

Professional Development of Participants in the Educational Process for Working With Students of an Inclusive Group on an Integrative Basis

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The article analyses the conduct of training seminars for pedagogical specialists. Methodological features of the introduction of inclusive education based on integration in the study of natural sciences and special education are shown. The paper also presents statistical data from a survey of teachers working in inclusive classrooms with students with special educational needs. Such methods are aimed at introducing innovative work in inclusive groups of educational. The proposed measures make it possible to form the subject competence of teachers of an educational institution and contribute to improving the communication process of teachers working in an inclusive classroom. The results of the study show the importance of conducting such training seminars, the tasks of which are designed to familiarise teachers with the latest methods and technologies that will contribute to better assimilation of the knowledge system by students with special educational needs and the ability to apply them in the process of learning and practical activities.

Keywords: educational process and its participants, teachers, students with SEN, training seminar, competencies, inclusion, STREAM-items

INTRODUCTION

Modern Ukrainian schools are filled with ideas of pedagogical innovations that are designed to orient the educational process to results and the acquisition of the most important competencies by students, to organise the educational process in such a way as to maximise the establishment of equal, partnership relations between all participants in this process (Davidenko, 2015).

It is generally known that today it is no longer enough for students to simply accumulate a certain amount of knowledge: the ability to use it in everyday life is necessary; the ability to independently acquire, reflect and use the information received (Nikolaev, 2019). Most studies in the field of psychology show that it is extremely important for a person to be able to “evaluate” the information received, to be able to check its validity (Bodnar, 2019). It is important that the student understands the acquired knowledge more as “I know how” than as “I know what”. At the same time, the question arises about what part of knowledge students have to learn “a priori”, and what knowledge they can find and assimilate independently, including through the implementation of theoretical information-referential and experimental research direction educational projects.

This is also emphasised in the new physics curriculum: students’ assimilation of the system of physical knowledge and the ability to apply it in the process of cognition and in practical activities is one of the main tasks of teaching physics in secondary schools (Collegium of the Ministry of Education and Science: Physics (grades 7-9, 2017). The final result of teaching a basic school mathematics course is the formed certain competencies, such as the student’s ability to apply their knowledge in educational and real-life situations, fully participate in the life of society, and be responsible for their own actions (Collegium of the Ministry of Education and Science: Mathematics (grades 5-9), 2017).

According to the Law “On education” (2017), Article 3 “Right to Education” states that equal conditions of access to education should be created in Ukraine for every citizen, in particular for persons with special educational needs (SEN).

Training of teacher assistants is currently underway (Malyshevskaya, 2018; Chupakhina, 2019; Hnatyuk et al., 2018), but unfortunately, very little attention is paid to how a subject teacher should develop an individual training plan for a child with special educational needs, taking into account their physical and psychophysiological capabilities and educational features, which indicates a low level of joint interaction between the teacher, teacher’s assistant, psychologist, and parents during the educational process.

The purpose of the article is to establish and develop conditions and criteria for organising advanced training courses for specialists in the field of school education working in inclusive classrooms, based on the analysis of scientific and methodological sources (Horishna, 2019; Kirik, 2019; Kolupaeva and Taranchenko, 2016; Poroshenko, 2019; Shestopal, 2019) and empirical research material.

The task of the article is to establish indicators of the effectiveness of conducting training seminars on the main strategy of interaction with students with special educational needs in the framework of training specialists to work in educational institutions and the level of formation of personal professional skills of subject teachers in working with students with SEN.

MATERIALS AND METHODS

As part of the study, monitoring and surveys were conducted among teachers of physics, mathematics, computer science, teacher assistants and psychologists of educational institutions. 70 respondents expressed a desire to take part in the survey at the beginning and after completing the training seminars. The survey was conducted among teachers of general secondary education institutions (in 2018 in the city of Uman, 25 participants took part in the survey (hereinafter respondent 1), in 2020 in the city of Poltava, 25 participants took part in the survey (hereinafter respondent 2) and in 2021 in the Gorodetska Comprehensive School of I-III levels of the Palanka village council of the Uman District, 20 participants took part in the survey (hereinafter respondent 3)), namely teachers, teacher assistants, psychologists and other participants in the educational process (public organisation World of Competencies, 2021):

The study consisted of the following stages:

1. Conducting monitoring, individual interviews and surveys among employees of educational institutions, on working with children with SEN.
2. At the second stage of the study, a team of specialists was invited to develop training seminars and methodological recommendations, which were conducted within the framework of the scientific and methodological seminar “Basic strategies for interaction with children with special educational needs in the framework of training specialists to work in educational institutions”.
3. Conducting a survey of participants to determine the topics of subsequent training seminars.
4. Conducting a scientific and methodological seminar in pre-defined areas of training seminars.
5. To better understand the issues in the implementation and operation of subsequent training seminars on the organisation of the educational process in an inclusive classroom, a questionnaire was developed for conducting partially structured interviews before and after they are conducted.
6. After the training seminar, a survey was proposed among the participants.
7. Processing of results and selection of topics for subsequent training seminars.
8. At this stage of the study, a team of specialists was invited to develop training seminars and methodological recommendations, which were then held in 2018, 2020 and 2021.
9. Conducting training seminars in 2018, 2020 and 2021 with specialists and teachers of educational institutions in Uman and the Uman region and in Poltava.
10. Processing the results of the survey and improving the methodology of teaching children with SEN to meet the needs of participants in training seminars.

RESULTS AND DISCUSSION

At the first stage of the study, 45 employees of educational institutions in the city of Uman and Uman, Hristinovskiy, Mankovsky districts of the Cherkasy region were interviewed.

At the second stage of the study, a team of specialists was invited to develop training seminars and methodological recommendations for working with students with SEN. At the third stage of the research, a number of training seminars were conducted in the following areas: “Teaching tolerance at school. Working with parents”, “Intellectual disability. Down syndrome”, “autism spectrum disorders”, “Developmental motor coordination disorder, cerebral palsy (CP)”, “Issues of sex education in working with children with special educational needs”, “Organisation of conditions for inclusive education (adaptation) at school”.

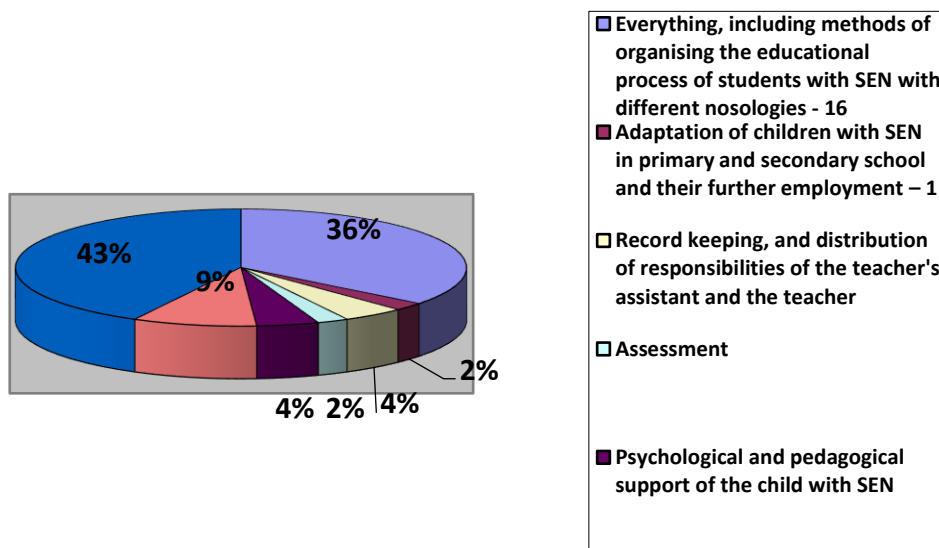
After conducting an educational and methodical seminar “basic strategies for interaction with children with special educational needs in the framework of training specialists to work in educational institutions” and a survey of participants, the importance of conducting training seminars on the following topics were determined: “Dividing the classroom into working areas for learning and conducting extracurricular work on STREAM-subjects with school inclusive groups of students”, “organising and conducting training on STREAM-subjects for an inclusive group of students on an integrative basis”.

These training seminars were held within the framework of the II All-Ukrainian scientific and practical seminar “Main Strategies for Interaction With a Child With Special Educational Needs in the Framework of Training Specialists to Work in Educational Institutions: Teaching Stream-Subjects in Inclusive School Groups: An Innovative Approach”, which was held on March 29-30, 2018 on the basis of the Pavlo Tychyna Uman State Pedagogical University with the participation of the faculties of Physics, Mathematics and Computer Science, Preschool and Special Education and public organisations “Odesa regional organisation of medical, psychological and pedagogical assistance “Healthy Society” and “World of Competencies”. The methodology presented at the training seminar on organising and conducting extracurricular classes in STREAM-subjects for an inclusive group of students on an integrative basis is described in detail in the publication (Hnatyuk et al., 2018).

Developing topics, it was taken into account that during the survey, teachers expressed the wish to address the issue of organising the educational process with students with SEN, considering the diverse

psychological characteristics in the inclusive classroom; psychological and pedagogical support of children with SEN; maintaining documentation in the inclusive classroom and the distribution of responsibilities of the teacher's assistant and teacher; adaptation of students with SEN in the middle and high school; assessment of children with SEN; organisation of the educational process with hard of hearing students (Katolyk and Kovalchuk, 2021; Starova, 2021).

FIGURE 1
RESULTS OF A SURVEY OF TEACHERS BEFORE THE FORMULATION OF THE TOPIC
OF TRAINING SEMINARS



After analysing the questions of the questionnaire, the results shown in Figure 1 were obtained. At the next stage of the study, 25 participants of the scientific and methodological seminar from the city of Uman as well as Uman, Khristinovsky, Mankovsky districts of Cherkasy region were interviewed:

The questionnaire for conducting a semi-structured interview before training seminars included the following questions:

1. Are there students with SEN in the classes you work with? If so, how many?
2. What challenges did you face while working in an inclusive classroom?
3. Were meetings, workshops, trainings, scientific-practical conferences, internships in preparation for work in inclusive classrooms held for subject teachers?
4. Are you familiar with the psychological characteristics of students with SEN?
5. What kind of help would you like to receive to successfully organise the educational process in inclusive classrooms?
6. At what level is the educational and methodological support for teaching students with SEN?
7. What do you expect from conducting training seminars?
8. What questions about teaching children with SEN would you like to discuss?
9. Do you know how to teach in inclusive classrooms based on partnership principles?
10. Determine your own level (high, medium, low) of professional skills in teaching inclusive classrooms) (please underline).
11. What category of students do you think should be paid attention to?
12. Do you carry out appropriate work with parents of students with SEN?

The questionnaire after the semi-structured interview after the training seminars included the following questions:

1. Have you deepened your knowledge and practical skills on the topic of training seminars?

2. Will the knowledge gained help you in further work with students with SEN?
3. Will the acquired knowledge help you in further work with parents of children studying in an inclusive classroom?
4. Will this knowledge help you in further work with students in an inclusive classroom?
5. Do you find it useful to hold such training seminars, scientific and practical conferences, etc.?
6. Have you received any assistance in organising the educational process in an inclusive classroom?
7. Have your expectations from the conducted training seminars been met?
8. What questions would you like to address during the next training seminars?
9. Will you be able to implement the proposed methods of teaching students in inclusive classrooms based on the results of training seminars?
10. Determine your own level (high, medium, low) of professional skills in teaching in inclusive classrooms after attending training seminars (please underline).
11. What category of students do you think should be addressed at the following training seminars?
12. Which software are you most interested in working with (GeoGebra; PHet simulations, canva, LearningApps)?

We processed the results of an empirical study in comparison for 2018, 2020 and 2021.

TABLE 1
RESULTS OF THE SURVEY ON QUESTION 1-4, 9, 11 BEFORE CONDUCTING TRAINING SEMINARS, AS A PERCENTAGE (%)

No.	Questionnaire questions	Respondent 1				Respondent 2				Respondent 3			
		Yes %	No %	Partially %	Did not respond %	Yes %	No %	Partially %	Did not respond %	Yes %	No %	Partially %	Did not respond %
1	Are there students with SEN in the classes you work with? If so, how many?	64	8	-	28	64	12	0	24	60	40	0	0
2	Were meetings, workshops, trainings, scientific-practical conferences, internships in preparation for work in inclusive classrooms held for subject teachers?	36	24	12	28	48	28	0	24	70	30	0	0
4	Are you familiar with the psychological characteristics of students with SEN?	52	12	30	6	24	24	28	24	65	5	30	0

9	Do you know how to teach in inclusive classrooms based on partnership principles?	4	48	20	28	4	60	12	24	20	20	60	0
11	12. Do you carry out appropriate work with parents of children with SEN?	60	8	4	28	64	4	8	24	58	26	16	0

TABLE 2
RESULTS OF THE SURVEY ON QUESTION 1-8 AFTER CONDUCTING TRAINING SEMINARS

No.	Questionnaire questions	Respondent 1				Respondent 2				Respondent 3			
		Yes %	No %	Partially %	Did not respond %	Yes %	No %	Partially %	Did not respond %	Yes %	No %	Partially %	Did not respond %
1	Have you deepened your knowledge and practical skills on the topic of training seminars?	82	0	12	6	88	0	4	8	80	5	15	0
2	Will the knowledge gained help you in further work with children with SEN?	96	0	4	0	92	0	0	8	90	0	10	0
3	Will the acquired knowledge help you in further work with parents of children studying in an inclusive classroom?	88	2	10	0	84	4	4	8	90	0	10	0
4	Will this knowledge help you in further work with students in an inclusive classroom?	96	0	4	0	84	0	8	8	90	0	5	5
5	Do you find it useful to hold such scientific and practical conferences, seminars, trainings, etc.?	100	0	0	0	92	0	0	8	100	0	0	0

6	Have you received assistance in organising the educational process in an inclusive classroom?	84	0	16	9	76	0	8	16	70	0	30	0
7	Have your expectations from the conducted training seminars been met?	82	0	18	0	60	8	20	14	70	0	30	0
8	Will you be able to implement the proposed methods of teaching students in inclusive classrooms based on the results of training seminars?	88	0	8	8	72	0	12	16	70	0	30	0

The respondents were asked to give a short answer to these questions “Yes”, “No”, “Partially”, but some participants did not indicate the answer, so we showed them in the table as such that “Did not respond”.

The analysis shows that the majority of participants indicated that conducting training seminars helped them raise their knowledge about the specifics of working with students with SEN.

After conducting a number of such training seminars, we decided to improve the previous methods of teaching students of general education schools in mathematics and natural sciences and to develop new ones. Thus, O. V. Hnatyuk and T. V. Polishchuk (2018) improved and developed new methodological recommendations on the following topics: “Dividing the classroom into working areas for teaching and conducting the educational process in STREAM-subjects with inclusive groups of students in school”; “organising and conducting training in STREAM-subjects for an inclusive group of students on an integrative basis”; “Organising and conducting extracurricular STREAM-subjects classes for an inclusive group of students on an integrative basis”. The development of new methods consisted in the methodological features (development) of teaching disciplines of natural sciences and mathematics in inclusive classes of basic secondary education.

These methodological developments are aimed at working with students (grades 5-9) with autism spectrum disorders (ASD) and intellectual disability (ID) when studying school subjects of natural sciences and mathematics. They will also be useful for parents of students with SEN when revising educational material at home with their children. In addition to the handout and its production, we proposed to use software in the educational process, namely GeoGebra; PHet simulations, Canva, LearningApps.

We also took into account that a large percentage of respondents in 2018 indicated that they wanted to gain more knowledge about working with students with autism spectrum disorders (ASD). To the first question of the questionnaire, the employees in Uman and Poltava almost equally for all years (in 2018, 2020 – 64% and 2021 – 60%) indicated that they work with students with SEN. However, in Uman number of children with SEN in classes is mostly 1 or 2 students. In contrast to the schools of Poltava, where the number of students with SEN is 2 or more. That is, analysing the answers to this question, it can be seen that the training seminar was attended by an audience that is aimed at training in order to improve their own skills.

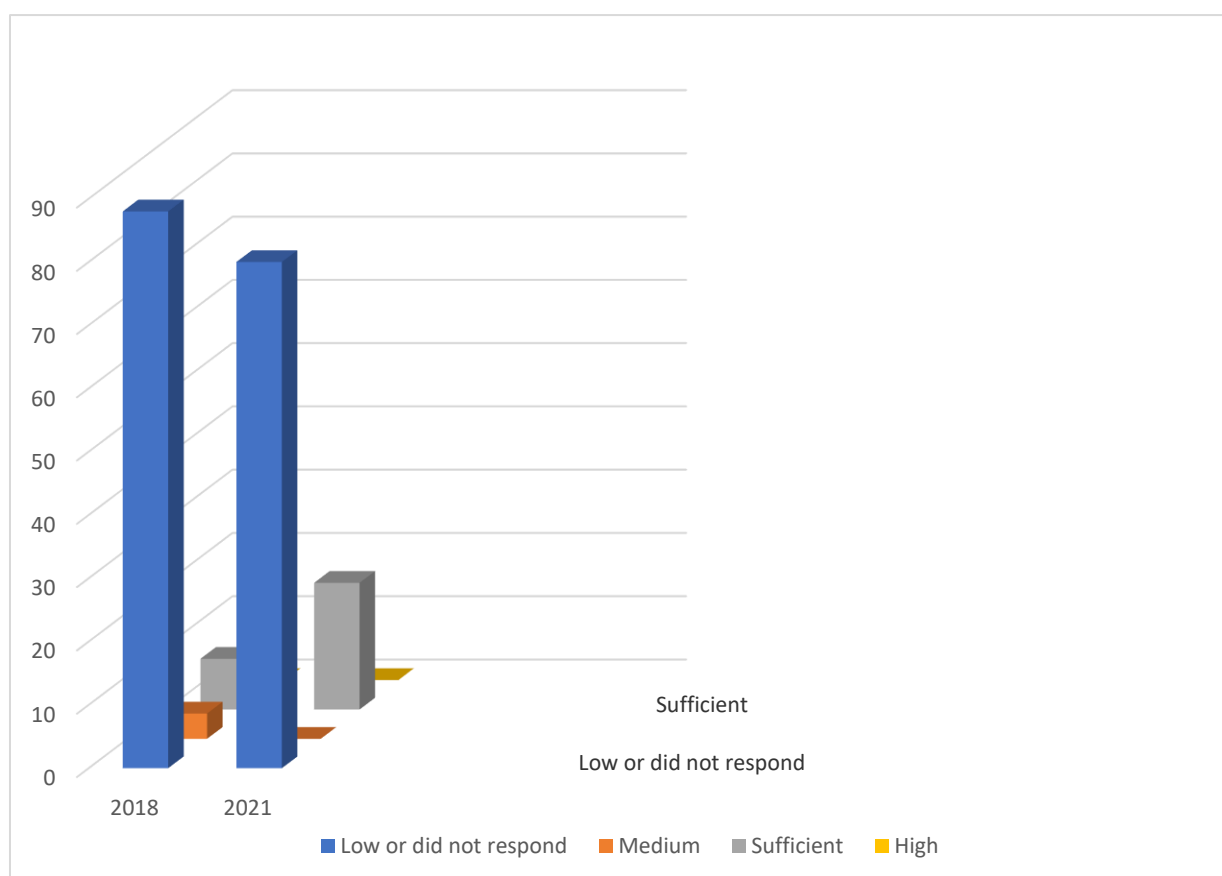
When asked about the need to hold meetings, workshops, trainings, scientific and practical conferences, and internships for subject teachers to prepare for work in inclusive classes, it was found that of these activities they can only attend teacher group meetings. 28% of respondents in 2018, 24% – in 2020 and 30% – in 2021 gave the following answers: “Did not respond” or “No”.

This result indicates a low level of training of subject teachers to work in inclusive classes, that is, that teachers master methods and techniques of working with students with SEN in the process of self-education.

Analysing the question of awareness of the psychological features of the development of students with SEN, the following conclusions can be made: a certain percentage of teachers have knowledge about the psychological characteristics of students with SEN or partially do, but the majority of teachers surveyed have no concept of the specifics of this work or did not give an answer. According to the results of this survey, these indicators were obtained due to the fact that in the 2018 training seminar “Basic Strategies for Interaction With Children With Special Educational Needs in the Framework of Training Specialists to Work in Educational Institutions” was conducted for teachers in the city of Uman.

When asked about the level of educational and methodological support for teaching students with SEN, the answers of respondents in different regions had almost the same result (Figure 2), although in 2021 the medium level increased slightly.

FIGURE 2
LEVEL OF EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR TEACHING STUDENTS WITH SEN (2018-2021)



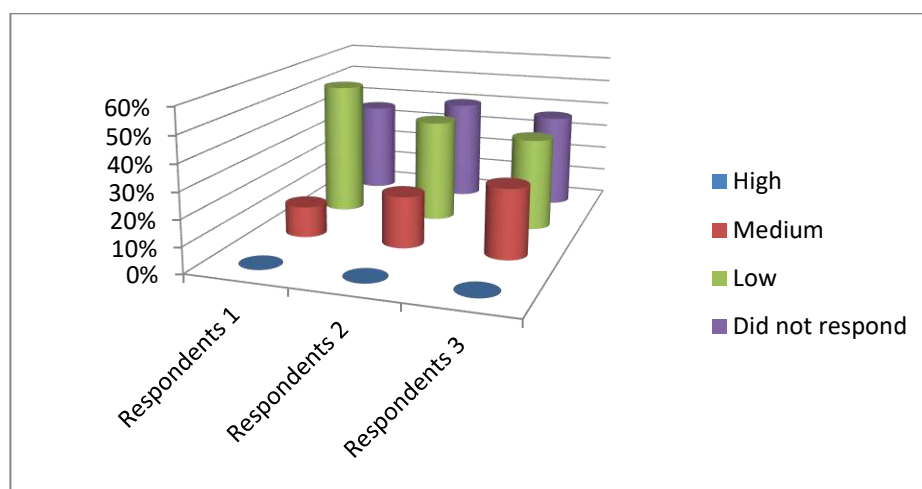
The answers to the question about the level of educational and methodological support for teaching students with SEN were distributed as follows: did not respond or low level - 88%, the medium level - 4% and the sufficient level – 8%. This result may indicate that there were fewer students with SEN in educational institutions in 2018.

When asked about the level of educational and methodological support for teaching students with SEN in 2020, the answers were distributed as follows: did not respond or low level – 80% and sufficient – 20%. This result shows that the educational and methodological support of educational institutions significantly

improved in 2021 compared to 2018, but teachers are not guided by how they can adopt different teaching tools for the category of students with SEN.

The questionnaire included questions on determining one's own level of professional skills formation in the course of working in inclusive classrooms "before" and "after" attending training seminars and the following results were obtained (Figure 3, Figure 4):

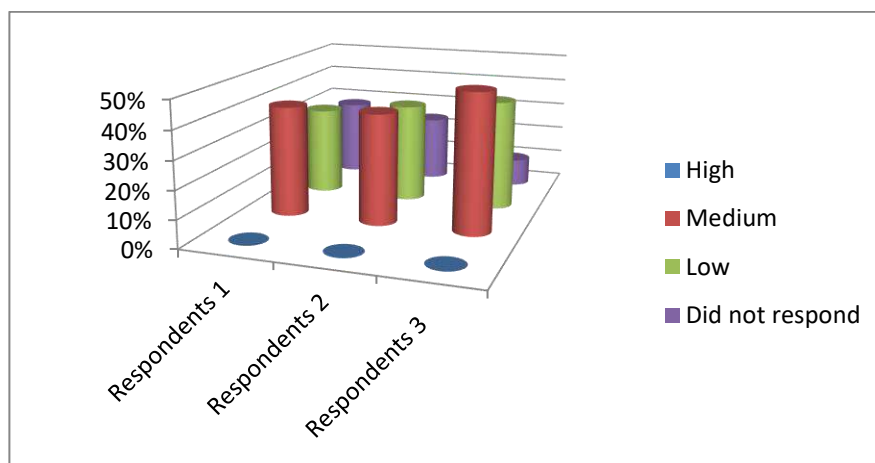
FIGURE 3
PERSONAL LEVEL OF FORMATION OF PROFESSIONAL SKILLS OF TEACHERS IN WORKING WITH STUDENTS WITH SEN BEFORE CONDUCTING TRAINING SEMINARS



Thus, a high indicator was not noted by any respondent; an average indicator is inherent in 6%, 10% and 18%, respectively; a low indicator is inherent in 48%, 30% and 28%, respectively; 46%, 39% and 34% of respondents did not give an answer, respectively.

Teachers in 2018 and 2020 determined their own level of professional skills in teaching in inclusive classes almost equally. However, in 2021, the rate of respondents who did not answer and indicated their level of knowledge as medium decreased significantly, but in all the years no one indicated that they have a high level.

FIGURE 4
PERSONAL LEVEL OF FORMATION OF PROFESSIONAL SKILLS OF TEACHERS IN WORKING WITH STUDENTS WITH SEN AFTER CONDUCTING TRAINING SEMINARS



The results of the survey obtained after conducting training seminars are as follows: respondent 1 high level – 0%, medium – 37%, low – 28%, did not respond – 35%; respondent 2 high level – 0%, medium – 29%, low – 29%, did not respond – 20%; respondent 3 high level – 0%, medium – 40%, low – 34%, did not respond – 9%.

This is a survey in Uman in 2018. Before: before the start of the training seminar, we asked teachers to determine their own level (high, medium, low) of professional skills in teaching in inclusive classes. We received the following result: high – 0 (0%); medium – 12%; low – 52% and did not respond – 36%. After: when asked to determine their own level (high, medium, low) of professional skills in teaching in inclusive classes (groups) after attending the training seminar, we received quite good results: high – 0%, medium – 80%, low – 10%, did not respond – 10%.

This is a survey in Poltava in 2020. Before: the answers to the question about the level of educational and methodological support for teaching students with SEN were distributed as follows: did not respond and low 40% and 40%, respectively, and medium 20%. This result suggests that teachers are not aware of how they can adopt different teaching tools for children with SEN. After: when asked to determine their own level (high, medium, low) of professional skills in teaching in inclusive classes (groups) after attending the training seminar, we received quite good results: high – 16%, medium – 68%, low – 8%, did not respond – 16%.

This is a survey in Uman (Gorodetska Comprehensive School) in 2021. Before: the answers to the question about the level of educational and methodological support for teaching students with SEN were distributed as follows: 37% did not respond, 36% low and 27% medium. This result suggests that teachers are not aware of how they can adopt different teaching tools for children with SEN. After: when asked to determine their own level (high, medium, low) of professional skills in teaching in inclusive classes (groups), after attending the training seminar, we received quite good results: high – 0%, medium – 80%, low – 20%, did not respond – 0%.

The results obtained confirm the urgency and relevance of developing and conducting specialised training seminars for teachers of all levels of general secondary education where inclusion is provided.

CONCLUSION

The results of the analysis of the questionnaire indicate the feasibility of conducting these training seminars with the proposed methods and contribute to the formation of the ability of teachers to apply the acquired subject competencies in the process of cognition and in practice. It is essential that when developing these methods, we take into account the specifics of their use in the organisation of inclusive education, and this work combines knowledge from school subjects of natural sciences and mathematics, methods of teaching these subjects, pedagogy and psychology. The results obtained confirm the urgency and relevance of developing and conducting specialised training seminars for teachers of all levels of general secondary education where inclusive education is provided.

Further research will focus on the specifics of using modern digital learning tools in the education of students with special educational needs in the disciplines of natural sciences and mathematics.

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