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EXTERNAL EVALUATION OF SELF-DIRECTED LEARNING SKILLS: ONLINE EDUCATION*

Konstantin B. Egorov, Vera A. Zakharova

Perm State Humanitarian Pedagogical University, Perm, Russian Federation

Abstract. Self-isolation measures implemented during the Covid-19 pandemic resulted in a quick transition to online instruction. As a result, teachers and students must master online learning tools and technologies in educational institutions. In addition, the problems with online education are frequently reported in scholarly sources.

Many participants in the educational process faced difficulties during this period. In our opinion, many difficulties in online education were caused by insufficient training of self-directed learning skills in students and corresponding skills in teachers. At the same time, this group of universal learning skills is a mandatory part of education in Russian schools. The skills of self-organization and self-control are included in the Russian federal state educational standards requirements. A considerable number of scientific publications are devoted to the formation of assessment skills in school children. At the same time, the problem of training self-directed learning skills in online classes has not been sufficiently studied.

This article examines the results of an independent assessment of self-directed learning skills and training in online classes for both primary school students and primary school teachers.

As a result of the study, the following skills were identified as important for teaching primary school online learners: Planning, Self-Monitoring, Self-assessment, and selecting effective approaches for online learning.

Empirical data were collected as part of the study. From this, the following points can be made: Primary school teachers are not prepared for online teaching; time demands on teachers have increased due to the specifics of teacher self-monitoring under the new conditions. Consequently, students need to learn the following skills during online teaching: self-monitoring, use of automated assessment and monitoring tools, self- and peer-assessment in the digital educational environment, and planning.

The empirical data obtained show the importance of training self-monitoring skills for online teaching. Therefore, the proposed recommendations for improving teacher training education programs in pedagogical universities and in the teacher professional development system have practical relevance and can be implemented through appropriate educational programs.

Keywords: *self-direction, self-control, planning skills, independent assessment in teaching, online learning, online teaching, online education, teacher education, primary school, functional literacy.*

1. Introduction

Self-directed skills are one of the prerequisites for the formation of functional literacy. The need to develop self-directed learning skills in students is a topic that has been actively

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discussed in the wake of forced online learning during the Covid-19 pandemic. The authors of the article update the aspect of building self-directed skills in online learning by comparing online instruction and online learning.

The need for self-isolation during the Covid-19 pandemic led to the transition to online learning. As a result, primary schools were also forced to master online learning technologies.

The advantages and disadvantages of online teaching were discussed even before the pandemic [1, 2]. The unexpected introduction of online learning required urgent and significant changes in the teaching and learning process. During the pandemic, primary school teachers and students quickly acquired tools and resources to transfer their education online. Teachers learned how to video conference and assign homework online. Students mastered computers and mobile apps. Interaction with Internet platforms such as Zoom, Teams, Discord, and Google Classroom intensified. Virtual classes and interactive tools such as Padlet, Kahoot, and others were learned. Many publications have been devoted to these aspects of online learning [3–8]. The problems of teachers in sharing resources in online work have been studied [9]. The issue of stress caused by difficulties in online learning for teachers, students, and parents has been discussed [10].

We believe that many of the difficulties associated with mastering online learning are related to organizational (self-directed) skills. At the same time, little is known about how students and teachers develop self-organizational skills in online learning. In the era of online education, many researchers have sought answers to the question of how teachers can effectively organize their work in online learning and how they can help primary school students acquire self-directed skills.

Materials from the NCEE (National Center on Education and the Economy) in the United States suggest that online learning at home helps to promote students' self-directed learning skills [4]. In addition, some international researchers have discussed aspects of self-organization and assessment activities in the context of online education for college students [11, 12].

Currently, the problem of training self-directed skills in university students is gaining more and more attention [13], and the issue of students' assessment skills is widely discussed [14–16]. In addition, the problem of training teachers' organizational skills in relation to teaching in normal conditions (face to face) was discussed in the works of psychologist O.V. Belous [17].

According to the Russian federal state standards for general primary education [18, 19], primary school students are expected to have the ability to accept and understand the learning task and to plan, control, evaluate, and choose effective ways to achieve the goal. The new edition of the state educational standards for primary school, adopted in 2021, includes two groups of universal activities for self-directed learning: 1) self-organization skills (the ability to plan learning activities to solve a learning task and achieve an outcome, and the ability to create a sequence of selected activities); 2) self-control skills (the ability to identify reasons for success or failure in learning activities and the ability to correct their learning activities to overcome errors) [20].

The ability to engage in self-directed learning is an important outcome of primary education and a prerequisite for the development of functional literacy skills [21, 22].

This article compares the results of an empirical study conducted by Perm State Humanitarian Pedagogical University. The authors of the article address the advantages and disadvantages of teaching self-directed skills to younger students and teachers' professional deficits in self-organization skills in online learning during the pandemic. Identifying poor learning skills through independent assessment during face-to-face instruction is motivated by the need to obtain objective data [23, 24]. Therefore, it makes sense to subject academic outcomes to independent assessment in the online education era. Furthermore, we assume that such a study is not only of

practical value but also of scientific interest. Based on the study results, recommendations were developed to improve the teaching of primary school children and develop primary school teachers' professional skills.

2. Materials and methods

This article describes the results of two independent empirical studies: 1) a study of primary school students' self-organizational skills and 2) a self-assessment of primary school teachers' professional strengths and weaknesses during the Covid-19 pandemic.

The study of primary students' organizational skills was conducted from 2018 to 2021. Pupils of grades 2, 3, and 4 in general educational institutions of the Perm region took part in the study "Quality Cluster of Perm State Pedagogical University." The sample was formed randomly from 159 to 894 persons in each age group. The study of self-directed abilities of primary school students was conducted based on criteria-based diagnostics. The diagnostics focused on revealing aspects of functional literacy and was based on the material of practical life situations. The organizational skills listed in the draft of a new version of the Russian federal state educational standards for general elementary education were used as assessment criteria. The analysis of the results was carried out and visualized using the automated system on the website of the Quality Cluster Project of Perm State University of Humanities and Pedagogy.

Initially, these diagnoses were not aimed at studying the impact of online teaching on the formation of self-directed skills. However, the authors were interested in comparing the results of the diagnoses before the transition to online learning during self-isolation and after the return to face-to-face learning in school.

A self-assessment of primary school teachers' professional strengths and weaknesses in online learning was conducted using a partially structured self-assessment questionnaire that included both choice and open-ended questions. The focus group of participants in a series of online workshops formed the sample. Seventy-nine teachers participated in the study (with different years of experience: 1–5 years – 1 person, 6–14 years – 8 persons, 15–24 years – 19 persons, more than 25 years – 51 persons). The analysis of the results was performed and visualized using automated electronic forms. In addition, the results of the study were subjected to mathematical processing and content analysis.

3. Results

In the study of self-directed abilities of primary school children, the following results were evaluated: a) as a whole, based on the average result of the formation of all groups of self-directed abilities; b) based on the criteria by groups of self-directed abilities, in which case the percentage of students who met each criterion was determined.

In general, a comparison of diagnostic results of self-directed skills among primary school students showed a decrease in 2021 after the online learning phase. Student performance results on the tasks were as follows (Table 1, Fig. 1):

– In the 2nd grade during the 2018–2019 academic year – 72%; in 2019–2020 – 65%; in 2020–2021, after the online learning phase – 63%.

– In the 3rd grade during the 2018–2019 academic year – 60%; in 2019–2020 – 54%; in 2020–2021 academic year, after the online learning phase – 47%.

– In the 4th grade during the 2018–2019 academic year – 58%; in 2019–2020 – 66%; in 2020–2021, after the online learning phase – 56%.

The greatest negative dynamics were observed among students in grades 2–3, who focus more on external control by the teacher.

Table 1

Self-directed learning skills in primary school students

Academic year/School grade	2-nd	3-rd	4-th
2018–2019	72%	60%	58%
2019–2020	65%	54%	66%
2020–2021	63%	47%	56%

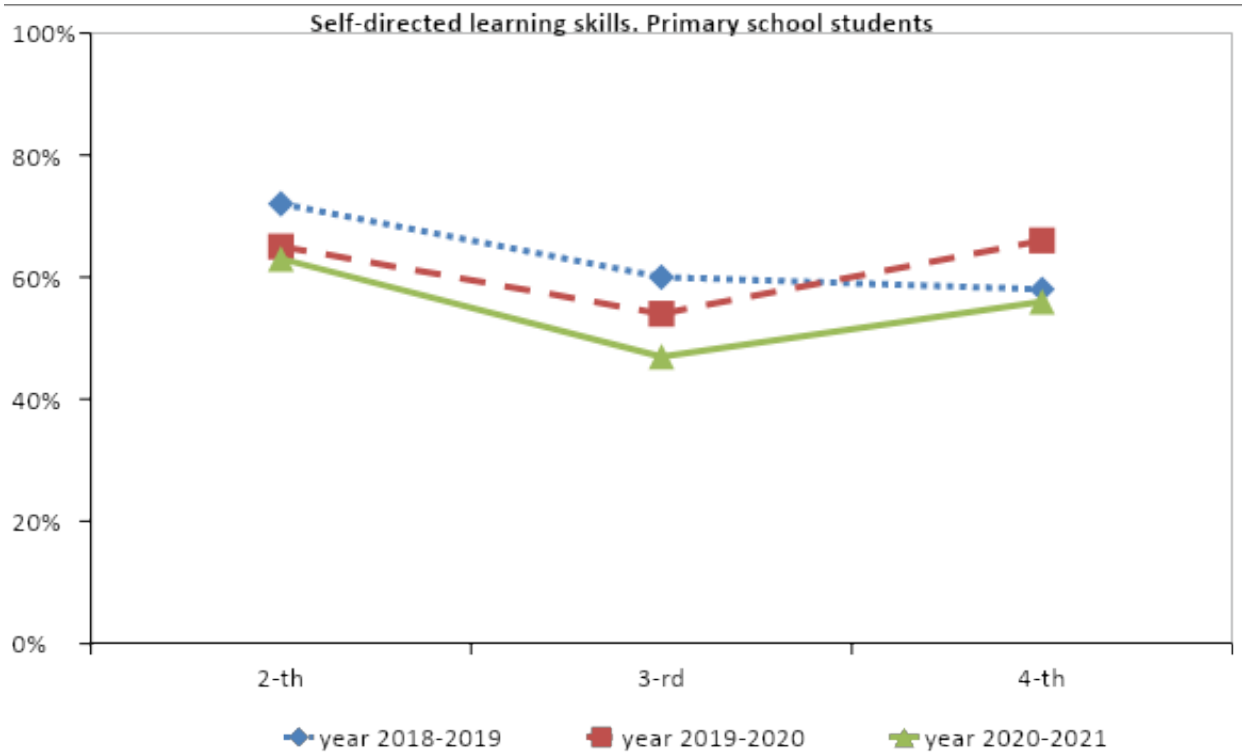

Fig. 1. The dynamics of self-directed learning skills in primary school students

Differentiated data were obtained by analyzing the results among primary school students using the criteria for the groups of self-directed skills.

3.1.1 Criterion 1. The ability of primary school students to accept and maintain a practice/ learning task. Diagnostics included an assessment of a practical task in everyday life in 2nd grade, translating a practical task into a learning situation in 3rd grade, and assessing a practical task in a learning situation in 4th grade.

The diagnostics results showed lower scores after the online learning phase in all grades (Table 2, Fig. 2).

– In the 2nd grade during the 2018–2019 academic year – 84%; in 2019–2020 – 83%; in 2020–2021, after the online learning phase – 58%.

– In the 3rd grade during the 2018–2019 academic year – 83%; in 2019–2020 – 78%; in 2020–2021, after the online learning phase – 14%.

– In the 4th grade during the 2018–2019 academic year – 58%; in 2019–2020 – 88%; in 2020–2021, after the online learning phase – 63%.

The greatest negative trend was found among grade 2 students, who were unable to make the transition from practical tasks to learning tasks at a higher rate.

Table2

The ability of primary school students to accept and maintain a practice/learning task

Academic year/School grade	2-nd	3-rd	4-th
year 2018–2019	84%	83%	58%
year 2019–2020	83%	78%	88%
year 2020–2021	67%	14%	63%

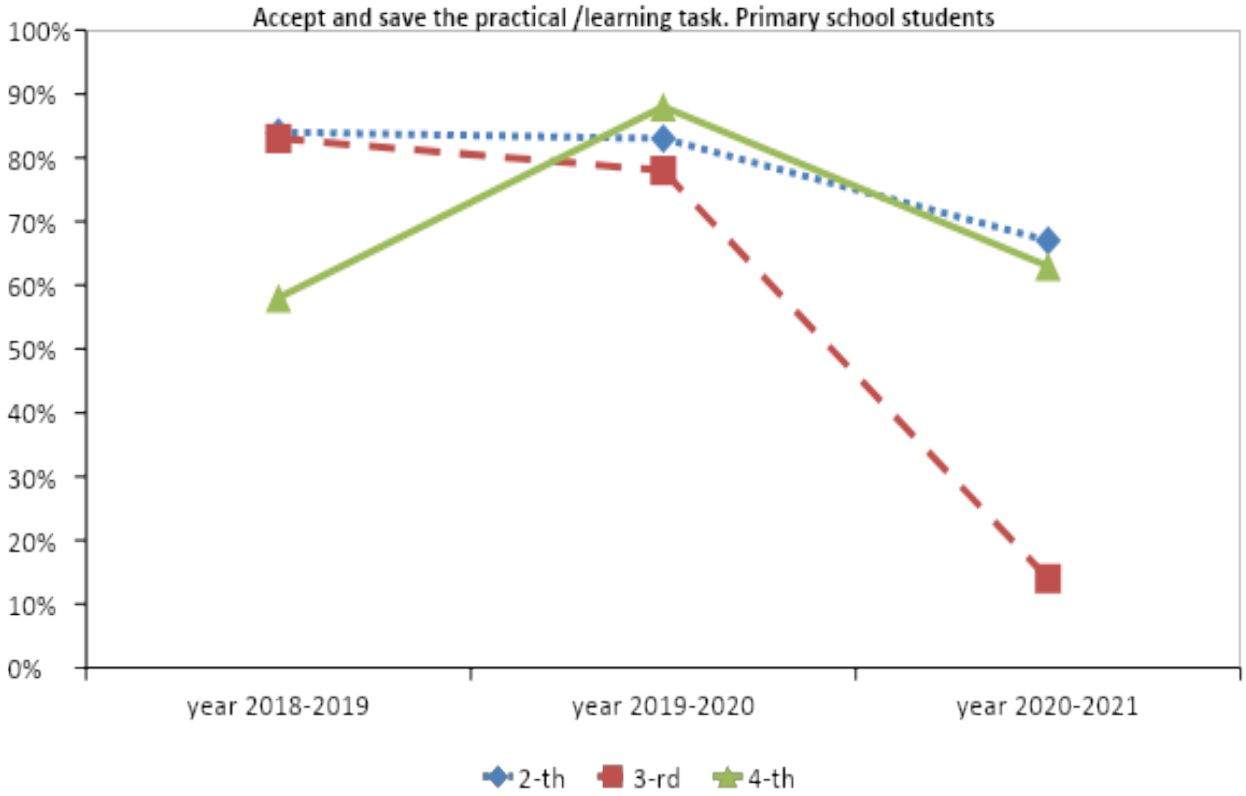

Fig. 2. The ability of primary school students to accept and maintain a practice/learning task

3.1.2 Criterion 2. The ability to plan ways to solve a learning task, outline actions to achieve a result, and create a sequence of chosen actions. Diagnostic results showed positive dynamics in 2nd and 3rd grade after the online learning phase, but in 4th grade, the results became lower (Table 3, Fig. 3).

– In the 2nd grade during the 2018–2019 academic year – 73%; in the 2019–2020 academic year – 69%, in the 2020–2021 academic year, after the online learning phase – 66%.

– In the 3rd grade during the 2018–2019 academic year – 45%; in the 2019–2020 academic year – 45%; in the 2020–2021 academic year, after the online learning phase – 59%.

– In the 4th grade during the 2018–2019 academic year – 66%; in 2019–2020 – 53%; in 2020–2021, after the online learning phase – 46%.

A negative dynamic was found among 4th-grade students, who were more focused on subject test scores, probably due to national monitoring of educational quality (all-Russian tests). On the other hand, the positive dynamics among 2nd and 3rd-grade students are likely related to online learning algorithmization.

Table 3

Planning skills in primary school sudents

Academic year/School grade	2-nd	3-rd	4-th
year 2018–2019	73%	69%	66%
year 2019–2020	45%	45%	53%
year 2020–2021	77%	59%	46%

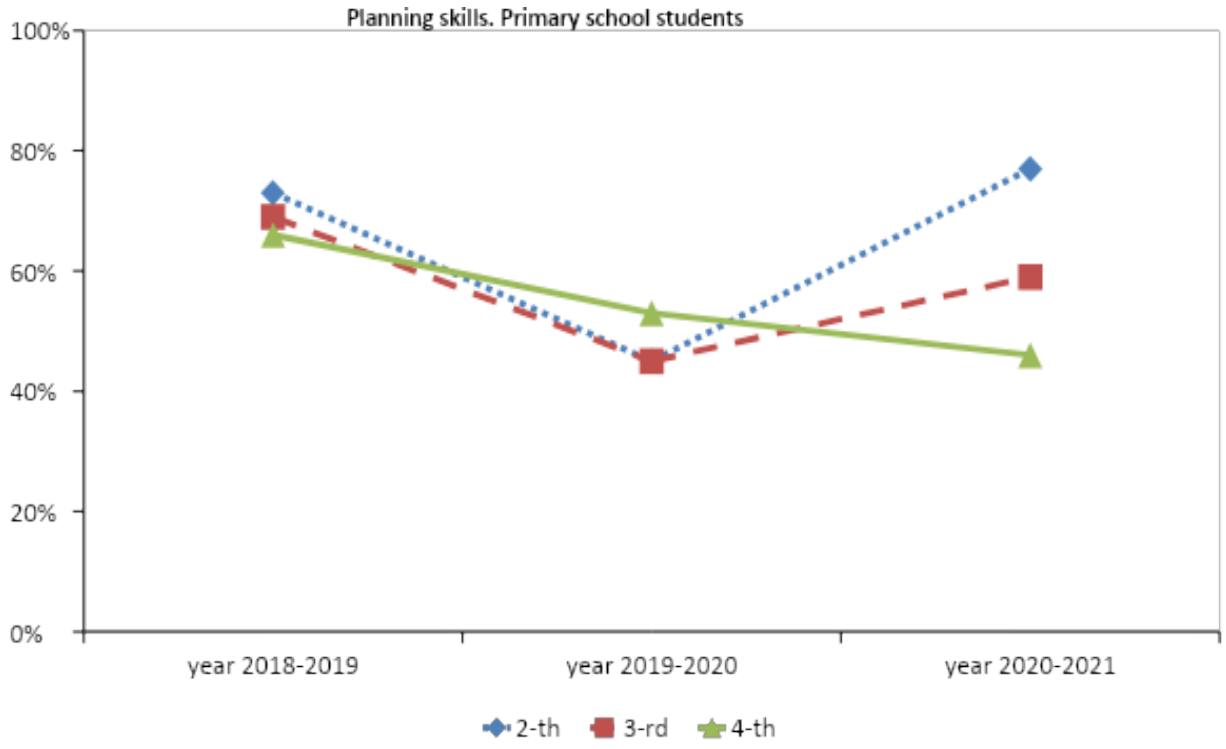

Fig. 3. Planning skills in primary school students

3.1.3. Criterion 3. The ability to evaluate different ways of achieving a result and select the most effective one. Diagnostic results showed positive dynamics in the 3rd grades after the online learning phase, and the results became lower in the 2nd and 4th grades (Table 4, Fig. 4):

– In the 2nd grade during the academic year 2018–2019 – 44%; in the academic year 2019–2020 – 69%; in the academic year 2020–2021, after the online learning phase – 50%.

– In the 3rd grade during the academic year 2018–2019, 97%; in 2019–2020 – 45%; in 2020–2021, after the online learning phase – 69%.

– In the 4th grade during the academic year 2018–2019 – 44%, in 2019–2020 – 57%; in 2020–2021, after the online learning phase – 38%.

A negative dynamic was observed among 4th-grade students, who were more focused on subject test results, probably due to the national monitoring of educational quality (all-Russian tests). The decline in scores for this criterion in the 2nd grade students can be explained by the greater algorithmization of online learning and fewer teacher choices for students. In the 3rd grade, students were likely given more freedom of choice, perhaps with less external teacher control, allowing students to choose effective pathways and solution options.

Table 4

The ability to evaluate different ways of achieving a result and select the most effective one

Academic year/School grade	2-nd	3-rd	4-th
year 2018–2019	44%	97%	44%
year 2019–2020	69%	45%	57%
year 2020–2021	50%	69%	38%

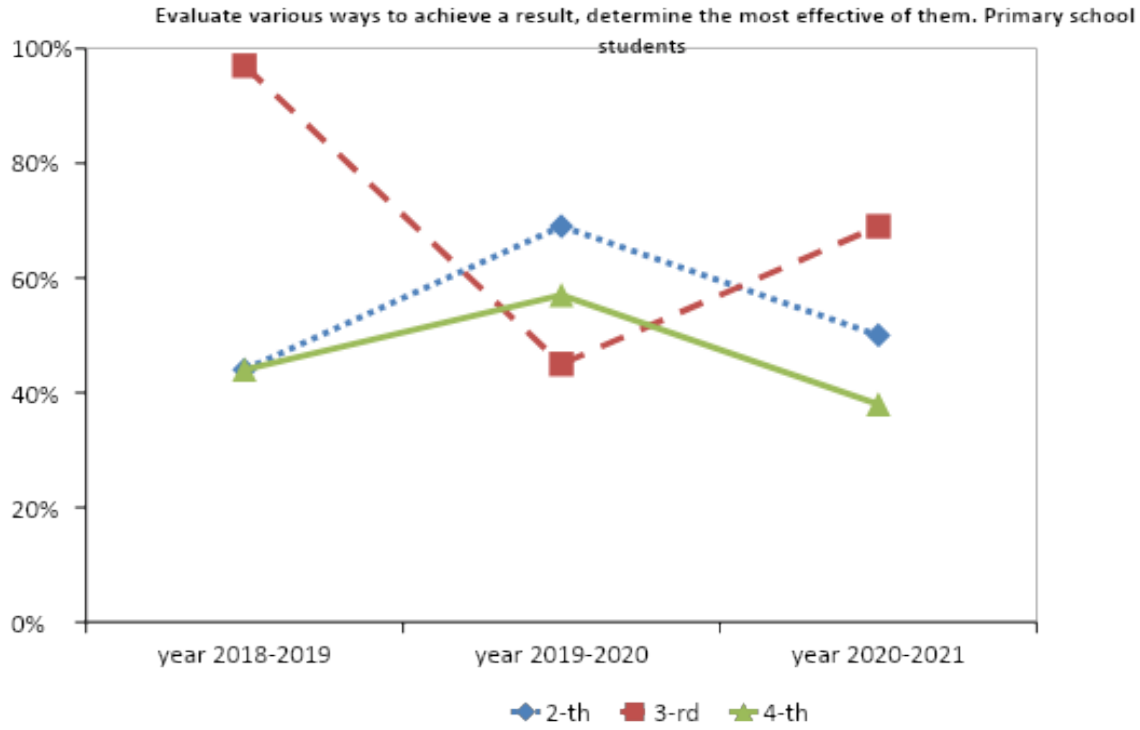

Fig. 4. The ability to evaluate different ways of achieving a result and select the most effective one

3.1.4. Criterion 4. Ability to identify reasons for success/failure and correct learning actions to overcome failures. The diagnostic results showed positive dynamics in the 2nd grades after the online learning phase, and the results became significantly lower in the 3rd and 4th grades (Table 5, Fig. 5):

– In the 2nd grade during the 2018–2019 academic year – 83%; in 2019–2020 – 61%; in 2020–2021, after the online learning phase – 70%.

– In the 3rd grade during the 2018–2019 academic year, no data for this criterion; in 2019–2020 – 73%; in 2020–2021, after the online learning phase – 48%.

– In the 4th grade during the 2018–2019 academic year – 79%; in 2019–2020 – 76%; in 2020–2021, after the online learning phase, 62%.

For 3rd and 4th grade students who had not mastered this skill in the online learning environment, negative dynamics were noted. This could be due to a lack of organization of the appropriate activity on the part of the teacher. Teachers probably did not know how to organize such work under online learning conditions and did not encourage students to correct their actions. In addition, repeated assessment procedures after the students' corrections are associated with a significant amount of time the teachers have to spend.

The improvement of the results in the 2nd grade can be explained by the spontaneous acquisition of skills in an online learning environment.

Table 5

Ability to identify reasons for success/failure, and correct learning actions to overcome failures

Academic year/School grade	2-nd	3-rd	4-th
year 2018–2019	83%	–	79%
year 2019–2020	61%	73%	76%
year 2020–2021	70%	48%	62%

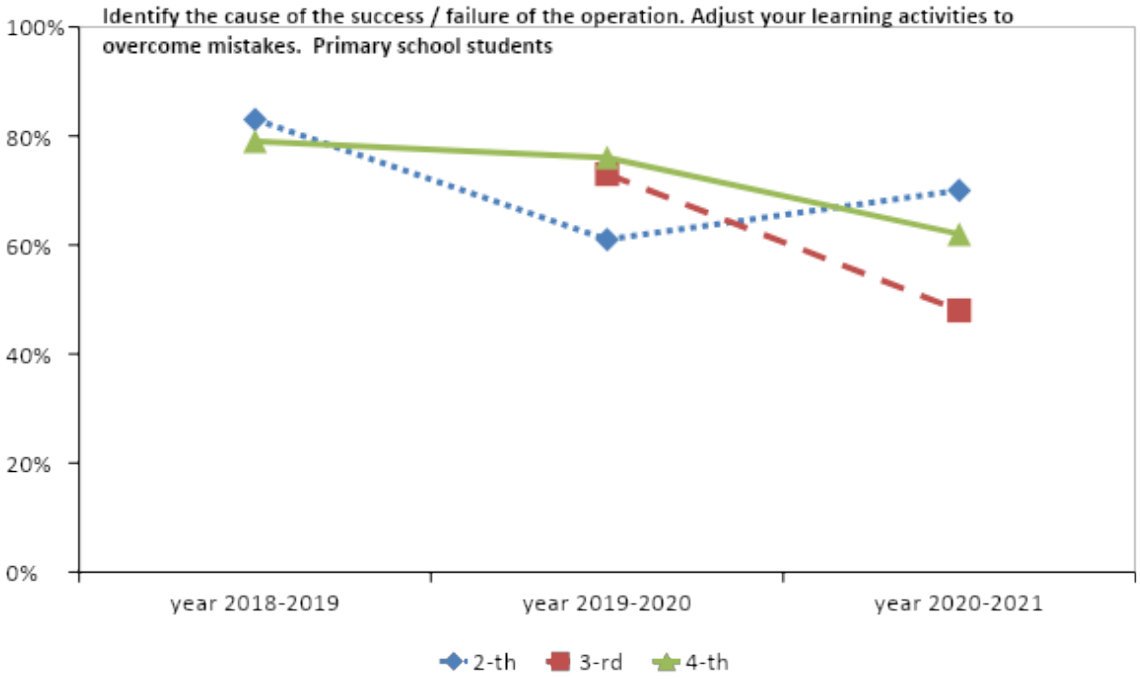

Fig. 5. Ability to identify reasons for success/failure and correct learning actions to overcome failures

3.1.5. Criterion 5. Ability to control the results and process of the activity. Diagnostics aimed to assess the ability to control outcomes in 2nd grade, the ability to control outcomes and processes in 3rd grade, and the ability to control processes in 4th grade. Diagnostic results showed positive dynamics in 3rd and 4th grade after online learning, while results in 2nd grade became worse (Table 6, Fig. 6):

– In the 2nd grade during the 2018–2019 academic year – 75%; in the 2019–2020 academic year – 68%; in the 2020–2021 academic year, after the online learning phase – 50%.

– In the 3rd grade during the 2018–2019 academic year – 53%; in 2019–2020 – 31%; in 2020–2021, after the online learning phase – 46%.

– In the 4th grade during the 2018–2019 academic year – 43%; in 2019–2020 – 56%; in 2020–2021, after the online learning phase – 73%.

A negative dynamic was found in the 2nd grade students who did not master the control skill in online learning conditions. This could be due to an insufficient number of reference standards for comparison, the lack of opportunities for mutual control and comparison to see different results in solving the same task, or the predominance of external control by the teacher.

The better results in grades 3 and 4 can be explained by the earlier mastery of self-monitoring mechanisms in face-to-face learning.

Table 6

Ability to control the results and process of the activity

Academic year/School grade	2-nd	3-rd	4-th
year 2018–2019	75%	53%	43%
year 2019–2020	68%	31%	56%
year 2020–2021	50%	46%	73%

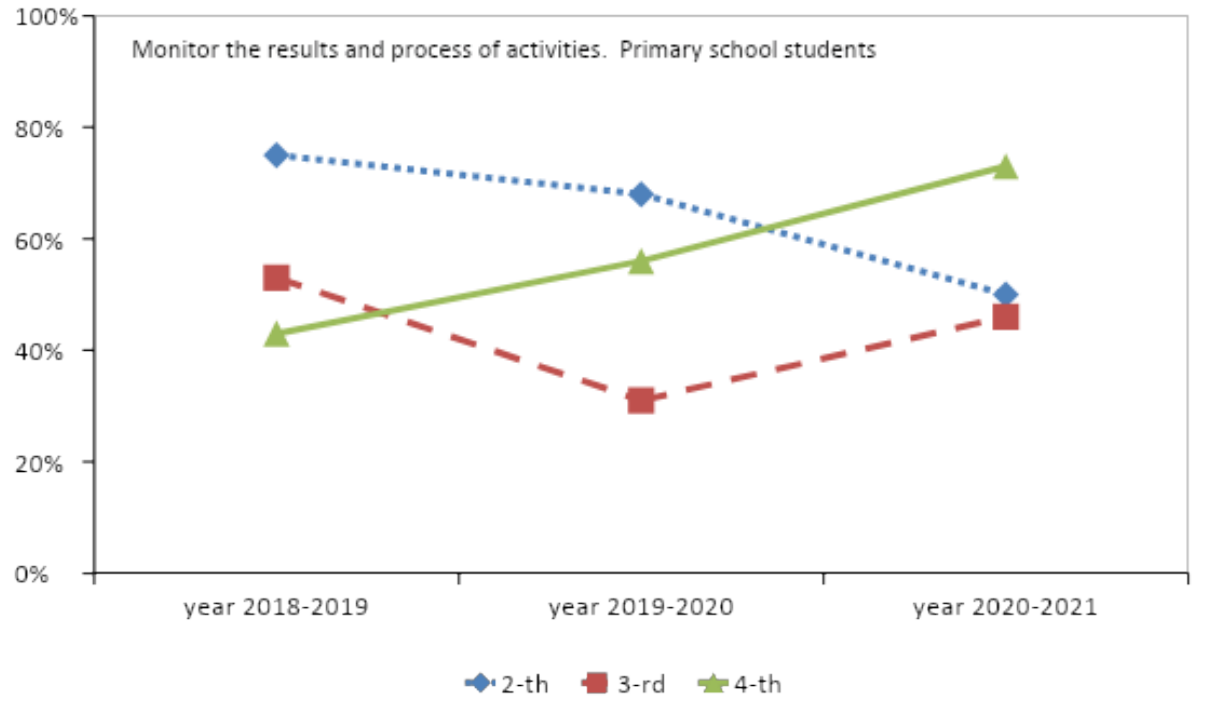

Fig. 6. Ability to control the results and process of the activity

3.2. A study of elementary school teachers' occupational advantages and disadvantages during the Covid-19 pandemic revealed the following.

The study was conducted using a partially structured self-assessment questionnaire. Let us share the results of primary school teachers' responses to the following questions:

– What proved to be the greatest difficulty in shaping primary school students' self-directed skills in an online learning environment?

– How has your view of the process of building self-directed skills changed as a result of the transition to online learning?

– What skills related to shaping self-directed skills are primarily needed by teachers under the new conditions?

3.2.1. Responses to the question "*What proved to be the greatest difficulty in shaping primary school students' self-directed skills in an online learning environment?*" indicated that planning skills presented the greatest difficulty for both the student and the teacher.

Here is an example of a problem of self-organization mentioned by the teachers: "The most difficult thing in the beginning, I think, was planning the daily schedule, because the children did not send their assignments on time, were confused about deadlines, and had problems with the platforms we use. Now it is much more organized."

The teachers mentioned the importance of developing planning skills in younger students, "Many children cannot plan their activities. As a result, they have trouble planning ways to solve tasks, outlining the steps to achieve a result, and creating a sequence of selected steps."

One particularly noteworthy response illustrates the relevance of planning skills among students in online learning: "Developing planning skills is the most difficult, but it is also the strongest!"

Several teachers provided responses that combined the relevance of planning skills and self-direction/self-assessment: "planning and assessing the learning task," "ability to plan and control the learning task," and "planning and control."

Teachers also pointed out the need to train students to find mistakes in their work and correct them: "The ability to correct learning actions to overcome mistakes."

One teacher pointed out the difficulty and importance of the initial phase in working with students – goal setting: "Understand the learning task, plan actions."

3.2.2. Responses to the question "*How has your view of the process of building self-directed skills changed as a result of the transition to online learning?*" indicated that students were confronted with the need for self-organization as they transitioned to online learning.

The analysis of the responses made it possible to classify all the teachers' statements into clusters showing the difficulties and advantages of online learning for the formation of regulative skills in younger students. Table 7 shows the result of the cluster analysis of the teachers' statements:

(a) clustering of difficulties in organizing online learning and teachers' doubts;

(b) clustering of the advantages of online learning for the formation of self-directed skills of primary school students.

Table 7

Challenges in an online learning environment

Difficulties	Some of the examples of teacher responses
Difficulties of students: How students' lives have changed, how students have changed? (7 responses)	"The children found themselves in a situation where they had to independently understand the learning task, plan their actions, control them, evaluate them, and find ways to correct mistakes. It became very clear whether the children understood the task or not." "I think the kids are more organized now. With the transition to online learning, they have to do their homework systematically and expect to plan their day, send out assignments, monitor themselves, and set goals, such as 'What am I going to do today?'" "The amount of independent work has increased. The sense of personal responsibility for the outcome has increased; children need to plan their learning activities, organize themselves, and monitor and evaluate their work. Some children (2nd grade) do not wait for adults, do not wait to be controlled, make their own decisions, submit their work, and ask questions about the material." "The children have become more independent; you can observe an individual approach to their work; they have learned to plan their activities during the day."
The challenges for teachers: what changes should be introduced? (10 responses)	"It is necessary to plan activities more precisely in order to keep up with the times." "The process of forming universal learning activities has slowed down in children in the first grade, so it is better not to use online learning in the early stages of forming self-directed skills." "It is difficult to develop universal learning activities in online learning because the main work is focused on mastering the subject material." "It is very important to work consistently on building self-directed skills from the first days of school." "The learning process has become more complex. It has become more individualized." "It is difficult to plan activities for the individual formation of universal learning activities (requires a lot of teacher time)." "The ability to solve problems that arise in the process of online learning."

End of Table 7

Difficulties	Some of the examples of teacher responses
Teachers' concerns: Losing teachers' monitoring and evaluation tools (14 responses)	"The formation of self-directed skills has become more complicated in some cases because it is impossible to be sure that children will complete all tasks independently." "Not all parents understand how to help their children properly, and they take on the role of the student. Therefore, it is difficult for the teacher to assess this process objectively." "Excessive 'help' from parents. If the adults do not give children the opportunity to take responsibility for the learning outcomes (at least partially)." "In my opinion, it is most difficult to teach children self-discipline and responsibility. When you can control children when only teaching online, with no school routine, then it is the most difficult to motivate the primary school children to do the tasks well." "In an online learning environment, it is more difficult to ensure self-control and objectivity of control over some steps of the work and the results obtained." "Correction problems: it is difficult to make necessary additions and corrections to the plan when the standard, the actual action, and the result differ." "Inability to track whether children can correct their actions in case of failure."
What are the challenges in forming and diagnosing self-directed skills? (7 responses)	"It is quite difficult to follow the process of forming self-directed skills." "Basically, performance tasks aim at mastering the subject of the lesson. There are time constraints and conditions for performing tasks of metadisciplinary nature."

Teachers evaluated the benefits of forming self-directed skills: hidden deficits became apparent, career development prospects became visible, and new skills were mastered (Table 8)

Table 8

The benefits of online learning for the formation of self-directed skills in primary school students

Benefits	Examples of teachers' responses
Previously hidden deficits came to light (9 responses)	"Problem areas have been uncovered that need to be worked on." "Self-directed skills help to foster children's independence under online learning conditions." "I have become even more confident in the importance of self-directed skills; the students whose self-directed skills were trained to an appropriate degree remained successful." "I have always considered the formation of self-directed skills an essential learning process. This situation clearly demonstrates the importance of self-directed skills." "For successful learning in an online learning environment, students must have the ability to organize their learning activities independently. For this purpose, they need to train self-directed skills, i.e., students should be able to set a task correctly, assess their knowledge and skills appropriately, find the easiest way to solve the task." "It is possible to track which of the students clearly plan their activities when performing tasks."
New perspectives (2 responses)	"The new role of teachers: they are entrusted with functions such as coordinating the cognitive process, adapting the course, advising on the development of an individual curriculum, and managing learning projects." "Attention to teachers' self-directed skills should be systematic, integrating tasks for their training into the online learning mode."
New competencies mastered (1 response)	"Online learning raised the question of independent, successful acquisition of new knowledge and competencies (the ability to learn). We had to look for other means, learning methods, and methodological techniques."

3.2.3. Replies to the question, "*What skills related to shaping self-directed skills are primarily needed by teachers under the new conditions?*" revealed the actual competencies of teachers. The need to acquire new skills was identified by 47% of teachers (Table 9).

Table 9

Relevant self-directed skills in an online learning environment

Examples of teacher responses	
Student skills	Teacher skills
Ability to set or accept a goal or learning objective	
"The ability to form learning skills in students, that is, to accept the learning task, plan actions, and carry out the task according to the plan." "The retention of the learning task throughout the lesson." "Understanding the learning goal."	"Setting the right goals and then helping and guiding the students." "Setting a specific goal."
Ability to plan	
"The ability to learn, that is, to plan actions, to perform tasks according to a plan." "To teach how to plan and correct the plan." "To plan ways to solve a learning task. To outline procedures that lead to a result; build a sequence of selected procedures."	"Planning and selecting instructional materials." "Consistent Planning" "The ability to properly organize the stages of acquiring material in an online learning environment." "Learning how to plan a lesson in a new way."
Monitoring and evaluation skills	
"Training of students' self-activity, self-monitoring of activities and results" "Self-direction" "Ability to control and evaluate the results and the process of the activity."	"New forms of pedagogical control" "Remote forms of control and evaluation of student outcomes" "It is important to help students and their parents organize their own learning activities." "A tool to track intermediate actions, not just the end result" "The ability to organize monitoring and evaluation activities and reflection"
Ability to determine the causes of failures and correct activities	
"Ability to determine the reasons for success/failure of activities." "Be able to correct learning activities to overcome failures"; "To teach how to plan and correct."	"To adapt actions to the current situation"; "Teachers must now organize the learning process not only as a process of mastering the system of knowledge, skills, and competencies that form the instrumental basis of students' learning activities but also as a process of personal development, acquisition of spiritual, moral, social, family and other values"; "Ability to organize work quickly under new conditions." "Ability to analyze one's own teaching activity and students' learning activity."
The ability to evaluate different ways to achieve an outcome to determine the most effective of them	The ability to evaluate different ways to achieve an outcome to determine the most effective of them
"Looking for different ways to achieve results."	"Anticipating children's difficulties in independent learning." "The ability to anticipate the outcome, including the level of knowledge absorption and its temporal characteristics." "Prediction of possible situations." "The ability to select methodological methods for designing self-directed universal learning activities." "The ability to plan and use different types and forms of work with children to develop self-directed skills, and to identify and systematize the most effective of them."

4. Discussion

Thus, the following facts and trends can be derived from the results of the study:

– Primary school teachers were not prepared for the online learning environment;

– Teachers' time commitment increased. This is due not only to the need to master new teaching technologies but also to the peculiarities of teachers' self-regulation in the new conditions

– the need for special work on the formation of students' self-directed skills was highlighted

– The following groups of students' self-directed skills essential for online learning were identified: Planning skills, self-control and self-assessment, selection of effective courses of action;

– The training problems related to the teacher's assessment activity were identified: formation of students' assessment skills, use of automated external assessment and monitoring tools, formation of students' self-assessment and peer assessment skills in the digital learning environment.

Some trends can be outlined, and the following hypotheses are offered for discussion:

In the era of online learning, there may be differences in assessing students' self-directed skills in solving learning tasks (primary literacy) and practical tasks (functional literacy). Therefore, it is necessary to investigate the role of self-directed skills in forming functional literacy.

The issue of teachers' self-directed skills as a component of teachers' professional competence was also recognized in the era of online learning.

5. Conclusion

Thus, the independent assessment of self-directed skills in online teaching and learning presented in this publication allows us to identify the need for changes to educational programs in pedagogical fields to improve the quality of education for current and future teachers.

Such changes can be initiated by federal and state executive agencies, university departments, and educational organizations – employers.

Independent evaluation can promote changes in teacher education that may include the following relevant aspects:

– Methods of teaching subjects

– The mastery of information technologies

– The mastery of methods for teaching self-directed skills to primary school students

– The mastery of digital tools for planning, monitoring, evaluating, and selecting effective courses of action for students.

We can assume that acquiring appropriate skills will optimize teachers' time, organize constructive interaction between the school and students' families, and create the conditions for forming the self-directed skills required by educational standards in primary school students.

Teacher training can be provided through professional development programs. Changes in the educational program of higher education of the pedagogical profile can be made through specialized modules of educational programs, internship programs, electives, and programs to form digital skills.

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Egorov K.B., Candidate of Historical Sciences, Associate Professor, Rector of the Perm State Humanitarian Pedagogical University (ul. Sibirskaya, 24, Perm, Russian Federation, 614990).
E-mail: egorov@pspu.ru

Zakharova V.A., Candidate of Pedagogical Sciences, Associate Professor of the Department of Theory and Technology of Teaching and Upbringing of Younger Schoolchildren, Perm State Humanitarian Pedagogical University, Head of the Center for Independent Assessment of the Quality of Education (ul. Sibirskaya, 24, Perm, Russian Federation, 614990).
E-mail: zaharova_va@pspu.ru