanent acquisition and development of skills that will enable adaptation to the requirements established in the labor market.

Learning about the various determinants of the effectiveness of the learning process at a university, including the conditions on which the course and results of independent learning of students in a remote form depend, it is worth emphasizing some objective (the theoretical aspects of objective factors and the research part have been presented in another publication by the authors) and subjective factors accompanying students in the process of independent acquisition of knowledge and skills. It is important to establish whether and to what extent, in the students' opinion, this remote study impacts the development of their self-learning skills.

Self-study in the online environment is accompanied by a number of subjective factors, the influence of which may, to some extent, be influenced by the learner in the process of acquiring knowledge and skills. These factors include, among others: the level of understanding of the essence of the problems presented in the classroom, awareness of the need for the usefulness of the acquired knowledge and the need for a vision of one's own aspirations, active participation of the student in the learning process, internal motivation and commitment, the level of discipline and determination in organizing time for learning, self-management skills, or being distracted as a result of multitasking.

The key issue in self-learning will be to understand the essence of the problems learned, to see the nature of the interdependence of knowledge, as well as the realized need and usefulness of the acquired knowledge. This means that the effectiveness of independent learning is determined not only by the understanding of what you are studying, but also by the awareness that the knowledge and acquired skills are to serve for a long time (Amirkhanova et al., 2015).

Another determinant is constant mental activity, which determines the possibilities of self-learning. It can even be said to be an indispensable condition for deliberate learning. Conscious active participation in the study process will depend primarily on the ability to set goals (Brandtstädter, 2009). The learner should realize what goals he is striving for, what goals he wants to achieve, what changes he intends to introduce to his further improvement.

One of the conditions necessary for learning during remote classes is greater internal motivation and commitment than during classroom classes, because the student often has to manage his own learning process on his own (Nurttala et al., 2015; Tseng, 2019). Self-study in an online environment requires the student to acquire the self-management and time management skills, allowing him/her to organize his/her learning more effectively and arrange everyday duties and chores more efficiently.

The student motivates him/herself during independent learning in an online environment (Chukwuedo, 2021). D.H. Pink draws attention to an interesting issue, namely that the intrinsic motivation (motivation 3.0) often prompts a person to undertake particularly difficult tasks. Finding the motivation 3.0 in oneself will, according to D. H. Pink, feel real joy and satisfaction with the undertaken actions (Pink, 2011). The issue of the importance of intrinsic motivation in learning are raised in their research also R.M. Ryan and E.L. Deci (2020). The research results in the field of motivation and online study are presented by K.Q. Baker and D.N. Moyer (2019).

The properties of attention, such as: stability of attention concentration, resistance to distracting stimuli, dynamics and divisibility are of particular importance in self-study in the online environment. Without going into more detailed considerations on the essence of attention and its role in learning, it should be assumed that, apart from interests and motivation to study, it is one of those subjective factors that significantly determine the course and effects of this process. In remote study, the learning environment like the network can be, and often is, the cause of frequent distraction and inability to fully focus on learning. Research by L. Bowman, B. Waite and L. Levine shows that students have much more problems with concentration and allocation of attention in an environment that offers many more attractive distractors than learning, such as using social media, browsing websites, watching movies or listening to music online or checking e-mail (Bowman, Waite, and Levine, 2014). This effect is additionally strengthened by the remote form of classes, in which the role of an external motivator in the form of direct teacher contact is reduced to a minimum.

During remote classes, the student's resignation from active participation in the online lecture is observed for the benefit of other activities not related to learning, for example using social networks or checking the offers of online stores. The multitude of possibilities of simultaneous use of the Internet medium during remote study allows us to assume that this form of studying is conducive to media multitasking. Media multitasking, in this case, will involve switching from one activity to another within the same medium.

The concept of "multitasking" includes a number of different cognitive tasks and affects the efficiency of their functioning, i.e. attention, working memory, long-term memory. While divisive attention in a human allows you to seamlessly switch between different tasks, there can only be one task at a time in the focus of working memory. Additionally, only full focus on activities promotes the transfer of information from working memory to long-term memory (Loukopoulos, Dismukes,

and Barshi, 2009). E. Ophir and colleagues indicate in their research that people who often undertake multiple tasks at the same time bear higher cognitive costs of switching between individual activities than those who rarely do it. People with a high level of multitasking are also more susceptible to the influence of stimuli irrelevant to the task performed (Ophir, Nass, and Wagner, 2009). Thus, the cited studies confirm the following relationship: with the increase in the level of media multitasking, the level of distraction and inability to focus on one activity also increases.

Research Methodology

Conducting a survey among students of Cracow's universities was justified by the growing interest in the impact of remote study during the global COVID-19 pandemic on the quality of education at universities. The conducted review of the literature on this subject was aimed at verifying the legitimacy of the undertaken research topic. For the purposes of the research, the main research problem was formulated, namely: how does online learning during the COVID-19 pandemic affect the development of independent self-study skills?

Regarding the main problem, the following detailed problems were distinguished:

- what subjective factors are conducive to the development of the ability to study independently in an online environment?
- what is students' attitude towards online self-study during the COVID-19 pandemic?
- how multitasking affects distraction when studying remotely.

In empirical research, the following hypotheses were adopted for verification:

H1: Remote study during the pandemic contributes greatly to increasing students' motivation and involvement in self-study.

H2: Studying remotely, due to the more limited contact with the teacher and peers, requires greater discipline in self-management and time management, organizing time for self-study.

H3: Studying in an online environment causes distraction while learning to a great extent.

After the first year of crisis education, at the end of the summer semester of the 2020/2021 academic year, a survey was conducted among students of Cracow's universities showing their experiences and opinions about the effects of online learning. The research sample was randomly selected and included students who studied at public universities in Cracow (participation in the research was voluntary and the students filled in the submitted questionnaire on their own).

The questionnaire used in the research was developed by a team of employees of Cracow University of Economics. The survey form was sent to the respondents using the CAWI (computer-assisted web interview) technique using the Google Forms application. Only fragments of a larger study have been used in this study. The questionnaire consisted of 8 questions identifying the characteristics of the respondents and 17 detailed questions regarding remote study. The statistical analysis was performed with the use of the Statistica PL 13.3 package. To assess the degree of interdependence of the analyzed variables, the Kendall tau correlation coefficient was used, assuming the significance level of $p < 0.05$.

Characteristics of the Research Trial

The study was attended by students of various levels, forms of study, as well as various faculties and years of study, who voluntarily and anonymously expressed their opinion on the benefits, threats and expectations related to the remote study process during the pandemic and after its end. 825 people participated in the study addressed to students of Cracow's universities, which constituted 0.64% of students at the time the study was conducted in the city of Cracow. Table 1 shows the structure of respondents according to selected criteria.

Table 1: Characteristics of the respondents

1. Gender			
women (532; 64.5%)		men (293; 35.5%)	
2. Age			
under 19 years (239; 29%)	20-22 years (491; 59.5%)	23-25 years (71; 8.6%)	over 25 years (24; 2.9%)
3. Study types			
full-time studies (489; 59.3%)		part-time studies (336; 40.7%)	

4. Level of study		
first degree studies (469; 56.9%)	second-degree studies (280; 33.9%)	long-cycle studies (76; 9.2%)
5. Experience in the studying*		
little experience a) (240; 29.1%)	average experience b) (296; 35.9%)	extensive experience c) (289; 35%)

* Legend:

- a) little experience in the studying: I year of the first degree studies and I year of the long-cycle studies
- b) average experience in the studying: II and III year of the first degree and II and III year of the long-cycle studies
- c) extensive experience in the studying: I and II year of the second-degree studies and IV and V year of the long-cycle studies

Source: own elaboration.

Among the surveyed students (825 people), the largest share of respondents due to the distinguished criteria of division in Table 1 can be seen in the group: women (64.5%), students in 20-22 years old (59.5%); full-time students (59.3%), first-degree students (56.9%); first-year students (bachelor's degree) - little experience in studying (29.1%). The proportion of women and men in the studied sample is comparable to the total proportion of women and men studying in universities in the Małopolskie voivodship, which at the time of the research was 59% to 41% (Main Statistical Office - GUS, 2021). As can be seen, the largest share of the surveyed students was aged 20-22. Due to the significant differences in the size of the studied groups of students according to the age criterion, it was abandoned from the analysis of the influence of the respondent's age on his internal motivation to learn remotely. In the above case, one cannot be sure that will be reliably proven the validity of the research hypothesis or the lack or the occurrence of significant statistical differences.

Most of the respondents (98.7%) studied only one major (min = 1, max = 2). Various fields of study were represented, namely: economic and business studies, humanities and social studies, philological (language) studies, pedagogical studies, IT studies, exact and natural science studies, technical studies, as well as medical studies.

Research Results

From among the many subjective factors presented in the theoretical part of this publication, which favor the development of the ability to study independently in an online environment, three were selected for the analysis, namely:

- 1) students activity and their motivation to study remotely,
- 2) self-discipline and determination in organizing study time,
- 3) attitude to remote study during the pandemic.

The results of the questionnaire survey are presented below, broken down by the above-mentioned factors.

Students' activity and their motivation to study

An essential factor influencing the growth of self-study skills and free development is the active participation of students in the learning process, including various discussions taking place during classes at university. During the survey, the respondents expressed their opinions on how the current, remote form of conducting classes, in comparison with the pre-pandemic classes, influences the level of freedom in expressing their own opinion or participating in discussions.

According to the students, the current form of remote teaching enables them to participate in a discussion to a greater extent or to express their opinion more freely than it was during classes in the university building - this opinion was expressed by 193 students (23.4%) whereas 148 (17.9%) of the respondents decided that they currently have a much better opportunity to participate in active discussions and express their opinions on specific topics during classes. Only 61 (7.4%) of the surveyed students stated that the form of remote study was definitely not suitable for this type of activity. The largest number of students (280; 33.9%) believe that this type of activity is comparable to that of studying within the university walls, i.e. the conditions of remote study relatively affect taking up discussions and expressing one's opinions during classes. The average value of the assessment in terms of the freedom to express one's opinion or participation in discussions during remote classes was $\bar{x}=3.27$ on a five-point scale (see Table 3). Similar results of the research are shown by M. Klimowicz - "teachers noted a significant increase in class attendance and students who hadn't been active in stationary classes earlier, began to take part in discussions in online space. It is possible that they were encouraged by the situation of remote education and the lack of physical contact and being in the same space with other students eliminated their earlier resistance" (2020, p. 24).

Moreover, a vital factor influencing active participation in the learning process, and thus the level of self-study skills, is the difficulty in concentrating during remote study. Out of all respondents, 398 people (which constitutes 48.2%) stated that

the greatest disadvantage of remote study is the difficulty in concentrating while learning. It would be interesting to find out the causes of distraction, which may result from frequent attempts to perform many activities at the same time, e.g. students responding to e-mails or browsing websites during remote classes. Scientists from Stanford University have proven that multitasking is not conducive to concentration (Ophir, Nass, and Wagner, 2009).

The results in Table 2 show that full-time students (63.1%) experience the greatest difficulty in concentrating during classes, especially with average (29.4%) and little experience in studying (18.9%). In the implementation of further empirical research, it will be possible to obtain more detailed information on the reason for difficulties in concentrating among full-time students. Probably due to the greater number of hours resulting from the study curriculum for full-time students, it can be assumed that this causes their greater weariness and a reduction in the level of concentration.

Table 2: Difficulty concentrating on classes while studying remotely (N=398)

Form of studies	Experience in the studying (share %)			Sum of shares%
	little	average	extensive	
Part-time studies	8.5	13.3	15.1	36.9
Full-time studies	18.9	29.4	14.8	63.1
Total	27.4	42.7	29.9	100.0

Source: own elaboration.

An important aspect that is worth emphasizing, related to the development of self-study skills, is the difficulty in maintaining a high level of motivation. Out of all respondents, 479 (which constitutes 58%) believed that remote study made it more difficult for them to maintain a high level of motivation in the current situation (recognizing it as a disadvantage of remote study). Among the surveyed students, 201 women (which constitutes 67%) of all 300 surveyed full-time students believe that remote study causes difficulties in maintaining a high level of motivation during classes, especially for people with average experience in studying (29.7%). Fewer men, 102 (which constitutes 57%) of all 179 full-time students surveyed, experience the same problem with maintaining a high level of motivation (especially with little and medium study experience).

The students were also asked what they considered a threat to further remote studies. Over one third of the respondents (322; 39%) treated the difficulty of maintaining a high level of motivation as not only a disadvantage, but also, as a consequence, a threat to remote study. Nearly 2/3 (208; 64.6%) of full-time students have such concerns, and among them over 68% are women.

As a result of the research, approximately 27.4% of students (226 people) indicated that they are now less involved in remote study than before the pandemic. Among the surveyed students, over 66% (out of 226 people) in full-time studies believe that remote study compared to traditional (within the university walls) reduces the level of their involvement in learning. As in the case of a decrease in the level of motivation, it can also be seen here, especially in people with average experience (men - 29.3%, and women - 31.8%) in full-time studies. These people are able to notice the comparison between full-time stationary studies (within the university walls) and in the current (remote) form. Therefore, they can more accurately and reliably assess how this situation impacted their level of engagement in studying than students with little experience in studying.

Analyzing the obtained results on the impact of student activity and motivation during remote classes on the development of independent learning skills, it becomes interesting to learn about the students' opinions on how the remote form of conducting classes, in comparison with the pre-pandemic classes, influenced their understanding of the knowledge. It turns out that most people (331; 40.1%) do not notice the difference in terms of understanding the acquired knowledge in the conditions of remote study and traditional study. According to the respondents, the current remote form of classes, compared to the traditional form of classes, had a negative impact on the understanding of the material by full-time students (137; 16.6%) to a greater extent than by part-time students (86; 10.4%). Taking into account the level of experience in studying, the poorer understanding of the material occurred among students with average experience in full-time studies (59; 7.2%) and little experience (43; 5.2%). 202 (24.5%) full-time students and 129 (15.6%) part-time students indicated the lack of difference in the understanding of acquired knowledge in the conditions of remote study and study in traditional form. The mean value (\bar{x} = 3.02 on a five-point scale) of the assessment of the impact of remote studying during the pandemic on understanding of acquired knowledge is presented in Table 3. This table shows the assessing the impact of remote teaching compared to pre-pandemic classes on the learning quality in scope of the choosing factors.

Table 3: Assessing the impact of remote forms of conducting classes on the learning quality (N=825)

Factors	Descriptive statistics			
	Arithmetic average \bar{x}	Standard deviation SD	Minimum	Maximum
1. The understanding of the material	3.02	1.06	1.00	5.00
2. The freedom of expression and participation in the discussion	3.27	1.16	1.00	5.00
3. The level of implementation of individual tasks in remote classes	3.36	1.05	1.00	5.00
4. The level of motivation to learn	2.58	1.13	1.00	5.00
5. The level of involvement during remote classes	2.67	1.12	1.00	5.00

Scale, where: 1 - definitely wrong (not suitable); 2 – wrong (lowers), 3 - no difference (same), 4 - better (picks up), 5 - much better (very picks up)

Source: own elaboration.

As can be seen, the factor related to the level of implementation of individual tasks in remote classes was rated the highest (\bar{x} =3.36 on a five-point scale). The freedom of expression and participation in the discussion received a slightly lower grade (this factor was assessed at 3.27). On the other hand, students rated the lowest factors related to the level of motivation to learn (\bar{x} =2.58) and the level of involvement during remote classes (\bar{x} =2.67). This means that, in the opinion of the respondents, online studies contribute to the greatest extent to decreasing the level of motivation and the level of commitment, and thus has a negative impact on the quality of student learning.

Table 4: Correlation coefficients between the researched factors influencing the learning quality (N=825)

Variable	Kendall's Tau correlation, BD removed in pairs, The correlation coefficient is significant with P <0.05000				
	UM	LT	LM	LI	FE
UM	1.000000	0.509508	0.559062	0.532875	0.464891
LT	0.509508	1.000000	0.501125	0.476987	0.467704
LM	0.559062	0.501125	1.000000	0.700955	0.455099
LI	0.532875	0.476987	0.700955	1.000000	0.497188
FE	0.464891	0.467704	0.455099	0.497188	1.000000

Legend: UM – The understanding of the material, LT – The level of implementation of individual tasks, LM - The level of motivation to learn, LI – The level of involvement during remote classes, FE – The freedom of expression and participation in the discussion

Source: own elaboration.

Comparing the correlation coefficients between the studied factors influencing the quality of learning (see Table 4), it can be observed that they are quite similar, although the strongest relationship exists between the influence of remote study on the quality of learning in terms of the level of motivation and the level of involvement during distance learning (0.70). The strength of the correlation between the other factors determining the impact of distance learning on the quality of this form of learning turned out to be slightly weaker, moderate, although significant. This observation seems to indicate that, in the opinion of the surveyed students of Cracow's universities, the impact of remote study on the quality of learning in terms of motivation is determined more by their involvement during remote classes (group work) than the level of individual tasks in remote classes (0.50), which is also confirmed by the even lower strength of the correlation between the level of implementation of individual tasks in remote classes and the level of involvement during remote classes (0.47). The weakest relationship exists between the level of motivation to learn and the level of completion of individual tasks in remote classes (0.45).

Self-Discipline And Determination In Organizing Study Time

Remote study as it has been defined causes that the student must be more disciplined and determined in organizing his/her time and allocating it at the right moment to study. Over 28.6% (236) of the surveyed students assessed that they had difficulties with self-discipline, and approx. 17.8% (147 people) found it difficult to separate their private life and

participation in classes. Table 5 presents the results of students' opinions on difficulties with self-discipline as a disadvantage of remote study.

Table 5: Difficulties with self-discipline in the opinion of the researched students (N=236; including: W=140, M=96)

Gender	Part-time studies (experience in the studying - share %)			Part-time studies (total of share %)	Full-time studies (experience in the studying - share %)			Full-time studies (total of share %)	Total of share %
	little	average	extensive		little	average	extensive		
Women	7.9	9.3	10.0	27.1	22.1	34.3	16.4	72.9	100.0
Men	11.5	7.3	13.5	32.3	25.0	28.1	14.6	67.7	100.0
Overall	9.3	8.5	11.4	29.2	23.3	31.8	15.7	70.8	100.0

Source: own elaboration.

Over 70.8% of the surveyed people in full-time studies, regardless of gender, have difficulties with self-discipline. This problem was addressed in the research by students with little (over 23.3%) and average experience (over 31.8%). Within the group of surveyed students, it turned out that approximately 16.2% (out of 134 people) did not develop fully, or insufficiently developed, the skills of self-study (see Table 6).

Table 6: Insufficient or lack of independent learning skills (N=134, including: W=79, M=55)

Gender	Part-time studies (experience in the studying - share %)			Part-time studies (total of share %)	Full-time studies (experience in the studying - share %)			Full-time studies (total of share %)	Total of share %
	little	average	extensive		little	average	extensive		
Women	6.3	12.7	11.4	30.4	25.3	29.1	15.2	69.6	100.0
Men	32.7	9.1	5.5	47.3	21.8	21.8	9.1	52.7	100.0
Overall	17.2	11.2	9.0	37.3	23.9	26.1	12.7	62.7	100.0

Source: own elaboration.

Insufficient skills or the lack of skills in self-learning were mostly stated by full-time students - 62.7% (out of 134 people). In full-time studies, it can be observed as relatively more problematic among women (69.6%) with average (29.1%) and little experience (25.3%), yet in part-time studies - more men (47.3%) with little study experience (32.7%) paid attention to the problem.

The surveyed students also expressed their opinions as to whether remote studying makes it easier for them to manage their time and plan the learning process (whether they use their time to study more effectively). Over 46.4% (out of 383 people) believed that remote study facilitated their time management and learning planning, and this is especially appreciated by female students (66.4%) of full-time studies with average (27.6%) and extensive experience in studying (21.2%) and by 56.4% of students, especially with average experience (22.6%).

Moreover, 20.4% (out of 169) of the surveyed students believe that they have a greater ability to adjust the pace of learning to their individual needs. Over 70% of women (out of 109) from full-time studies believe that they have a greater ability to adjust the pace of learning to their needs, especially with average (32.11%) and extensive experience (20.18%), while such an advantage was indicated by 55% of men (out of 60) from full-time studies, especially with little (25%) and average experience in studying (18.33%). Among part-time students, this advantage was more noted by 45% of men with little experience (20%) and only nearly 30% of women with extensive experience (13%).

Only 13.6% of the surveyed students considered that remote study causes difficulties in setting priorities (what should be considered important and what should not). Even less, 5.1% of the respondents indicated that they have a problem with planning daily activities and duties. Few indications may also indicate that students generally do not plan their classes and duties, they can be included in the generation 0 of time management. More information about time management by generations can be found in the study S. Covey (2021).

Attitude towards remote study during the pandemic

An important factor determining the level of effectiveness of independent self-learning is the student's attitude to distance learning in terms of specific forms of conducting classes (lectures, practical classes, seminars or conversations).

Figure 1 shows the results in terms of the attitude of the surveyed students to remote study during and after the pandemic. The chart above shows that the surveyed students significantly prefer to study remotely during the pandemic (509; 61.7%), and half of the respondents (422; 51.2%) prefer to continue this form of studying after the pandemic.

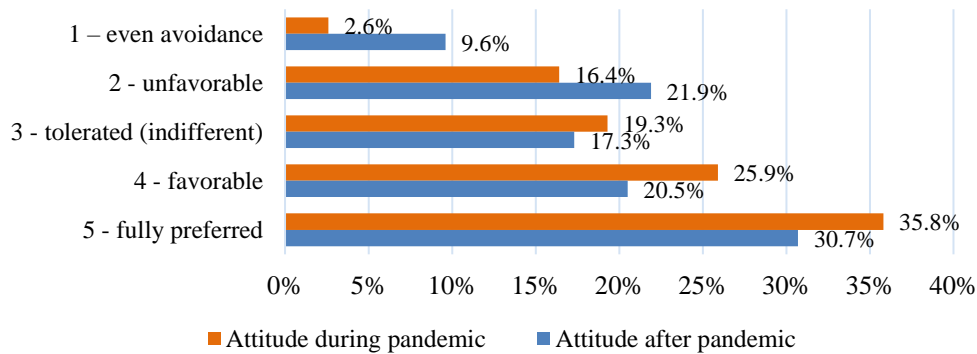


Fig.1: Current attitudes of students to study remotely during the pandemic and to continue studying remotely after the pandemic (N = 825).

Source: own elaboration.

Table 8 shows the results of the assessment of the attitude of students to remote study and the correlations between the assessment of the attitude of the surveyed students to remote study during the pandemic and the assessment of the attitude of students to continue remote study after the pandemic.

Table 8: Summary of the assessment results of the attitude of the researched students to remote study during and after the pandemic (N=825)

Variable	Kendall's Tau correlation, BD_removed in pairs, The correlation coefficient is significant with P <0.05000			
	Arithmetic average \bar{x}	Standard deviation SD	Attitude during pandemic	Attitude after pandemic
Attitude during pandemic	3.757576	1.178033	1.000000	0.704484
Attitude after pandemic	3.407273	1.367602	0.704484	1.000000

Grading scale: 1 – even avoidance; 2 - unfavorable; 3 - tolerated (indifferent); 4 - favorable, 5 - fully preferred.

Source: own elaboration

The average score for the current attitude of students to remote study during the pandemic is - 3.76, whereas the average score for the attitude of students to continue remote study after the pandemic is - 3.41. It can therefore be assumed that the current students will be slightly less likely to continue this form of learning in the future, after the pandemic.

The power of the correlation between the attitude to remote study during the pandemic and after the pandemic turned out to be positive, high (0.70). This observation seems to indicate that the current attitude of students to continue studying remotely after the pandemic is more determined by their attitude towards the form of studying they have during the pandemic.

Conclusion and Recommendations

The collected data on the basis of a sample of 825 people do not give a complete picture of the scale of the problem under study and require further in-depth research and analysis. However, the research carried out among students of Cracow's universities was sufficient and allowed for the verification of three hypotheses.

Hypothesis 1 was not confirmed in the study. As indicated by the results of the research, over 58% of students expressed the opinion that remote study causes greater difficulties for them in maintaining high motivation. Over 39% of students considered it not only a disadvantage of this form of study, but also a threat. The assessment of the impact of the remote form of conducting classes on the quality of learning in terms of the level of motivation and the level of commitment also does not confirm this hypothesis. The results of the research show that only over 41% of students are much more involved in discussions and have greater freedom to express their opinion during remote classes compared to classes conducted within the university walls. Over 27% of students indicated that they are now less involved in distance learning than before the pandemic.

However, hypothesis 2 was confirmed, assuming that students during remote study are required to have more discipline in self-management and time management, as well as organizing time for self-study. Over 46% of students believed that remote study facilitated both their self-management and time management as well as learning planning, over 20% believed that it also enabled them to better adjust the pace of learning. However, the results of the research show that over 28% of the surveyed students assessed that they have difficulties with self-discipline and over 16% of students believe that they have a low level of self-study skills.

The research positively verified hypothesis 3. Based on the analysis of the obtained results, it can be concluded that studying during remote learning during the pandemic was associated with the need to overcome many difficulties. According to the respondents, it was difficult for them to properly focus their attention during remote classes and to maintain it at a high level of concentration for longer periods of time. As they pointed out, the attention of the surveyed students was relatively often distracted. It can be assumed that the attention during remote classes was directed to too many stimuli simultaneously as a result of random external and internal stimuli. This seems to indicate a weak resistance of the participants' attention to distracting factors. The poor concentration of students' attention during remote study during the pandemic can also be concluded on the basis of other studies (Godlewski et al., 2020, p. 8), also confirmed by the observation of the didactic process at a university. It is worth keeping this in mind when considering the transfer of teaching activities to an online environment. Remote learning requires from students greater focus and increased concentration, which was difficult for a significant part of students. However, by introducing various forms of conducting classes within the subjects, the lecturers should encourage students to focus more attention (greater interest) and engage students, using for this purpose their intrinsic motivation, which naturally stimulates cognitive curiosity. Students will then be willing to expand their knowledge on their own initiative (Pink, 2011; Ryan and Deci, 2020).

Among the many challenges related to studying in the online environment during the pandemic, students note that higher education is primarily independent self-study or self-education. However, independence in learning does not diminish the role of the teacher in the remote study process. It should be systematic and it should include, apart from showing the good and weak points of studying, guidelines for the future. A well-used independence of learning gives the learner special skills that can be used not only in this case. They can be called key skills for learning in general (Hiemstra, 1994).

Emergency Remote Learning (ERL) is usually not planned in advance and consists of a sudden shift from traditional teaching to distance learning due to emergencies such as occurred during the coronavirus outbreak in various countries (Khalif, 2021, p. 269). This is completely different from using e-learning under normal circumstances (Hodges, Moore, Lockee, Trust, and Bond, 2020; Affouneh et al., 2020, p. 135). Therefore, the collected suggestions from students and their experiences in remote study resulting from the crisis situation should help the people conducting the classes to define the direction and scope of changes introduced in the didactic process, so that they would enable students to improve their ability to learn independently. The challenge for teachers in the online age is to engage students and involve them in the learning process, change teaching methods and time management, and create the content that not only covers the curriculum but engages students as well (Kebritchi et al., 2017).

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References

- Affouneh, S, Salha, S, and Khlaif, Z.N. (2020), 'Designing Quality E-Learning Environments for Emergency Remote Teaching in Coronavirus Crisis', *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 11(2), 135-137, <https://dx.doi.org/10.30476/ijvlms.2020.86120.1033>.
- Amirkhanova, A., Davletkaliev, E., Muldasheva, B., Kibataeva, N., G. Satyglyyeva, G., and Arynhanova, E. (2015), 'A Model of Self-education Skills in High Education System', January 2015, *Procedia - Social and Behavioral Sciences*, 171, 782-789, <https://doi.org/10.1016/j.sbspro.2015.01.192>.
- Baker, K.Q., and Moyer, D.M. (2019), 'The Relationship between Students' Characteristics and Their Impressions of Online Courses', *American Journal of Distance Education*, 33(1), 16-28, <https://doi.org/10.1080/08923647.2019.1555301>.
- Bowman, L.L., Waite, B.M., and Levine, L.E. (2014), 'A Cross-Cultural Comparison of Media Multitasking in American and Malaysian College Students', *International Journal of Cyber Behavior, Psychology and Learning*, 4(3), 1-16, <https://doi.org/10.4018/ijcbpl.2014070101>
- Brandtstädter, J. (2009), 'Goal pursuit and goal adjustment: Self-regulation and intentional self-development in changing developmental contexts', *Advances in Life Course Research*, 14 (1-2), 52-52, <https://doi.org/10.1016/j.alcr.2009.03.002>.

- Chukwuedo, S.O., Mbagwu, F.O., and Ogbuanya, T.Ch. (2021), 'Motivating academic engagement and lifelong learning among vocational and adult education students via self-direction in learning', *Learning and Motivation*, 74, May, 101729, <https://doi.org/10.1016/j.lmot.2021.101729>.
- Covey, S. (2021), *7 nawyków skutecznego działania*, Dom Wydawniczy Rebis, Poznań, ISBN:978-83-8188-039-8
- Hiemstra, R. (1994), 'Self-Directed Learning', *The International Encyclopedia of Education*, Husen, T. and Postlethwaite, T.N. (eds.), (2nd ed.), Pergamon Press, Oxford, ISBN:978-00-8041-046-3.
- Kebritchi, M., Lipschuetz, A., and Santiago, L. (2017), 'Issues and challenges for teaching successful online courses in higher education', *Journal of Educational Technology Systems*, 46(1), 4–29, <https://doi.org/10.1177%2F0047239516661713>.
- Khalif, Z.N., Salha, S., Fareed, S., and Rashed, H. (2021), 'The Hidden Shadow of Coronavirus on Education in Developing Countries', *Online Learning*, 25(1), 269-285. <https://doi.org/10.24059/olj.v25i1.2287>.
- Klimowicz, M. (2020), 'Polskie uczelnie w czasie pandemii', Fundacja Centrum Cyfrowe. Projekt Społ-Tech., Warszawa.
- Kliombka-Jarzyna, J., Kuba, M., Stankiewicz, A., Staszewska, E., Warwas, I., Wiktorowicz, J., and Woszczyk, P. (2016), 'Pokolenia - co się zmienia? Kompendium zarządzania multigeneracyjnego', Wolters Kluwer SA., Warszawa, ISBN:978-83-8092-513-7.
- Loukopoulos, L., Dismukes, R., and Barshi, I. (2009), 'The Multitasking Myth Handling Complexity in Real-World Operations', Ashgate Pub, Farnham, England, ISBN:978-07-5467-997-4.
- Main Statistical Office – GUS, (2021), <https://stat.gov.pl/obszary-tematyczne/edukacja/edukacja/szkolnictwo-wyzsze-w-roku-akademickim-20202021-wyniki-wstepne,8,7.html> (Access: August 5, 2021).
- Nurttala, S., Ketonen, E., and Lonka, K. (2015), 'Sense of Competence and Optimism as Resources to Promote Academic Engagement', January 2015, *Procedia - Social and Behavioral Sciences*, 171, 1017-1026, <https://doi.org/10.1016/j.sbspro.2015.01.225>.
- Ophir, E., Nass, C., and Wagner, A. (2009), 'Cognitive control in media multitaskers', *Medicine, Computer Science, PNAS: Proceedings of the National Academies of Sciences*, 106 (37), 15583-15587, <https://doi.org/10.1073/pnas.0903620106>.
- Pink, D. H. (2011), 'Drive: The Surprising Truth About What Motivates Us', Penguin, New York, ISBN:978-1-59448-480-3.
- Ryan, R.M., and Deci, E.L. (2020), 'Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions'. *Contemporary Educational Psychology*, 61, <https://doi.org/10.1016/j.cedpsych.2020.101860>.
- Tseng, H., Yi, X., and Yeh, H.-T. (2019), 'Learning-related soft skills among online business students in higher education: Grade level and managerial role differences in self-regulation, motivation, and social skill', *Computers in Human Behavior*, 95, 179-186, <https://doi.org/10.1016/j.chb.2018.11.035>.