New Trends and Issues Proceedings on Humanities and Social Sciences

Volume 7, Issue 3, (2020) 124-129

www.prosoc.eu

Selected Paper of 9th Cyprus International Conference on Educational Research (CYICER-2020) 18-20 June 2020, Bahçeşehir Cyprus University Nicosia / TRNC (ONLINE CONFERENCE)

# Remote study process during Covid-19: application and self-evaluation of digital communication and collaboration skills

**Gatis Lāma** *, University of Latvia, Faculty of Pedagogy and Psychology and Arts, Department of Pedagogy, Latvia https://orcid.org/0000-0001-7815-856X

**Elza Lāma**, University of Latvia, Faculty of Social Sciences, Latvia https://orcid.org/0000-0002-9271-3862

**Suggested Citation:**

Lāma, G. & Lāma, E. (2020). Remote study process during Covid-19: Application and self-evaluation of digital communication and collaboration skills. *New Trends and Issues Proceedings on Humanities and Social Sciences. 7*(3), pp 124–129.

Received from August 12, 2020; revised from September 23, 2020; accepted from November 12, 2020.
Selection and peer review under responsibility of Prof. Dr. Huseyin Uzunboylu, Higher Education Planning, Supervision, Accreditation and Coordination Board, Cyprus.
©2020 Birlesik Dunya Yenilik Arastirma ve Yayincilik Merkezi. All rights reserved.

**Abstract**

The higher education in Latvia became remote in the spring of 2020 due to the pandemic of Covid-19. Bearing in mind the probability of reoccurrence of a similar crisis, the aim of the study is to establish the self-evaluation of digital communication and collaboration skills of Latvian higher education students, and to detect the difficulties experienced during the remote study process. Data was collected through an online survey. Study shows that although the self-assessed level of competence of digital communication and collaboration skills is high, the use of skills is not as frequent, indicating that remote study process is not equivalent to on-site education. The academic staff is advised to vary teaching methods to stimulate use of different skills.

*Keywords*: Collaboration skills; Communication skills; Digital skills; Higher education; Remote studying

* ADDRESS FOR CORRESPONDENCE: Elza Lama,, University of Latvia, Faculty of Social Sciences, Raiņa bulvāris 19, Centra rajons, Rīga, LV-1586, Latvia

*E-mail address*: ez08054@edu.lu.lv

## Introduction

From March 12th to June 9th, 2020, in regard to the statement of World Health Organisation, claiming that *Covid-19* had reached pandemical proportions, the government of Latvia issued nationwide emergency measures that affected every aspect of everyday life, including higher education (Cabinet of Ministers, 2020). According to the Cabinet Order Nr. 103, every form of on-site education, including lectures, seminars, study-group meetings, individual consultations and praxis in laboratories etc., had to be executed remotely via Internet, using various platforms (Cabinet of Ministers, 2020).

Social and physical distancing of such magnitude was a unique experience for both students and academic staff, illuminating several issues, but also stimulating creative problem-solving. The crisis came as a surprise and no preparations had been made before, thus, the academic staff and students had to utilize the existing platforms and e-study opportunities, as well as to master other applications available on the market.

Although the emergency restrictions in Latvia were lifted on June 9th, 2020, some precautions, for instance, social gathering limitations, still prevailed (Government of Latvia, 2020), leaving the question of resuming ordinary study process in the fall of 2020 unanswered.

Remote studying in contrast to regular study process has both advantages and flaws that are closely connected to the "noise" caused by the new channels, that is, online platforms, for instance, lack of digital skills or inability to argue one's opinion coherently and effectively due to technical difficulties of outdated computers or programming. Bearing in mind the probability of reoccurrence of a similar crisis in the foreseeable future, it is important, to cover the challenges and opportunities of remote study process students had faced.

Thus, the aim of the study is to establish the self-evaluation level of digital communication and collaboration skills of Latvian higher education students, as well as to detect the difficulties in communication and collaboration, experienced during the remote study process from March 12th to June 9th, 2020. Several research questions are posed:

1. How do students self-evaluate their digital, collaboration and communication skills that are essential to ensure remote study process?
2. How often are digital, collaboration and communication skills used by students during the remote study process?
3. Is remote study process equivalent to lectures on site?
4. What challenges and issues are observed by students during the remote study process?

As the academic staff and students were obliged to use the existing communication platforms during the crisis, the study process had been literally moved to the Internet, without special adaptations, thus, digital skills and collaboration and communication skills have been viewed separately both in literature review and in the online survey questions. The survey of students takes place while the restrictions of social gathering and remote study process is still in action.

## 1. Literature review

### *1.1. Digital skills*

In order to ensure collaboration, both motivation and space to create the collaboration in is required (Newell & Bain, 2018). Digital skills, thus, are a necessity for creating a platform of collaboration and communication during the remote study process, as the "space" has been moved to the digital world.

Digital skills include students' ability to apply technology to use and access information; in addition, "digital literacy" or ability to apply digital skills also describes how students use technology to process, obtain and evaluate the

information they collect. Digital skills also include the ability to communicate and collaborate through digital technologies (Hatlevik & Christophersen, 2013).

Digital skills consist of five domains (Carretero, Vuorikari, & Punie, 2017):

- information and data literacy,
- communication and collaboration,
- digital content creation,
- safety,
- problem solving.

Digital collaboration and communication is characterised by such skills as interacting through digital technologies, sharing through digital technologies, engaging in citizenship through digital technologies, collaborating through digital technologies, netiquette and managing digital identity (Vuorikari, Punie, Carretero, & Brande, 2016). Digital skills include skills related to both the use of hardware (e.g. classroom or mobile devices) and software (including apps and games) and digital content/data (i.e. any files, including images, audio and video). Particularly important for the creation of digital environment is the use of the various software functions.

### *1.2. Collaboration and communication skills*

A framework is essential to adopt, recognise and promote the collaborative process (Newell & Bain, 2018). Collaboration skills are defined as the ability to reach a goal as a team, to complement and support each other (Oudeweetering & Voogt, 2018).

Collaborative skills are characterised by the ability to interact and to communicate intensively (Khlaisang & Mingsiritham, 2016), as well as by the ability to organise work and oversee the duties to be performed (Zundans-Fraser, 2014), which provides the necessary basis for achieving common tasks and objectives. Learning in the collaborative process is determined by the situation in which the members of the group are able to engage together in a coordinated way in order to solve problems (Häkkinen, u.c., 2019). In order to ensure the quality of the study process, provision of feedback (Lowell & Ashby, 2018) and the possibility of reflection on the work process should be considered an important component of the collaboration.

The cooperation process can be significantly influenced by the diversity of the social status, culture, political and philosophical views of the participants (Zundans-Fraser, 2014), which has an impact not only on the structure of cooperation management and participation but also on intercommunication. To create a successful model of group collaboration a balanced group management structure is needed, as it helps resolve conflicts and share responsibilities (Kabataş & Yilmaz, 2018), but does not limit the opportunities for new participants to engage freely in the process.

The members of the group should be flexible, able to reach compromises in order to achieve a common objective and to assume mutual responsibility for the common task (Lāma, 2020). However, collaboration should not be used solely to achieve individual objectives; important collaborative, group objectives should be the exchange of new ideas, sharing of thoughts and researching information (Khlaisang & Mingsiritham, 2016).

Communication skills are defined as the ability to address others clearly, coherently and effectively, achieving the set objective (Andersone, Lāma, & Raiska, 2019). Digital communication is an indispensable element of remote study process or e-learning. Clear communication motivates students and promotes closer interaction and collaboration between them (Terblanché, 2015). Communication is the ability to create verbal and non-verbal messages and the ability to receive and understand them. Communication skills include such abilities as informing and explaining, arguing, persuasion, conflict management and emotional support (Tugtekin & Koc, 2019). The importance of communication skills is constantly emphasized by educators, employers and professionals of the industry (Spies & Xu, 2018). The physical remoteness of the group members could create communication problems (Yilmaz, Yilmaz, & Keser, 2020) and could have a negative impact on the cohesion and atmosphere of the group.

## 2. Method

The total number of students in Latvia according to the most recent data of Central Statistics bureau of Latvia is 79 408, of which 57 055 are full-time students that attend higher education institutions on-site (Central Statistical Bureau of Latvia, 2020). To reach the students who have digital skills and knowledge, an online survey of 2 demographical and 22 thematical questions was created and distributed in the social media site *Facebook*, which is the most popular social media site in Latvia according to audience research (Kantar TNS Latvia Digital, 2018).

In order to reach the target audience researchers contacted all *Facebook* pages of student bodies of Latvian universities (20 in total) and asked to forward the questionnaire to students; of these pages 10 administrators replied and forwarded the questionnaire. In addition, a sponsored post was created on *Facebook* targeted to reach students of higher education in Latvia. The advertisement with a call to action was active for 4 days and gathered a total reach of 7616 students and 129 real responses. The online survey ran for 8 days, from May 31st to June 8th, gathering a total of 143 responses.

Based on a theoretical analysis of digital skills as an element in the provision of a "space" for communication and collaboration, as well as the theoretical analysis of collaboration and communication skills, 10 digital cooperation and communication components were identified, broken into two groups:

Digital skills:

- Searching for information
- Sharing information
- Creating online meetings
- Joining online meetings
- Ensuring audio-visual presence

Collaboration and communication skills:

- Sharing opinion and ideas
- Acknowledging other views and ideas
- Reaching an agreement on group objectives
- Mutual support
- Displaying initiative

Students were asked to self-assess the frequency of use of the particular skill and the level of competence of set skill during the *Covid-19* crisis. A Likert scale was used in the evaluation process (frequency: 4 – Apply daily, 3 - Apply frequently, 2 - Apply rarely, 1 - Never apply; level of competence: 4 - High, 3 - Rather high, 2 - Rather low, 1 - Low).

**3. Results**

Five digital skills and five collaboration and communication skills that are essential to the remote study process were researched in detail. The average self-assessed level of digital, collaboration and communication skills is rather high (see *Table 1*).

Table 1. The average self-assessed level of digital, collaboration and communication skills

| | | Frequency of use | | Self-assessed level | | Difference between use and level |
|---|---|---|---|---|---|---|
| | Skill | $\bar{X}$ | Sd | $\bar{X}$ | Sd | $\bar{X}_{level} - \bar{X}_{use\ freq}$ |
| Digital skills | Searching for information | 3.23 | 0.719 | 3.52 | 0.592 | 0.29 |
| | Sharing information | 3.06 | 0.906 | 3.67 | 0.541 | 0.61 |
| | Creating online meetings | 2.22 | 0.843 | 2.94 | 0.878 | 0.72 |
| | Joining online meetings | 2.93 | 0.624 | 3.61 | 0.594 | 0.68 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Communication and collaboration skills | Ensuring audio-visual presence | 2.44 | 0.766 | 3.22 | 0.755 | 0.78 |
| | Sharing opinion and ideas | 2.55 | 0.802 | 2.99 | 0.796 | 0.44 |
| | Acknowledging other views and ideas | 3.27 | 0.694 | 3.43 | 0.599 | 0.16 |
| | Reaching an agreement on group objectives | 2.65 | 0.781 | 3.22 | 0.655 | 0.57 |
| | Mutual support | 2.78 | 0.815 | 3.12 | 0.800 | 0.34 |
| | Displaying initiative | 2.43 | 0.774 | 2.84 | 0.853 | 0.41 |

### *3.1. Digital skills*

The level of self-assessed competence of three (from a total of 5) digital skills is very high: "sharing information" ($\bar{X}$=3.67, sd=0.54), "joining online meetings" ($\bar{X}$=3.61, sd=0.59), "searching for information" ($\bar{X}$=3.52, sd=0.59), thus, indicating a sufficient level of expertise to participate in remote study process.

The two remaining digital skills – "ensuring audio-visual presence" ($\bar{X}$=3.22, sd=0.76), that includes the ability to share one's screen and presentation, as well as audio files during an online lecture or seminar, and "creating an online meeting" ($\bar{X}$=2.94, sd=0.88) – students felt less competent with, detecting that in the future these skills may need improvement. Moreover, the last skill – "creating an online meeting" – students had felt the least confident with and it is crucial to creating independent collaboration between course mates.

Overall students assess their digital skills with a "high" level of competence, as this response was chosen in 30% of all cases, a "rather high" level of competence or higher is in 70% of all cases (see *Figure 1*). Thus, most students feel they are able to adapt to the remote study process and have a sufficient level of competence regarding their digital skills. The ability to "share information" in particular has been assessed as "rather high" or even better by 98% of respondents.

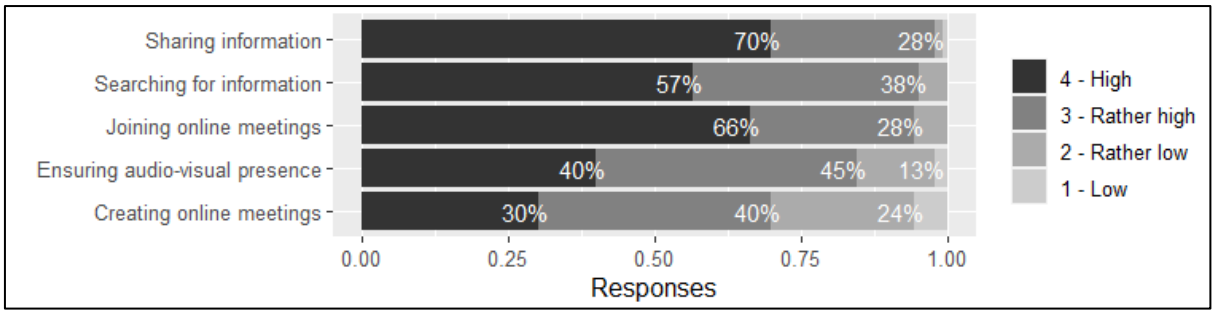


Figure 1 The self-assessment of digital skills by students

However, the average level of digital skills and the frequency of use of digital skills is not even, and the self-assessed level of competence regarding digital skills is higher, thus, highlighting an inconsistency that the academic staff might correct by varying their teaching methods and stimulating students to apply their digital skills. Moreover, the data implies the link between the level of competence and the frequency of use – the self-assessed level of competence regarding a particular skill increases with frequent and active use.

Nevertheless, the majority of digital skills had not been applied daily during the remote study process (See *Figure 2*). The ability to "join online meetings" in particular was used by only 15% of respondents, which, in combination with a more than two times frequent "sharing information" (38%) and "searching for information" (39%), leads to a conclusion that the study process was not simply moved to an online platform, but in fact transformed to a more individual and remote study process.

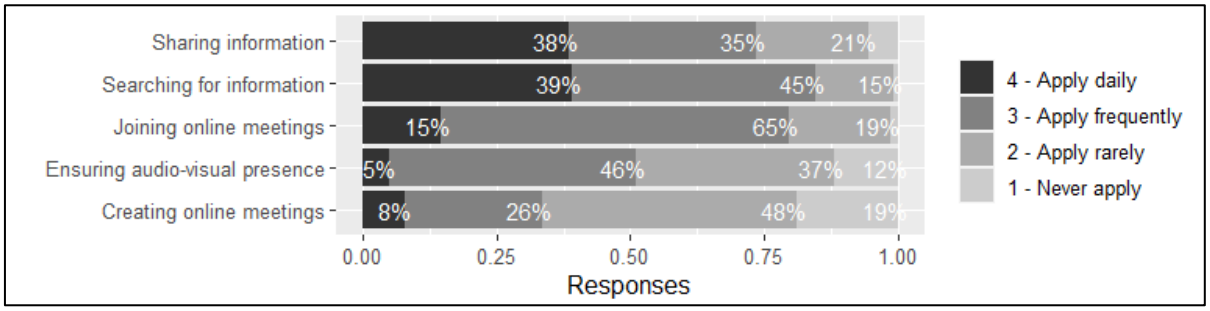


Figure 2. Frequency of application of digital skills during the remote study process

### *3.2. Collaboration and communication skills*

Data analysis shows that students are less confident with their collaboration and communication skills in the digital world during the remote study process. The analysis of the average level of student cooperation and communication skills studied shows that only one of the collaboration and communication skills is assessed at a high level: "acknowledging other views and ideas" ($\bar{X}$=3.43, sd=0.60).

The average level of competence regarding other skills of this group are lower: reaching an agreement on group objectives ($\bar{X}$=3.22, sd=0.66), mutual support ($\bar{X}$=3.12, sd=0.8), sharing opinion and ideas ($\bar{X}$=2.99, sd=0.80), displaying initiative ($\bar{X}$=2.84, sd=0.85). Although the level of collaboration and communication skills analysed is relatively high, there is room for improvement, particularly regarding the skill of "sharing opinions and ideas", whose mean value and data distribution indicate that this skill is of an insufficient level for a rather large group of respondents.

The analysis of student collaboration and communication skills at each of the levels of development shows that only "acknowledging other opinions" (48%) is highly developed for almost half of the students surveyed (see *Figure 3*).

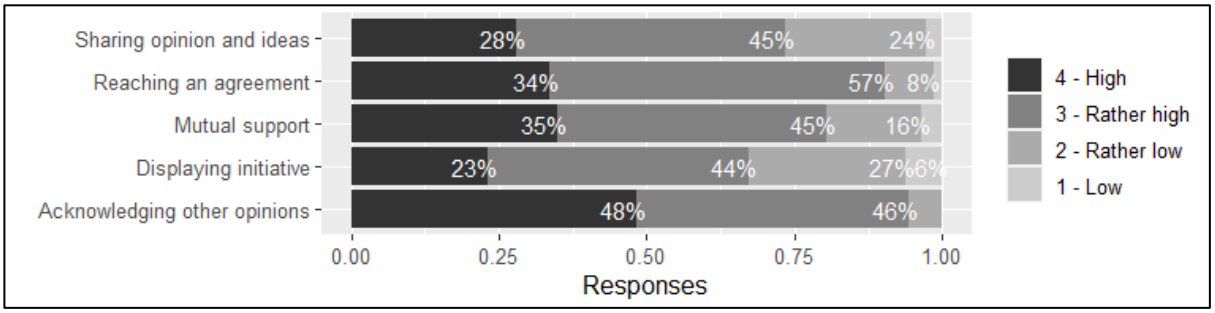


Figure 3 Collaboration and communication skills during the remote study process

However, students have self-assessed collaboration and communication skills as "high" relatively less frequently (ranging from 23% to 48%) than digital skills. A larger proportion of respondents have assessed their collaboration and communication skills with a score of "rather high" or above. Depending on the skill, the level ranges from 66% to 94%. This points to the fact that, by slightly improving skills "displaying initiative", student collaboration and communication skills would be at sufficient level to fully ensure remote study process.

The connection between the level of students' communication and collaboration skills and the frequency of use of these skills is less significant than the link between the use of digital skills and the level of their competence. This may be explained by a relatively more intensive use of collaboration and communication skills before the remote study process.

A more detailed analysis of the frequency of use of collaboration and communication skills during *Covid-19* pandemic shows that the level of daily use is relatively low (see *Figure 4*). "Sharing opinion and ideas", "reaching an agreement" and "displaying initiative" are skills that are applied daily by less than 15% of respondents. This data, in combination with the frequency of the use of digital skill "join a meeting" (15%), indicates that the remote study process was focused on the students' individual form of work. This points to the need to analyse the process of remote study process from the perspective of the academic staff of higher education.

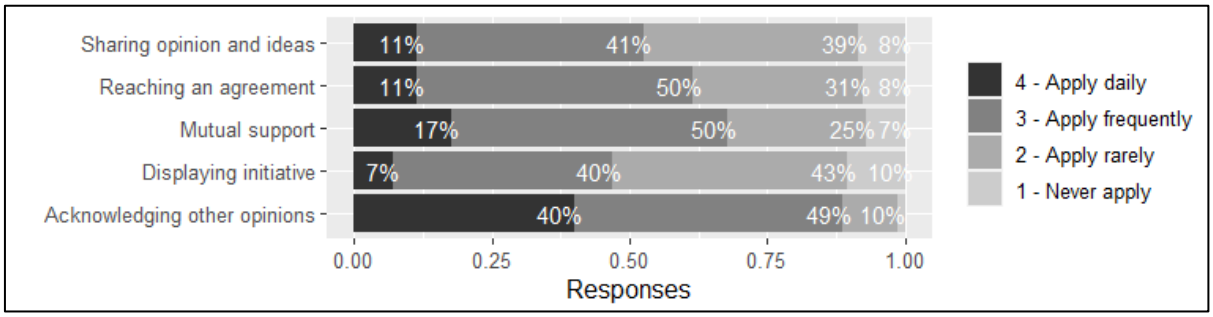


Figure 4. Frequency of application of collaboration and communication skills

Although collaboration and communication skills studied have not been used on a daily basis, it can be seen that nearly half of the respondents have used these skills relatively often. Further research could focus on why the skill "display initiative" has been used relatively rarely comparing to other collaboration and communication skills. Given that the use of other skills has been more intensive, it draws attention to the fact that this skill may have been applied more frequently, but it had not because of the low competence level. It would be essential to create a learning environment in which the student may freely display initiative and act proactively.

The average level of digital skills of students ($\bar{X}$=3.39) and the average level of collaboration and communication skills ($\bar{X}$=3.12) indicate that major challenges of remote study process are not related with technical issues of creating a digital space for collaboration and communication, but with the problem of adapting and transferring collaboration and communication skills to the new, online environment. Almost ¾ of respondents (74%) answered negatively to the question "Is remote study process equivalent to lectures and seminars on site?". This points to several challenges and issues that students faced during the remote study process implementation.

To explore further the challenges and issues regarding the remote study process and gather some insights, an open question was posed at the end of the survey, that is examined in the next section.

*3.3. Challenges and issues regarding the remote study process*

At the end of the online survey, an open question regarding the challenges of remote study process was posed. Although several students were generally content and did not experience any difficulties, moreover, some even concluded that the whole experience was "pleasant" and the main advantage of studying at home was that "other students did not bother" them, the majority of respondents had been faced with various troubles.

The students' answers are categorized into 3 groups: technical issues, social issues, and personal issues. Technical issues are related to technical problems experienced, such as poor connectivity to Internet, noise disturbances etc.; social issues are related to collaboration and communication in the digital world that are influenced by the "noise"

of the new channel, that is, the new platform the study process takes place; personal issues are related to personal difficulties, for instance, lack of personal organisation of time and resources, as well as loneliness and stress.

First of all, students experienced technical difficulties during the remote study process. The most pressing issue was an inadequate internet connection and/or study space at home (or dormitory). Students were unable to fully participate in lectures or group meetings due to problems with internet or outdated (or incomplete) equipment, such as lack of microphones, computer programs etc. Students complained that "noise" and other distractions, for example, other students in the dormitory of family members at home, made it impossible to be fully present in the lectures.

Students, especially students of medicine and chemistry, experienced difficulties to complete practical and research assignments that needed special equipment. Such assignments were later postponed or dismissed altogether by the academic staff, leaving the students with a sense of "incompletion".

Lastly, several students admitted that their level of digital skills had been insufficient. However, most respondents pointed out that digital skills were a problem with the academic staff, who had been unwilling or unable to adapt the study process to the online platform. Some students had experienced staggered communication between course mates and academic staff, as, for instance, it took "1 to 3 days to receive and answer in an email" while "offline" the question might had been answered instantly, in the classroom. Remote education with online lectures and chats, written assignments in e-mails and e-study platforms "took a lot of time", even more time as the usual study process, students pointed out.

The second category of problems were of a social nature. Students pointed out that remote studying could not fully replace an ordinary classroom due to the lack of "human contact". In reality, online lectures were "a one man's show" – the lecturer spoke, students turned their microphones and cameras off, and there was no evidence of "group solidarity" or "support for one another". Several respondents remarqued that they lack "the support of academic staff".

Some students pointed out that lecturers were not prepared and study materials were "inadequate" and "of poor quality", rendering the study process rather "boring" and distilling the whole learning and classroom experience to a "lecturer's monologue behind the screen". One student remarqued that his study process has transformed from "choreography to audio-visual art" and that "theory has taken over the practical assignments" altogether, which is "disappointing".

Some students pointed out, that it was difficult to converse with one another via an online platform, but it was "even more frustrating" to text in the chat, as it was confusing to follow the thread of ideas. During the lectures, discussions between participants were "ragged" and "inefficient" due to a time-shift caused by online platform malfunctions – questions needed to be repeated, answers got misheard. This time-shift made it "rather difficult" to express an opinion and to manage team assignments. Most active students monopolized the conversation and less active ones, as students remarqued, "could not get their point across". However, one student concluded that similar situations had also occurred in "offline lectures and seminars".

Another issue is the lack of "emotion communication" – digital communication made it difficult "to read" other classmates' state of mind and reaction to, for example, ideas in a brainstorm session. Students expressed the need "to see their lovable classmates" and "converse normally"; there was "a lack of closeness and unity".

Finally, the third category of problems with remote education were personal issues. Students had found it difficult to organise their work and study process and experienced a "lack of discipline", as for one particular student it was "hard to wake up in time" for the lectures. Others pointed out that the "monotonous talk" of the lecturer and lack of supervision made it hard "to focus" and urged to multitask, for instance, "clean the apartment" during a study session. Some respondents "lacked motivation" which in combination with an increased workload form the teachers made the whole study-process "dreary". Other students had observed problems with academic honesty.

The blending of borders between classroom and home created an amorphous continuum of time. The inert atmosphere and lack of change of scenery had "dampened the spirits", created "stress" and "loneliness". Some students, who were also simultaneously employed, pointed out that the "whole day goes by sitting by the computer"

and “13 hours a day behind the screen is too much”. The unchanging space, inadequate work environment was also a strain on health, especially eyes.

## 4. Discussion

This study provides a topical insight in a unique situation during a world-wide crisis – *Covid-19* pandemic and consequential social gathering restrictions. Not only does it capture the difficulties students had faced adapting to the remote study process, but also gives qualitative and detailed descriptions of several issues that may be resolved if the situation ever reoccurs.

However, several limitations prevail: the number of respondents of the survey is relatively rather low as the survey took place at the end of the semester while students were occupied with end-of-term papers and not interested in participation in other surveys. The survey was in Latvian, and, although the official study language in Latvia is Latvian, the minorities (e.g. Russian-speaking minority) may have resisted participation.

Further research may be directed towards the perspective of academic staff of higher education institutions and capturing their issues with the remote study process, especially digital collaboration and communication skills. Further research could also focus on the preconditions of an online learning environment in which the student may freely display initiative and act proactively (in a group).

## 5. Conclusion

The study shows that students were able to adapt from the study process of Latvian higher education institutions on-site to platforms on the Internet and had felt rather confident with their digital collaboration and communication skills, but at the same time had faced several issues, which should be attended to in the future by the academic staff, bearing in mind the probability of reoccurrence of a similar crisis in the foreseeable future.

Overall students had assessed their digital skills with a “high” level of competence. Most students had felt they were able to adapt to the remote study process and had a sufficient level of competence regarding their digital skills. Moreover, the data implies the link between the level of competence and the frequency of use – the self-assessed level of competence regarding a particular skill increases with frequent and active use.

Students were less confident with their collaboration and communication skills in the digital world and the level of daily use of collaboration and communication skills were relatively low. Respondents had more frequently acknowledged other ideas and views than expressed and shared their own or shown initiative.

Results indicate that the study process was not simply moved to an online platform, but in fact transformed to a more individual study process. The whole study process was more focused on the students' individual form of work, less – teamwork.

The vast majority of respondents feel that remote study process was not equal to education on-site. Several technical, social and personal issues have also influenced the study process and added to the already existing challenges. Results indicate that major challenges of remote study process were not related with technical issues of creating a digital space for collaboration and communication, but with the problem of adapting and transferring collaboration and communication skills to the new, online environment.

## 6. Recommendations

After studying the results, in the future, if the higher education is once more transferred online, the academic staff of higher education is advised to vary their teaching methods to stimulate students use different digital communication and collaborations skills. As the remote study process of Spring 2020 was also more focused on the students' individual form of work, less – teamwork, it would be essential to create a learning environment in which the student may freely display initiative and act proactively (in a group). The higher education staff should bear in mind also the technical, social and personal issues students face during a remote study process.

## References

Andersone, R., Lāma, G., & Raiska, D. (2019). Development of Non-technical Skills in a Multicultural Environment : Case study in Latvia. *Intern.* Warsaw. Retrieved from https://www.dpublication.com/wp-content/uploads/2019/07/ARE-1-425-1.pdf

Cabinet of Ministers. (2020). Retrieved from https://mk.gov.lv/en/aktualitates/declaration-emergency-situation-no-longer-force

Carretero, S., Vuorikari, R., & Punie, Y. (2017). *DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use.* Luxembourg: Publications Office of the European Union. doi:10.2760/38842

Central Statistical Bureau of Latvia. (2020). *Higher education institutions and colleges.* Retrieved from https://data1.csb.gov.lv/pxweb/en/sociala/sociala__izgl__augstsk/IZG240.px/

Government of Latvia. (2020). Retrieved from https://covid19.gov.lv/en/covid-19/safety-measures

Häkkinen, P., Virtanen, T., Virtanen, A., Näykki, P., Pöysä-Tarhonen, J., Niilo-Rämä, M., & Järvelä, S. (2019). Finnish pre-service teachers' perceptions of their strategic learning skills and collaboration dispositions. *Journal of Education for Teaching*, 1-16. doi:10.1080/02607476.2019.1708628

Hatlevik, O. E., & Christophersen, K.-A. (2013). Digital competence at the beginning of upper secondary school: Identifying factors explaining digital inclusion. *Computers & Education, 63*, 240-247. doi:10.1016/j.compedu.2012.11.015

Yilmaz, F. G., & Yilmaz, R. (2019). Impact of pedagogic agent-mediated metacognitive support towards increasing task and group awareness in CSCL. *Computers & Education, 134*, 1-14. doi:10.1016/j.compedu.2019.02.001

Yilmaz, R., Yilmaz, F. G., & Keser, H. (2020). Vertical versus shared e-leadership approach in online project-based learning: a comparison of self-regulated learning skills, motivation and group collaboration processes. *Journal of Computing in Higher Education*. doi:10.1007/s12528-020-09250-2

Kabataş, S., & Yilmaz, F. G. (2018). Evaluation of Teachers ' Lifelong Learning Attitudes in terms of Self-Efficacy Towards the Standards of Educational Technology. *Bartin University Journal of Faculty of Education, 7*(2), 588-606. doi:10.14686/buefad.405661

Kantar TNS Latvia Digital. (2018). Retrieved from https://www.kantar.lv/11499-2/

Khlaisang, J., & Mingsiritham, K. (2016). Engaging Virtual Learning Environment System to Enhance Communication and Collaboration Skills among ASEAN Higher Education Learners. *International Journal of Emerging Technologies in Learning*, 103-113. doi:10.3991/ijet.v11i04.5503

Lāma, G. (2020). Case Study: Transversal Skills in Secondary School Mathematics. In V. Dislere (Ed.), *Rural Environment. Education. Personality. (REEP). 13*, pp. 93-100. Jelgava: LLU. doi:10.22616/REEP.2020.011

Lowell, V. L., & Ashby, I. V. (2018). Supporting the development of collaboration and feedback skills in instructional designers. *Journal of Computing in Higher Education, 30*, 1-21. doi:10.1007/s12528-018-9170-8

Newell, C., & Bain, A. (2018). *Team-Based Collaboration in Higher Education Learning and Teaching.* Singapore: Springer. doi:10.1007/978-981-13-1855-9

Oudeweetering, K., & Voogt, J. (2018). Teachers' conceptualization and enactment of twenty-first century competences: exploring. *The Curriculum Journal, 29*(1), 116-133. doi:https://doi.org/10.1080/09585176.2017.1369136

Spies, T. G., & Xu, Y. (2018). Scaffolded Academic Conversations: Access to 21st-Century Collaboration and Communication Skills. *Intervention in School and Clinic, 54*(1), 22-30. doi:10.1177/1053451218762478

Terblanché, E. (2015). Deciding to teach online: Communication, opportunities and challenges for educators in distance education. *South African Journal for Communication Theory and Research, 41*(4), 543-563. doi:10.1080/02500167.2015.1115416

Tugtekin, E. B., & Koc, M. (2019). Understanding the relationship between new media literacy, communication skills, and democratic tendency: Model development and testing. *New Media & Society*, 1-20. doi:10.1177/1461444819887705

Vuorikari, R., Punie, Y., Carretero, S., & Brande, L. V. (2016). *DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: The Conceptual Reference Model.* Luxembourg: Luxembourg Publication Office of the European Union. doi:10.2791/11517

Zundans-Fraser, L. (2014). *Self-Organisation in Course Design: A Collaborative, Theory-Based Approach to Course Development in Inclusive Education.*