

SELF-DIRECTED LEARNING IN SECONDARY EDUCATION DURING REMOTE STUDY PROCESS. CASE STUDY IN LATVIA

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ABSTRACT

Due to rapid technological changes and innovations, by graduation students have to be equipped with skills necessary for lifelong learning. There is an increasing potential for students' further development in the digital environment. In high school, it is necessary to build and improve the students' skills of self-assessing their own learning needs, as well as setting educational objectives and measuring their success. The importance of self-directed learning has increased particularly in the context of COVID-19. In many countries, educational institutions are closed and studying process is remote, reducing the level of teacher involvement and increasing pupils' own responsibility for their learning outcomes. Changing the classroom from direct spatial presence to the digital environment also changes learning opportunities and increases the importance of digital skills. It is therefore necessary to identify whether pupils possess the necessary self-directed learning skills for the purpose of learning, selecting activities and study materials, managing time, structuring the learning environment, skills to communicate and collaborate and assess their performance, as well as the digital skills needed to organise the digital learning environment and identify the major challenges in remote learning. The results of the study show that pupils have assessed their self-driving learning skills as sufficient, however, as well as that the learning process has been challenging and has created motivational, self-discipline and socializing problems.

Keywords: *digital skills, secondary education, self-directed learning, remote studying, transversal skills.*

Introduction

Due to rapid technological changes, by graduation students have to be equipped with the skills needed for lifelong learning. Lifelong learning is seen as an important cornerstone of professional development in the 21st century, due to globalization and internationalization and permanent access to information (Mohd Salleh, Zulnaidi, Abdul Rahim, Zakaria, & Hidayat, 2019). Students will have to continue to acquire new knowledge and skills throughout their careers (Voskamp, Kuiper, & Volman, 2020).

Self-directed learning is one of the skills needed to organise an independent learning process and is an essential part of life-long learning (Tekkol & Demirel, 2018). Traditionally a direct learning model based on teaching knowledge or skills using appropriate teaching methods is used; however, such learning methods provide knowledge and skills transfer (Sukardjo & Salam, 2020), but do not allow students to choose and analyse their own learning strategies and evaluate their suitability, set their own learning goals and achievable results as well as make sure that learning outcomes are achieved. Failing to develop these skills at school could lead to problems for students to continue to learn independently in future.

In Latvia, due to the restrictions of the COVID-19 pandemic, for several months the entire study process in secondary schools took place remotely, which means that the collaboration between the student and the teacher is only possible in the digital environment. In a remote study process, the teachers' control of the learning process is reduced, and, thus, students' responsibility for their own learning process is increased. In the digital environment, self-directed learning is particularly relevant for a meaningful learning process (Zhu, Bonk, & Doo, 2020). The challenges of the remote learning process relate not only to the skills needed to implement a self-directed learning process, but also to skills required for changing the learning environment from direct spatial presence to digital environment (Lāma & Lāma, 2020). It is the digital environment and the ability to act on it that is a prerequisite for the success of a remote learning process. Consequently, it is essential that the learning process is not simply transferred to the digital environment but also transformed. The goal of the research is to find out, whether students have the necessary skills to be able to fully participate in a self-directed remote learning process and to identify challenges of remote learning process.

Self-directed learning

Self-directed learning is often referred to as a set of 21st century skills that can be developed directly by students at school (Voskamp, Kuiper, & Volman, 2020; Global Partnership for Education, 2020). At the same time, self-directed learning is also a way to motivate students to learn at school; by giving students more choice and responsibility, they will be more actively involved in the learning process (Francom, 2010). The Self-directed learning (SDL) theory has its origins in adult education (Voskamp, Kuiper, & Volman, 2020). Knowles (1975) describes self-directed learning as a process in which an individual, either independently or through others, sets his or her educational objectives, independently forms learning strategies and identifies the resources needed to achieve the learning objectives pursued, as well as continuously verifying the achievement of learning outcome (Voskamp, Kuiper, & Volman, 2020, Knowles, 1975).

Self-directed learning is an active process in which learner supervises and controls their own cognition, behaviour and motivation (Onah, Pang, & Sinclair, 2020), as well as assessing the appropriateness of learning strategies for achieving, and, if necessary, adjusting the goal. In addition, the self-directed learning is treated as learning and motivating processes, based on the individual responsibility of students to learn with or without instructions. Metacognition is therefore an essential component of the self-directed learning process. Improving self-directed learning skills also helps to develop critical thinking as well as to improve the ability to take initiative, particularly in the context of planning and adapting the learning process (Sukardjo & Salam, 2020).

Self-directed learning can be defined as a learning process in which learner plays a central role and is included in planning learning process, setting goals, selecting information or resources and searching and evaluating their own learning process (Silamut & Petsangsri, 2020). In the context of secondary education, the student's opportunities are limited and therefore self-directed learning is significantly influenced by the school's curriculum.

Although self-directed learning process is characterised by a relatively high level of student involvement and responsibility (Voskamp, Kuiper, & Volman, 2020), the student cannot fully set his or her own learning objectives, as defined in the curriculum, thereby bringing self-directed learning closer to self-regulated learning skills within the scope of this research. In view of the objective, the ability to manage own learning process effectively in both formal and non-formal education (Zhu, Bonk, & Doo, 2020) after graduation of secondary school. School is a transitional phase in which the teacher's responsibility should be gradually reduced and the involvement of the student should be increased, according to the level of his or her capacity. However, the active student's involvement in the presentation of ideas and taking responsibility not only for the learning results of but also for the learning process itself, allows students to develop critical thinking and planning skills (Mamun, Lawrie, & Wright, 2020).

Self-directed learning is characterised by three stages of the learning process: preparation, implementation and self-reflection phase (Zimmerman, 2015). The preparatory phase is characterized by the diagnosis of learning needs, the formulation of learning objectives, including the nomination of measurable learning outcomes (Larson, Jordan, Lande, & Weiner, 2020). In the implementation process, the motivation, self-discipline, and student's adaptation skills, as well as the skills to search and critically evaluate information, are essential. In particular, the importance of self-discipline in the process of implementing training activities should be highlighted, since that includes the ability to focus on learning objectives, and also helps to

collaborate in the learning process, as a teacher's guided process. The process is iterative, and the reflection phase is not only important part of the evaluation of learning outcome, but it is also essential for adjusting learning strategies. Therefore, reflection serves as a tool for evaluating objectives, activities and learning strategies and as a self-directed learning skills assessment tool (Toh & Kirschner, 2020). Thus, self-directed learning process can be characterised by six dimensions (Onah, Pang, & Sinclair, 2020):

- goal setting;
- task strategies;
- time management;
- structuring of environment;
- seeking help;
- self-evaluation.

Consequently, in view of the self-directed learning as a complex skill or set of skills, it consists of (Mohd Salleh, Zulnaidi, Abdul Rahim, Zakaria, & Hidayat, 2019; Tsai, 2019): Self-assessment of learning gaps, Self-evaluation skills, reflection skills, critical thinking skills, information management skills, communication skills and collaboration skills, self-discipline.

Digital skills

The concept of digital skills relates to the ability to use specific digital technologies or software (Guillén-Gámez, Mayorga-Fernández, Bravo-Agapito, & Escribano-Ortiz, 2020). However, digital skills are more widely perceived in the context of education. They are also skills for the full employment of digital technologies for learning purposes. Meaningful digital communication is characterized not only by the ability to use software functionality, but also by understanding the psychological aspects of communication and the corresponding social conventions (Lāma & Lāma, 2020). Therefore, in the context of learning, digital skills include the students' ability to use technology to access information, acquire and evaluate it, present and share with others, and to be able to work on a team (He & Li, 2019), communicate in different formats (live video, e-mail, chats etc), and be able to find and use different digital learning tools. Digital skills are particularly relevant in the remote learning process; they are a prerequisite for managing the virtual learning environment.

Digital skills can be divided into five domains (Carretero, Vuorikari, & Punie, 2017):

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

Therefore, the most important learning skills of self-directed learning skills in remote learning can be considered to be: planning skills, self-discipline, self-assessment of learning gaps, reflection skills, information literacy, digital communication and collaboration skills and skill to use digital learning tools.

Method

Students' self-directed learning skills were measured through a self-assessment survey. The survey was distributed through boosted *Facebook* and *Instagram* posts, reaching 6974 adolescents, aged 16–19. In total, the questionnaire was completed by 419 secondary-school students. In the questionnaire, secondary-school students had to self-evaluate seven self-directed learning dimensions: planning skills, self-discipline, self-assessment of learning gaps, reflection skills, critical thinking skills, digital communication and collaboration skills and the skill of using digital learning tools. Each of the skills was evaluated on a 5-point Likert scale (5 – excellent, 4 – good, 3 – acceptable, 2 – poor, 1 – very poor) as well as one open-ended question in which students were asked to share their challenges with remote learning. Completing the first seven questions was mandatory; results were analysed using descriptive statistics, but the last open-ended question was optional and was analysed through content analysis. The study considered all ethical research standards in accordance with the General Data Protection Regulation (GDPR). The questionnaire was anonymous and participation in it completely voluntary.

Results

Survey's internal consistency Reliability is high (Cronbach's alpha value 0.775).

Secondary school student self-directed learning skills for remote studying can be divided into two groups:

- skills that are essential to conduct self-directed learning;
- skills needed to manage the digital learning environment.

By analysing students' self-assessment of the skills needed to implement the self-directed learning process, it can be concluded that students have evaluated their self-directed learning skills as good (Table 1). However, mean values of students' self-evaluation of different self-directed learning skill components are quite different, and dispersion and standard deviation is rather high. Planning skills and self-discipline skills students have evaluated higher, and reflection-skills and self assessment of learning skills have been evaluated lower.

Table 1. Students' self-evaluation of self-directed learning skills

Variable	Mean	SD	Variance
1. Reflection skills	3.05	1.15	1.33
2. Self-assessment of learning gaps	2.95	1.10	1.20
3. Self-discipline	3.46	1.10	1.20
4. Planning skills	3.73	1.06	1.12
5. Use of digital learning tools	4.02	1.07	1.14
6. Digital communication and collaboration skills	3.47	1.24	1.54
7. Information literacy	3.37	1.21	1.45

The results show that pupils have assessed their ability to organize and plan learning process rather high. Skills required for evaluating and reviewing the learning process is evaluated lower, indicating the need for teacher's involvement in the reflection phase, as well as in the knowledge evaluation phase. In particular, the skill to assess learning gaps should be highlighted, as the mean value of students' self-evaluation is less than three – less than fair.

Analysis of skills for digital environmental management shows that students have well developed digital skills, and the assessment mean value is rather high. Use of digital learning tools ($\bar{x} = 4.02$) is evaluated with the highest mean value. Digital communication and collaboration skills ($\bar{x} = 3.47$) and information literacy ($\bar{x} = 3.37$) evaluation should also be considered high. It indicates that students have the necessary skills to manage the remote study process. In particular, the high assessment of use of digital learning tools indicates that the learning process can be enriched with digital resources by including them in teaching. This indicates that pupils are prepared not only for the transfer of the learning process to the digital environment, but also for the transformation of learning.

To understand the ratio of students who are well prepared for remote self-directed learning it is important to analyse the self-directed learning skill relative distribution by self-assessment levels.

By analysing self-directed learning skills that are not related to the digital environment (Fig. 1), it can be concluded that students' perception of self-discipline and planning skills is rated rather high. 61% of respondents rated planning skills as good or excellent and only 12% as poor or very poor. Similarly, 52% of respondents evaluated self-discipline as good or excellent and only 12% as poor or very poor. Reflection skills and self-assessment of learning gaps are evaluated lower. Analysis shows that 36% of respondents evaluated their reflection skills and 34% self-assessment of learning gaps as

good or excellent; almost a third of respondents (31%) evaluated reflection skills as poor or very poor, and similarly 36% of respondents evaluated their self-assessment of learning gaps as poor or very poor. This indicates that students with the help of their teachers should focus on improving their skills to self-assessment of learning gaps. This skill enables students to understand the need of learning and provides a basis for organizing the learning process independently after leaving school, particularly in the context of informal learning.

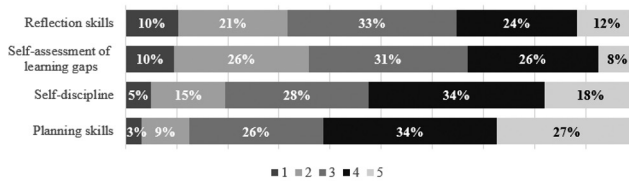


Figure 1. Skills that are required to implement a self-directed learning process

By analysing self-directed learning skills that are related to the digital environment (Fig. 2), it can be concluded that students evaluate their use of digital learning tools as the most developed: 73% of respondents evaluated them as good or excellent and only 11% as poor or very poor. Digital communication and collaboration skills and information literacy are evaluated lower. More than a half of respondents (54%) evaluated digital communication and collaboration skills to be good or excellent; 48% of respondents evaluated their information literacy as good or excellent. A quarter of respondents (24%) evaluated their digital communication and collaboration skills and a similar number of respondents (26%) evaluated their information literacy as poor or very poor. It can therefore be concluded that there is a need to improve students’ information literacy.

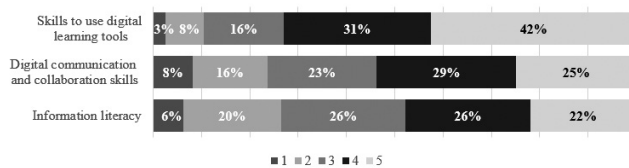


Figure 2. Skills for digital environment management

Results of open-ended question were clustering around different themes and most relevant remote studying challenges (Fig. 3). Students’ answers to the open-ended question were of different length and contained from 1 to 3 different themes.

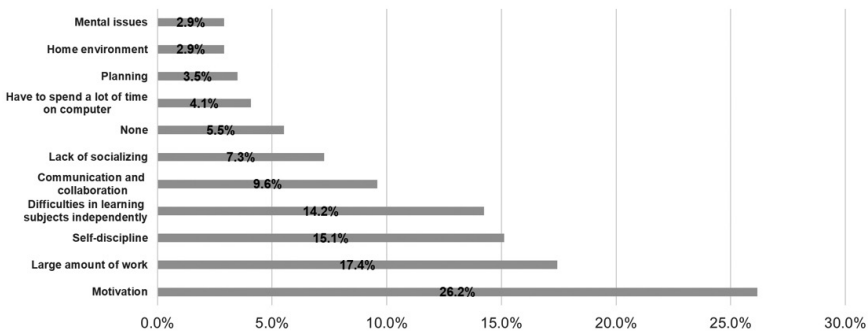


Figure 3. Student challenges with remotes studying

Respondent answers show that motivation and self-discipline are major challenges. These challenges, although categorized separately, are essentially very closely linked. Lack of motivation also affects self-discipline. 41.3% of students recognize one of the two factors as a major challenge to remote learning, which points to the need for teachers and students to pay increased attention to tackling these challenges. It also raises the question about quality of remote study process. It is important to highlight that students' evaluation of self-discipline was rather high: the mean value is 3.5. The inconsistency of self-discipline self-assessment and the fact that it is pointed out as the major challenge could be due to the fact that students were able to overcome this challenge, or it could also be explained with the students' inability to connect their self-discipline problems with the lack of motivation.

Most respondents have not specified the reason for the lack of motivation, but from some more expanded responses, it can be concluded that lack of motivation is connected with lack of socialization:

- “Lack of presence of teachers and classmates, lack of emotions, sports, dancing, singing! Hard to find motivation at home”
- “Motivation, too exhausting to sit at a computer all day”
- “There is no collective feeling when you are at home, so sometimes there are problems with self-motivation, because with learning in-person your classmates can encourage you”.

Similarly, detailed analysis of the main challenges connected with self-discipline problems shows that they relate to the daily regime and the distraction caused by the learning environment at home:

- “Sometimes there is unrestrained laziness to start tasks that take longer (such as reading a book in literature)”
- “Wake up in time to school”
- “Hard to get together when there are things around (videogames, TV) that distract”

One of the major challenges was digital communication and collaboration as it caused problems with interaction and did not fulfil social needs (lack of socializing) as more than 7% of respondents thought it was a major challenge to remote study process. Other aspects that influenced digital communication related to the inability to construct conversation the same way students had done previously, in person:

- “The fact that there is no communication in person leads to unanswered questions”
- “Can’t immediately communicate with teachers on topics I don’t understand”
- “I can’t come to the Conclusions and understanding of the theory, in consultation with my friends”

Some of students distinguish difference between communication in person and digital communication; their answers indicated that they have not adapted yet. Students also struggle with the problem to socially construct knowledge digitally.

Other major challenges were connected with heavy workload, lack of direct guidance and mental health issues:

- 17.4% of students point to the fact that there is heavy workload, which could be linked to the teachers’ inability to adapt to remote studying or to the student illusion of heavy workload caused by lack of self-driven learning skills. Further research is required to find it out.
- 14.2% of the students have difficulties to learn independently. Indicating that they are not capable to learn without direct teacher guidance.
- 2,9% of students have mentioned some mental health issues caused by remote learning and isolation.

It can be concluded that in spite the fact that most of the direct-learning skills students evaluate as good, remote study process has been difficult and challenging. Teachers should create the necessary learning environment that supports the development of self-directed learning skills especially emphasizing activities that promote reflection skills, self-assessment of learning gaps, self-motivation, and self-discipline.

Discussion

The study identified the self-assessment of secondary education students learning skills for remote learning and identified the major challenges students face with remote studying. The results indicate that students feel they have the necessary skills to learn remotely effectively and successfully. However, students also point to significant challenges encountered during the remote learning process.

Student self-assessment was used to measure student skill level. Self-assessment often reflects a student's feelings about their performance and may differ from the true level of skills measured with different and more reliable methods (Allen & Velden, 2005). Therefore, it is essential that the results of self-assessment are interpreted in conjunction with the challenges indicated by the students.

An analysis of the challenges identified by students points to lack of motivation and self-discipline as well as its relevance to the specificity of a remote learning process. The problems identified in the responses of students relate to the learning environment at home and the lack of positive effects from socializing with their peers, excluded in remote study process in comparison to direct spatial study process. Teachers have not been able to integrate these in-person learning elements into remote learning process.

It is essential to investigate, how home environment and other aspects could be changed or how students can handle them better, as it could be the key to success in alleviating motivation and self-discipline problems. It may also have been the reason behind student mental issues. Geng together with colleagues (2019) found that self-directed learning skills positively correlate with learning motivation (Geng, Law, & Niu, 2019). Future studies would need to identify the extent to which self-directed learning skills can help students in overcoming the challenges of a remote learning process.

Conclusions

The challenges of the global pandemic have led to a change in the learning environment that could change the traditional direct spatial learning practice in the future. By analysing the current situation, and by adjusting the learning process, by addressing most pressing issues and by developing skills that are essential for remote learning, students will be more prepared for life-long learning. Analysis of the results of the research allows to draw some conclusions on the students self-directed learning skills and challenges they have faced in remote learning process:

- Students have self-evaluated self-directed learning skills that are related to digital environment management as sufficient. *Use of digital learning tools* ($\bar{x} = 4.02$), *digital communication and collaboration skills* ($\bar{x} = 3.47$), *information literacy* ($\bar{x} = 3.37$).
- Students have self-evaluated their planning skill ($\bar{x} = 3.73$) and self-discipline ($\bar{x} = 3.46$) as sufficient, but students should improve reflection skills ($\bar{x} = 3.05$) and self-assessment of learning gaps ($\bar{x} = 2.95$) to be fully ready to manage their learning process.

- Overall, most of the students have sufficient self-directed learning skills for remote studying, but 14% of students admitted that they have difficulties to learn without teachers' explanations.
- Lack of motivation is the most common learning challenge. Lack of motivation has a significant impact on self-discipline and, consequently, on the education quality. The focus should be on promoting motivation by better adjusting the home environment for learning needs and promoting remote socialization.
- A large percentage of students (17%) mention heavy workload as a learning challenge. The results of the study indicate that this could be linked to the need for further development of self-managed learning skills but could also be linked to the inability of teachers to adapt to the specificities of remote learning. Further studies are needed to clarify this.

The results highlight the significant challenges faced by students during a remote study process and further studies would need to identify how to create appropriate conditions for learning at home and to improve the motivation and self-discipline of students, as well as the ability to identify their personal learning needs. It should also be noted that the questionnaire data is collected in the digital environment, thus representing the views of students who are actively participating in remote studies and are comfortable in the digital environment. Therefore, it would be essential to further focus on those students who do not possess the skills and means for adequate remote learning.

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