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# Motives, benefits and difficulties in online collaborative learning versus the field of study. An empirical research project concerning Polish students

## Abstract

As a result of universities' growing interest in online learning, largely due to the COVID-19 pandemic, it is necessary to adapt online learning methods to students' professional preferences. The learning environment should accordingly be designed so as to ensure the highest possible engagement levels from the participants. This article discusses the value of collaboration in online learning along with its determinants. It highlights the need to include the crucial activities in the remote education of university students while taking into account their individualization and diverse motives. The analysis reveals that students cannot be treated as a homogeneous group; the preferences and abilities represented by them – which are associated with their field of study – determine their functioning in the remote learning environment. Based on their empirical study, the authors propose recommendations that may be helpful for educators in online collaborative learning.

**Keywords:** distance learning, collaboration, field of study, digital skills, motives

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## Introduction

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With the COVID-19 pandemic – resulting in the decision to move university classes online – academics are currently facing new challenges such as switching from in-person to online instruction. Not only do they need to quickly acquire the knowledge and skills needed to handle the remote technologies but, perhaps first and foremost, they have to re-evaluate their educational views and concepts, along with the methodology of online teaching. The problems (e.g. preparing online classes while taking into account individual motives), discussed in the article have already been acknowledged; however, the present scale of using the online learning solutions has clearly exacerbated them. One of the challenges is to convince educators that preparing online classes should not be limited to merely sharing the course contents online. Instead, remote education should be a constantly monitored, comprehensive and student-orientated process rather than a teacher's one-off action. Distance learning has proved to be a dramatic change for many academics, taking up a lot of their time and effort. For example, developing teaching materials in a form that is attractive to learners requires a significant amount of staff time, knowledge, skills, and motivation (Hiltz & Shea, 2005; Palloff & Pratt, 2005; 2007).

They have to modify the way they think about remote education and shift from correspondence-based teaching to interactive learning that is engaging both for students and teachers. One of the many challenges is to use modern technologies to create a unique learning environment adapted to the students' needs. Moreover, it is important to encourage both students and teachers to use collaborative tasks. Research shows that some students, in order to work effectively in a group, need more support (e.g. detailed instructions, monitoring their activity) in carrying out collaborative tasks (Hämäläinen, 2012).

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### **Distance learning: toward commitment and individualization**

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One of the challenges is to select the right education forms and tools to be used by the participants of the online learning process. Diversification of the curricula and requirements in different fields of study allow future students to choose from a wide range of academic offers and find the discipline that best suits their predispositions. Depending on the field of study, classes can differ not only in terms of content and learning outcomes, but also in form. The principle of individualization in online education is most often implemented through the possibility of learning at one's own pace, with diversified materials, appropriate activating methods, and defining objectives that are achievable and motivating (Simonson et al., 2015, pp. 42–43). However, one cannot forget the technological constraints that often enforce a certain unification of materials or the reluctance of the academic staff to introduce new teaching methods. The latter may be caused by increased workload due to remote teaching, i.e. the need to prepare, moderate and evaluate the course and the teaching materials. Taking into account individual motivations in online learning seems to be just as important as in offline settings (i.e. in-person classes). Involving students in joint educational activities is not an easy process, as each member of the group may have different personal motives, personality traits, unique skills and predispositions. Further challenges may result from differences in priorities, expectations, individual styles of work, communication and socialising patterns, as well as cultural differences, etc. So far, research shows that factors that are crucial for ensuring effectiveness and achieving course outcomes in online collaborative learning include: communication activities, teachers' support, as well as taking into account individual traits (e.g. level of digital skills, presented learning styles and strategies, motivation, time management and organization, perceived need of class participation, personal engagement and willingness to take part in classes) (Blau et al., 2020; Kwiatkowska, 2016; Lee & Yang, 2020; Morris et al., 2005; Romano et al., 2005; Sarja et al., 2018). Harasim (2000), while speaking of the role of collaboration, shows that teamwork strengthens the relationships among learners, engaging and motivating them to participate. Collaborative learning seems to be gaining particular interest in the current contexts of online education on a large scale. Hence, it seems worthy to present its main assumptions and characteristics.

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### **Collaboration in distance learning**

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Four main theoretical approaches to collaboration in online learning can be identified: behaviorism, social constructivism, situational learning, and connectivism. The first is particularly important for technical and organizational reasons and for monitoring the collaboration process. Planning, clear presentation of individual stages and tasks, requirements, expecta-

tions and the purpose of the teacher's actions also fall within the behaviorist approach. Tests and exams allow students to demonstrate what they have learned, while teachers can assess the efficiency of their work. Such evaluations also seem to be inspired by behaviorism (Kwiatkowska, 2018). The second approach has been derived from the works of Bruner (1971, p. 28), Papert (1993, pp. 176–195), Piaget (1981; 2005), and Vygotsky (1978, p. 42), whose ideas have become the source of many teaching methods based on learners' activity, learning by doing, and social presence. These principles can also be successfully applied to the virtual learning environment and the development of further methodological solutions (Harasim, 2012, pp. 68–73; Kwiatkowska, 2018, pp. 33–34). The third perspective refers to the concept of situational learning put forth by Lave and Wenger (1991), who argue that the learning process is context-dependent and as such it entices active learning through experiencing problems in real situations. Learning online occurs in different conditions and work organization contexts; its participants come from various kinds of environments and cultures, while they also differ in terms of knowledge, skills, motivation, and individual predispositions. This concept was developed by Illeris (2006), who proposes different spaces and frameworks for learning situations, such as learning from everyday life, through practice, at schools and other educational institutions, in the workplace, and collective learning. In his works, he highlights learning through collaboration (collaborative learning), as it inspires activity, generates common emotions, motivates people to expand their knowledge, and strengthens relationships in the group. According to Tapscott and Williams (2008), innovative ways of acting and collaborating will allow us to make better use of human skills, creativity, and intellect. Kazmer (2007) agrees with them and argues that contemporary learners contribute their knowledge, skills, experience, values, and cultural norms to online groups where they share them with other participants. Learners engage in relationships, share ideas, support each other and collaborate, both online and offline, to achieve the predefined objectives. Kazmer speaks of the interpenetration of both spheres of life (virtual and physical).

Online collaborative learning can also be analyzed from the perspective of connectivists, who highlight that people navigate the Web and thus learn from the experiences of other Internet users. We cannot experience everything personally, but we can help ourselves to the knowledge, ideas and actions of other people by socializing, sharing, learning and gaining recognition from others (Siemens, 2005). Consequently, Siemens integrates the dual nature of independent learning and community learning; he focuses on the discourse of online communities whose participants pursue similar interests and share their opinions and experiences (Kwiatkowska, 2018, p. 39). Connectivism places learning in the context of continuous expansion and creation of information (Tschofen & Mackness, 2012). To meet these challenges, learners must have

the information skills that will facilitate their functioning in the contemporary world.

Collaboration in an online course is conditioned by the specificity of indirect contact via digital technologies and the individual predispositions of the students and the teacher, the purpose of the action, the organization of the collaboration process, the course resources, and the intensity of interactions. Therefore, there are many factors that are relevant to online collaboration. Some of them have been the subject of research, with scientists using experimental methods in order to prove better outcomes of collaborative learning. Unfortunately, the controlling of various factors in many cases turned out to be impossible and unreliable. Nevertheless, numerous variables have been analyzed, such as the composition of the group, the characteristics of the task, the context of collaboration, and the medium of communication (Ahern et al., 2006; Rovai & Wighting, 2005, p. 108). Such studies show that focusing on collaboration in distance learning is of great importance, not only for achieving the predefined learning outcomes, but, above all, for engaging the learners and developing a sense of responsibility in them. In her study, Kwiatkowska (2018) shows that some students feel that achieving learning outcomes depends on their engagement; hence collaboration in online learning allows them to be more active and more responsible for their learning process. Those students value flexibility and freedom to make their own decisions regarding the education process (e.g. working at their own pace). However, some students feel overwhelmed by the responsibility for their own learning process. This group seems to need more support and guidance.

Based on the research presented above, it seems that the learning community of young adults is not a homogeneous group. Taking all these facts into consideration, the study presented below seeks to fill a gap in the research on the relationship between online collaborative learning and students' personal preferences manifested in their choice of a specific field of study. This paper contributes to the growing literature on collaborative online learning among Polish students and the role of students' motives, as well as the perceived benefits and challenges in the process. The results obtained can support dialogue between academics and learners and help them understand the importance of collaboration. We hope that the conducted research is seen as a contribution to the scientific discussion on this issue. What is of particular importance is the need to build the theoretical foundations of e-education and improve the quality of academic classes carried out remotely. Therefore, undertaking research in this area, in the context of the development of views on teaching and learning, as well as remote education methodology, seems justified.

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### Material and method

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The main cognitive objective of this research was to investigate whether the field of study has any impact on the students' selected preferences in collaborative learning.

### Study design and data collection

Our study took place at the Nicolaus Copernicus University in Poland. The research was conducted online. Students received a link to a questionnaire via the University's Survey Research System. Before answering the questions, the respondents received information about the purpose of the research, its structure, and data processing. They had to express their consent to participate in the study. The study was anonymous and could be interrupted at any time. The opening website of the research was displayed over 570 times, with less than 400 people eventually taking part. A total of 393 questionnaires were filled in, of which 153 were complete and could be admitted for further analyses. The research was conducted in May and June 2020, i.e. after approximately 2–3 months of exclusive distance learning (online) at the university.

Non-probability sampling was applied, and participation in the university's remote classes was set as the basic criterion. The diagnostic survey method was employed. To this end, a questionnaire was prepared that featured four groups of questions:

1. Socio-demographic data: gender, age, field and current year of study, place of residence.
2. Assessment of one's own skills and competences in online learning prior to the COVID-19 pandemic and currently (on a 5-point Likert scale).
3. Personal and social motives taken into account in online collaborative learning. The respondents could choose any number of motives and could also add their own.
4. Benefits and difficulties faced by the respondents in online collaborative learning. A nominal scale was used, and the respondents could choose any number of answers.

Verification of the research tool and the research procedure were performed in a pilot study, which ensured the identification of errors, shortcomings and ambiguities. Based on the information obtained, some items in the survey form were redrafted, changed, or deleted.

### Characteristics of the groups

Assuming that the choice of the field of study is dictated not only by one's abilities and interests but also by individual predispositions to collaborative learning (e.g. digital skills or motives to take action as part of a team), the research group was divided into four subgroups depending on the field of study and related areas of education. The following groups were identified (Table 1):

1. Exact Sciences – 30 respondents, which accounted for 20% of the entire study group; over one third of them were aged between 18 and 20. As many of them lived in the city as in the countryside (40% each). This was the only group in which males constituted the majority (70%).
2. Economics – 23 respondents (15% of the entire study group). Nearly half of them lived in the

city (47.8%) and over 90% were between 21 and 30 years old. Females constituted the majority in this group (78.3%).

3. Education Sciences – 66 respondents (43% of the entire study group). In this group, the gender disproportion was the highest (98.5% of females vs. 1.5% of males) as these

fields of study are more frequently chosen by women. Nearly half of the respondents lived in the countryside.

4. Humanities – 34 respondents (22% of the entire study group), most of whom lived in towns (29.4%) or cities (50%). The gender ratio was fairly equal (41.2% males vs. 58.8% females).

**Table 1**  
General information about the respondents in the respective groups

		Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)	
		N	%	N	%	N	%	N	%
Gender	M	21	70	5	21.7	1	1.5	14	41.2
	F	9	30	18	78.3	65	98.5	20	58.8
Age group	18–20	11	36.7	2	8.7	22	33.3	11	32.4
	21–30	19	63.3	21	91.3	44	66.7	23	67.6
Current year of study	1	10	33.3	–	–	27	40.9	14	41.2
	2	9	30.0	4	17.4	16	24.2	6	17.6
	3	3	10.0	11	47.8	14	21.2	8	23.5
	4	4	13.3	5	21.7	1	1.5	1	2.9
	5	4	13.3	3	13.0	8	12.1	4	11.8
Place of residence	Countryside	12	40.0	8	34.8	31	47.0	7	20.6
	Towns	6	20.0	4	17.4	18	27.3	10	29.4
	Cities	12	40.0	11	47.8	17	25.8	17	50.0

Source: authors' own work.

The respective fields of study in each group are presented in Table 2.

**Table 2**  
Fields of study in each group

Group	Field of study	N	%
Exact Sciences (N = 30)	Internet of Things Application	1	3.3
	Astronomy	4	13.4
	Automation and Robotics	3	10
	Biotechnology	1	3.3
	Physics	6	20
	Information Technology	15	50
Economics (N = 23)	Economics	8	34.8
	Finance and Accounting	15	65.2
Education Sciences (N = 66)	Psychology	4	6.1
	Speech Therapy	3	4.5
	Pedagogy	41	62.1
	Pre-school and Early School Education	12	18.2
	Special Education	6	9.1

Group	Field of study	N	%
Humanities (N = 34)	English Philology	1	2.9
	Applied Linguistics	10	29.4
	Polish Philology	6	17.7
	History	9	26.5
	History of Art	2	5.9
	Law	1	2.9
	Scandinavian and Baltic Studies	3	8.8
	Military Studies	2	5.9

Source: authors' own work.

# Motives, benefits and difficulties in online collaborative...

## Results

The analysis was conducted in PS Imago Pro Academic 6 (SPSS for Windows, Version 26). The first step was to identify whether the level of online learning skills has changed over the course of distance learning. A basic descriptive analysis was performed in the identified groups. Then, to look for differences between groups, non-parametric tests (U-Mann Whitney test, chi-square test and Cramér's coefficient) were used.

The first area of interest was the one of students' self-assessed digital skills. The results are presented in Table 3.

The data shows that the respondents (in all groups) assessed their skills and competences in online learning as average, both before the pandemic and currently. The differences (in changes between groups and within the same group) were not statistically significant. However, the direction of changes turned out to be surprising, with the average level

of skills reported as lower in as many as two groups (Table 3).

Following this, an analysis was conducted of the personal and social motives that the respondents found important in online collaborative learning. The results are presented in Tables 4 and 5.

The data in Table 4 shows that students from the identified groups differed in the personal motives that they considered important for online collaborative learning. With respect to two of them, self-efficacy and desire to share, the observed differences turned out to be statistically significant. Consequently, no statistically significant relationship seems to exist between the field of study and the importance of the remaining individual motives. Nevertheless, several conclusions can be drawn based on the obtained results. While the motives related to the feeling of acquiring new knowledge, competences or skills and obtaining information were the most frequently selected in all groups, the frequency of these responses differed

**Table 3**

*Changes in online learning skills*

Skills and competences in distance learning	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)		p
	M	SD	M	SD	M	SD	M	SD	
Prior to the COVID-19 pandemic	3.10	0.76	3.26	0.54	3.36	0.82	3.44	0.86	0.311
Currently	3.03	0.96	3.30	0.77	3.32	0.95	3.56	0.82	0.157
Direction of changes	↓		↑		↓		↑		
p	0.592		0.796		0.759		0.363		

Note. Non-parametric tests were used to look for differences.

Source: authors' own work.

**Table 4**

*Personal motives relevant to online collaboration*

Motive	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)		$\chi^2$	$V_c$
	N	%	N	%	N	%	N	%		
Sense of satisfaction	7	33.3	8	34.8	32	48.5	12	35.3	5.972	0.198
Self-efficacy	8	26.7	7	30.4	36	54.5	11	32.4	9.687**	0.252
Feeling of acquiring new knowledge, competences or skills	20	66.7	15	65.2	42	63.6	17	50.0	2.497	0.128
Sense of obtaining information	18	60.0	18	78.3	39	59.1	20	58.8	3.017	0.140
Desire to share	14	46.7	10	43.5	36	54.5	6	17.6	12.662***	0.288
Desire to be better than others	3	10.0	2	8.7	6	9.1	4	11.8	0.219	0.038
Need for domination	1	3.3	–	–	2	3.0	2	5.9	2.138	0.100
Need for control	6	20.0	5	21.7	14	21.2	8	23.5	0.126	0.029

Note. \*\*\*p<0.01.

Source: authors' own work.

across the groups even by as much as 20%. Similar differences were found with respect to other motives; for example, the sense of satisfaction and self-efficacy were chosen by half of the students from the Education Sciences group (48.5% and 54.5%, respectively) compared with only one third of the respondents in the remaining groups (Table 4). Conversely, the willingness to share turned out to be important for 17.6% of the Humanities students, while the respondents in the other groups indicated this motive over 2.5 times more frequently. The responses were the least varied for the willingness to be better than others and the need for control.

Students could also add their own personal motives. The following were identified: sense of duty, willingness to exchange information, need to get the points for a completed task, perfectionism and utilitarianism, task execution, effective memorizing, and desire to graduate.

Next, social motives important for online collaborative learning were analyzed (Table 5).

The analysis of the data in Table 5 reveals that the students from the respective groups differed not so much in what motives they found important, but in how important they were. The data shows that motives related to being a part of community (i.e., working together, learning from others, and participation for the common good), were the most important in all groups; however, although these three community-related motives were indicated most frequently (in a different order in the Exact Sciences group than in other groups), the frequency with which they were selected was highly varied across the

groups. The observed differences were statistically significant for three motives: participation for the common good, need for support, and learning from others. More specifically, the motive of the common good was important for nearly three fourths of the students of Economics and Education Sciences, half of the respondents from the Humanities group, and slightly more than one third from the Exact Sciences group. A significant diversification was also revealed for the other two motives, e.g. the motive of support was important only to every fifth student of the Humanities group, every third of the Exact Sciences and Economics groups, and almost every second student of the Education Sciences group, while learning from others was important to one third of the students of the Humanities group and over half of the students in the remaining groups.

Similarly to personal motives, the respondents could add their comments and own motives. One person decided to do so; it was an interesting comment regarding the social motives behind collaboration: "If people are willing to collaborate and are truly engaged, ideas, solutions and motives emerge that I would never come up with alone. The group creates an atmosphere of excitement and creativity, which helps us to learn the content."

Another analyzed aspect concerned the respondents' actions taken as part of the online collaborative learning process (Table 6). The students were asked to indicate one option.

When working online, the respondents from the Humanities and the Economics groups focused primarily on finding and collecting information. For the

**Table 5**  
Social motives relevant to online collaboration

Motive	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)		$\chi^2$	$V_c$
	N	%	N	%	N	%	N	%		
Need to belong	9	30.3	8	34.8	23	34.8	8	23.5	1.49	0.099
Willingness to meet other people	3	10.0	4	17.4	15	22.7	7	20.6	2.27	0.122
Need for support	10	33.3	7	30.4	29	43.9	6	17.6	7.09*	0.215
Participation for the common good	11	36.7	17	73.9	50	75.8	17	50.0	16.95***	0.333
Prestige	–	–	1	4.3	1	1.5	1	2.9	1.52	0.10
Respect among others	5	16.7	2	8.7	8	12.1	3	8.8	1.19	0.088
Desire to succeed	6	20.0	10	43.5	25	37.9	11	32.4	4.03	0.162
Learning from others	16	53.3	13	56.5	38	57.6	10	29.4	7.79*	0.226
Working together for mutual benefit	19	63.3	16	69.6	44	66.7	16	47.1	4.42	0.170
Expecting reciprocity	8	26.7	3	13.0	20	30.3	7	20.6	3.15	0.144

Note. \* $p < 0.05$ ; \*\*\* $p < 0.001$ .

Source: authors' own work.

# Motives, benefits and difficulties in online collaborative...

**Table 6**

Actions taken while learning online

Online learning efforts aimed at:	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)	
	N	%	N	%	N	%	N	%
Finding and collecting information	14	46.7	13	56.5	29	43.9	21	61.7
Interpreting information (reading and understanding it)	15	50.0	6	26.1	26	39.4	7	20.6
Sharing information	1	3.3	4	17.4	6	9.1	2	5.9
Creating information	–	–	–	–	5	7.6	4	11.8

Source: authors' own work.

students of the Exact Sciences and Education Sciences groups, this action was just as important as reading and understanding data. The groups varied considerably in terms of sharing information; this option was most frequently selected by students of the Economics group and least frequently by those from the Exact Sciences group. In addition, only the respondents from the Education Sciences and Humanities groups admitted to creating information when learning online.

The respondents were also asked whether they felt a greater responsibility for the published group task (Table 7).

When performing group tasks, most of the respondents (regardless of the group) had a feeling of greater responsibility for their work at the stage of its publication. However, the analysis also shows that approximately a quarter of the students from the Exact Sciences and Humanities groups, and one fifth of the students from the Education Sciences group were unable to assess whether or not such an increase occurred in their case.

Another issue addressed in the study was that of the benefits from, and difficulties in, online collaborative learning faced by the respondents (Tables 8 and 9). As in the case of the personal and social mo-

tives, the responses to these questions also differed across the groups. Most respondents admitted that online collaboration allowed them to improve their teamwork and communication skills. While these two options were marked by the highest number of the students regardless of the group, the differences between the groups were significant, reaching 40%. The respondents varied considerably with reference to improved time management or negotiation skills; these responses were indicated by only 10% of the students from the Exact Sciences (both answers) and Economics (negotiation skills) groups. Enhanced technical skills turned out to be the only predefined benefit for which no statistically significant differences were found.

Despite their considerable diversity, the only responses regarding the difficulties (Table 9) in online collaborative learning that turned out to be statistically significant were the lack of a person coordinating the work of the group and the lack of involvement from the participants in a joint project. The former problem was reported by about one fifth of the students from the Exact Sciences and Economics groups, and by nearly twice as many in the remaining groups. The latter difficulty, i.e. lack of engagement, concerned

**Table 7**

Increased responsibility after publishing a group task according to the respondents

Response	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)	
	N	%	N	%	N	%	N	%
I strongly disagree	2	6.7	–	–	2	3.0	2	5.9
I do not agree	4	13.3	3	13.0	10	15.2	3	8.8
I have no opinion	8	26.7	2	8.7	13	19.7	9	26.5
I agree	14	46.7	16	69.6	28	42.4	16	47.1
I definitely agree	2	6.7	2	8.7	13	19.7	4	11.8
<i>M</i>	3.33		3.74		3.61		3.5	
<i>SD</i>	1.03		0.81		1.06		1.02	
<i>p</i>	0.45							

Source: authors' own work.



**Table 8**

*Collaborative learning – benefits reported by the respondents*

Benefits from learning	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)		$\chi^2$	$V_c$
	N	%	N	%	N	%	N	%		
Improved negotiation skills	3	10.0	8	34.8	19	28.8	3	8.8	10.046*	0.256
Improved teamwork skills	16	53.3	20	87.0	44	66.7	16	47.1	10.918*	0.267
Improved communication skills	15	50.0	17	73.9	51	77.3	19	55.9	9.414*	0.248
Improved time management	3	10.0	15	65.2	36	54.5	19	55.9	22.072***	0.380
Enhanced technical skills	11	36.7	9	39.1	29	43.9	8	23.5	4.041	0.163

Note. \* $p < 0.05$ ; \*\*\* $p < 0.001$ .

Source: authors' own work.

**Table 9**

*Collaborative learning – problems reported by the respondents*

Problems	Exact Sciences (N = 30)		Economics (N = 23)		Education Sciences (N = 66)		Humanities (N = 34)		$\chi^2$	$V_c$
	N	%	N	%	N	%	N	%		
Increased ambiguity in communication	7	23.3	5	21.7	18	27.3	10	29.4	0.585	0.062
Extended waiting time for a response	16	53.3	14	60.9	48	72.7	22	64.7	3.710	0.156
Lack of a person coordinating the work of the group	6	20.0	4	17.4	26	39.4	13	38.2	6.504*	0.206
Assessment of the participation in, and contribution to, a task	4	13.3	7	30.4	23	34.8	11	32.4	4.828	0.178
Technical problems	13	43.3	11	47.8	34	51.5	20	58.8	1.638	0.103
Lack of involvement from the participants in a joint project	4	13.3	10	43.5	39	59.1	18	52.9	18.127***	0.344
Using someone's idea without his/her consent, or the fear of this	1	3.3	1	4.3	6	9.1	2	5.9	1.468	0.096
Need to adapt to others	4	13.3	6	26.1	23	34.8	11	32.4	4.073	0.180
Reluctance to take responsibility for the final result	6	20.0	3	13.0	15	22.7	13	38.2	5.581	0.191

Note. \* $p < 0.05$ ; \*\*\* $p < 0.001$ .

Source: authors' own work.

only one in 10 students in the Exact Sciences group while in the remaining groups it was reported over three up to nearly five times as frequently.

Furthermore, most respondents in each group struggled with difficulties such as extended waiting time for a response, or technical problems. On the other hand, the problem of assessing the participation in, and contribution to, a task, concerned fewer students of the Exact Sciences group, while reluctance to take responsibility for the final result was reported by fewer students from the Economics group.

## Discussion

The analysis of the obtained results shows that a collaborative learning group should not be treated as homogeneous, while presenting such a group with the same educational tasks, regardless of the field of study, seems to be a misunderstanding. The groups analyzed in this study differed not only in terms of their place of residence (which may, for example, determine their access to broadband Internet) and the gender ratio, but above all in their approach to

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online collaborative learning. When summarizing and discussing these results, several important issues should be highlighted.

Firstly, it is surprising that, despite several months of distance learning, no (statistically significant) increase has been observed in digital competences. In fact, according to some students, their skills have declined. Two explanations for this result seem probable and worth further study. The first assumes that the online courses were of a poor quality – rather than teach new skills, they were based on a few selected activities, giving the students the feeling of a lack of progress. The second explanation may be that, while studying online, the students have realized their own digital shortcomings, despite the fact that they use modern technologies on a daily basis. The situation of isolation and distance learning has forced them to familiarize themselves with previously unknown systems and applications, thus verifying their actual competences. The everyday use of modern technological solutions, including social media, is not a guarantee of having the necessary online learning skills, as in the study by Josefsson et al. (2015). Their research showed that there are three main roles while using social media: the student, the private, and the professional roles. Based on these findings, Allan (2016) encourages universities to show students how to use technology for learning. Moreover, researchers (Allan, 2016; Josefsson et al., 2015) believe that caution is needed while assuming that students' off-campus digital skills will be sufficient for studying. It seems very interesting to investigate further the reasons behind the decline or the lack of increase in digital skills among students.

Secondly, the majority of the students felt a greater responsibility for a group task after its publication – most likely because this is when their activities are no longer anonymous. However, in each of the identified groups, there were also students who either disagreed with this statement or had no opinion on the issue. It can be assumed that this applies to people who either engage in group activities at every stage (feeling equally responsible for them throughout the project), or, on the contrary, do not identify themselves with the currently developed solution and push the responsibility onto others.

To sum up, when considering the problem of collaboration in education – regardless of its form (in-class or online) – two types of associations come to mind. On the one hand, it is all about a new challenge, joint creative work, group integration, new quality in education, learning through experience, and getting to know the participants of a task or a project better. Secondly, it is connected with organizational requirements, the need to moderate the collaboration process, unequal participation and engagement, problems with shared responsibility, and difficulties in assessing the contribution and content created by learners. Participants of online courses are more prone to feeling misunderstood, isolated and lonely. Therefore, if a collaborative learning experience is

to be satisfactory, it is essential to deal with the said requirements and limitations.

Learning online should become a process of constructing knowledge together, wherein collaboration, communication, and digital skills are used and improved as part of learners' personal development. Naturally, this is not an easy task, and it requires dedication, time, willpower, and persistence from all actors involved; nevertheless, it is worth the effort to make online learning meaningful and valuable. In addition, online teaching is becoming an integral part of educational institutions and generally the life of learning communities. Therefore, it is necessary to acknowledge its different conditions, methodologies, and outcomes (Kwiatkowska, 2018, p. 16).

Changes in academic education will be determined by the attitude of lecturers who will promote the culture of collaborative learning, and accept and implement present-day teaching and learning technologies, thus responding to the needs of the modern world. Undoubtedly, teachers and academics play a vital role in initiating online collaborative learning and engaging people in this experience. Their effort and knowledge of the necessary tools and practices can contribute to the successful achievement of the learning objectives, greater efficiency and more complete outcomes. Research shows that without teachers' moderation, learners do not engage in a discussion, skip important stages of work, are not sufficiently involved in the project, and do not use their own knowledge and skills (Gillies, 2016, p. 44).

By applying the principle of collaboration in learning, based on dialogue and teamwork, teachers contribute to establishing and strengthening the relationships among learners, thus engaging and motivating their students to undertake further work. To this end, teachers need to know how to use the technology and need to be participants of the virtual world to which they introduce their criticism, reflection, and extensive experience. Research by Bellal and Nader (2014) confirms that online learning requires learning skills, communication skills, collaborative skills, and digital skills. Promoting and fostering a culture of teamwork (sharing, collaboration, acting together) can motivate online learners to share their insights and experiences with others.

Naturally, the research presented in this article is not without its limitations. Firstly, a large number of questionnaires were incomplete and there were many people who did not decide to take part in the study. It is possible that some of them were tired of isolation, constant remote work, and the lack of face-to-face contact. The study was conducted in a period of constant changes when it was not clear if and when students would return to regular classes. Secondly, this research focused on selected aspects of collaboration in distance learning; there are many more to be explored. Furthermore, some of the questions (e.g. regarding the actions taken in online learning – Table 6) could be asked in a form that enables, for example, the ranking of responses. It is

also worth looking for other, e.g. personality-based, factors that determine students' preferences in online collaborative learning.

Last but not least, a larger sample with representatives of more fields of study could provide statistical confirmation of the presented results. The study could therefore be repeated on a group of students at different levels of education. It would also be worth including the qualitative paradigm. With a larger sample size, any possible differences with respect to the year of study could also be verified.

## Conclusions

The current study contributes to the growing body of literature on online collaborative learning. The results demonstrate that students from four areas (Exact Sciences, Economics, Education Sciences and Humanities) differ in how they work in online courses requiring collaboration. The main differences were associated with the personal and social motives that were important to them. Our findings may prove important to authors of academic online courses who should focus on developing the said competences, preparing tasks that require teamwork, and improving collaboration in project work.

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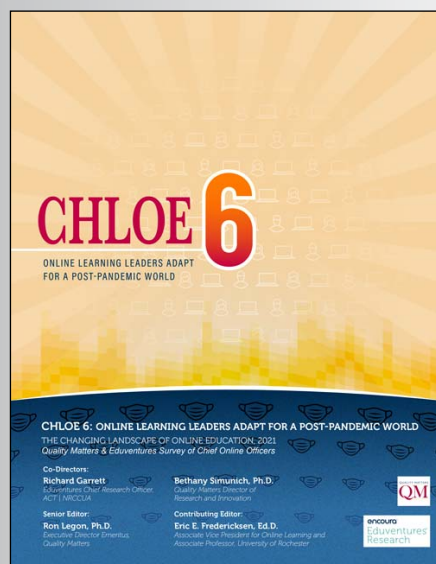
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## WE RECOMMEND

### CHLOE 6 report: Online Learning Leaders Adapt for a Post-Pandemic World



The 2021 report, authored by Quality Matters and Eduventures® Research, tracks how institutions are reassessing their priorities related to online learning and shifting focus to ed tech enhancements, faculty professional development and online quality. The report was compiled from responses from 422 chief online officers (COO) representing 2- and 4-year colleges and universities.

More than half of the survey respondents (57%) across all sectors of higher education, including predominantly in-person institutions, indicated that, going forward, the pandemic experience is leading to a positive reassessment of institutional priorities related to online learning. Key survey findings from the 69-page report include:

- An elevated commitment to online learning quality assurance goals, including having courses meet quality standards, supported by a commitment to faculty professional development.
- An average 10-15% increase across institutions in online professional development and student orientation to online study to serve formerly in-person faculty and students.
- The largest yearly increases ever in ed tech investment in 2020 and 2021 across all sectors of higher ed.

Future CHLOE reports will track whether the momentum stimulated by the pandemic has lasting effects.

From the official Quality Matters website, the report can be downloaded for free at: <https://www.qualitymatters.org/qa-resources/resource-center/articles-resources/CHLOE-6-report-2021>