Possibilities of didactic engineering in training future specialists

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Abstract. The article discusses the possibilities of didactic engineering in preparing future specialists for independent professional activities. Didactic engineering is a methodology (theory, practice, diagnostics) of organizing activities to solve didactic problems using engineering methods (metric approach, modeling, numerical analysis, use of information and communication technologies). Within the framework of didactic engineering, the tasks of creating new effective didactic systems, teaching aids and diagnosing the quality of training of specialists working in a virtual-real environment are solved. This allows us to outline the path for rapid sustainable professional development of the student, establish key invariant abilities, determine the role of knowledge in solving professional problems, and generally reveal the reasons why some people solve professional problems more successfully than others. The authors, based on the theoretical and practical results of the study, highlight problematic issues in the adaptation of future specialists to independent professional activities and the need to implement innovative approaches. Based on the conducted research, a set of interrelated conditions aimed at increasing the level of readiness of future specialists to carry out innovative professional activities was put forward for discussion. The process of training and education of a student must be organized based on his personal professional interest, personal growth through the construction of a professional development trajectory. Consequently, in systems built within the framework of didactic engineering, it is necessary to introduce the category “complexity of problems”, since in the future this makes it possible to objectively assess the professional potential of a future specialist.

1 Introduction

At present, Russian education has become open and accessible to all students, including those with disabilities, so the process of education individualisation deserves special attention. However, the process of individualisation of education can be a challenge for teachers. They must be able to adapt teaching material and teaching methods to the needs of each student, taking into account their individual characteristics, abilities and interests. This requires flexibility, creative thinking and the ability to develop individual educational programmes.

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from teachers. In this regard, the formation of psychological resilience in future teachers is especially relevant. Psychological resilience helps teachers to cope with the difficulties arising in the individualisation of education and to maintain emotional balance in situations of stress. They must be prepared for failure, be able to adapt to change and find solutions to help each student succeed. As a result, they form the need to improve the skills of pedagogical activity, to self-educate, to improve professional competence.

To date, the issues of formation of psychological stability in future teachers in the process of implementation of tutor support of students with health limitations (HL) are an urgent problem for the pedagogical community. The stated research problem is not sufficiently developed at the theoretical, methodological and practical levels, that is what has marked its relevance.

In connection with the adoption of new educational standards, the introduction of professional standards in the practical activities of teachers, new requirements are imposed on the competences of a competitive specialist, future teacher. This circumstance is caused by globalisation in the socio-cultural and educational space, as well as by the orientation to the importance of application in educational organisations of technologies of tutor support of students with HL, which will meet the orientation of education towards individualisation of learning. The solution of the main tasks of individualisation of modern learning process is promoted by increasing the level of psychological stability in the future specialist.

Based on the analysis of psychological and pedagogical literature, studying the opinions of leading specialists T.A. Kovaleva, E.V. Kuzmina, O.V. Movchan, V.S. Tsilitsky, N.N. Zybareva, etc. [1-4], the main difficulties faced by a teacher in the course of implementation of tutor's professional activity were identified:
- lack of teachers' sustainable motivation and value orientations to the implementation of tutoring activity;
- difficulties in evaluating and adapting educational methods and materials for teaching students with disabilities;
- limited possibilities of access to educational information and materials for development of individual educational programmes;
- difficulties in organising individual work with each student due to the large number of students in a class;
- low motivation of learners with HL in the learning process;
- difficulties in establishing and maintaining effective contact with parents of students with HL;
- the need for continuous professional development and training in the field of special pedagogy and psychology;
- unpreparedness of teachers to carry out educational activities in the conditions of inclusive education;
- inability of future teachers to manage their own emotional state and the state of students with HL, low stress resistance, earlier emotional burnout.

We proceed to the analysis of the concept of "psychological stability of future pedagogues". The ideas about the psychological stability of personality were formed by national psychologists L.I. Bozhovich, L.S. Vygotsky, A.N. Leontiev, S.L. Rubinstein [5, 6]. In the 30s, in general terms, this concept is understood as an equilibrium state of the psyche, preserved by counteracting external and internal factors that try to violate it. Depending on specific conditions, the psyche adjusts to them, forms a certain algorithm by which self-control and self-organisation of behaviour is carried out. Thus, the stability of personality is considered as a person's ability to control their behaviour depending on the existing life circumstances.

In the early 80s of the XX century, K.A. Abdulkhanova-Slavskaya put forward the assumption that psychological stability includes self-esteem, ways of self-knowledge, self-
relationship and self-concept in general. Also, personality stability depends on the type of temperament, emotional stability, extraversion/introversion. Note that the study of personality stability in the opinion of this author is more focused on the internal factors that determine it (motivation, self-relationship, temperament, etc.), and is considered not only as the ability to resist external influences. B.V. Lomova connects psychological stability with the general functional level of basic mental qualities of personality and its professional training, considers it the main component of mental readiness for further professional activity [7].

Thus, psychological stability includes not only self-esteem and self-knowledge, but also self-concept as a whole. It depends on the type of temperament, emotional stability and extraversion/introversion. The study of personality resilience has concentrated on internal factors such as motivation, self-attitude and temperament. Psychological stability is associated with the general functional level of mental qualities of personality and its professional training. It is considered as the main component of mental readiness for further professional activity. Psychological stability of future teachers refers to their ability to cope with various stressful situations and maintain emotional and psychological balance. This stability is important for successful performance of pedagogical work and ensuring effective interaction with students. According to the ideas of domestic psychologists, psychological stability is formed through self-control and self-organisation of behaviour. The personality adapts to conditions, adjusts to them and develops strategies that help it to resist external and internal factors that can disturb the mental balance. Psychological resilience is associated with a number of qualities such as emotional stability, the ability to manage one's emotions, mental flexibility, endurance, self-discipline, adaptability, and others. Such qualities allow teachers to effectively solve problems, adapt to new circumstances, maintain trust and respect from students. However, it should be noted that psychological resilience is a dynamic and evolving concept. It can change depending on various factors, such as family and social support, education, work experience and others. Therefore, taking care of strengthening the psychological stability of future teachers is an important task of pedagogical practice and psychological support.

There is no doubt that in order to organise qualified and highly effective pedagogical activity within the framework of solving the issues of individualisation of educational activity of students with disabilities, the necessary condition is the development of individual educational routes for them. At the same time, the professional training of a teacher who is able and ready to provide tutor support, thus providing an open space for professional, personal and life self-determination of their students, is of great importance.

Tutor training of future teachers at the pedagogical university has a number of advantages. Firstly, training students to use tutor technologies helps them to develop skills of individualisation of education. Tutor methods of work assume an individual approach to each student, which allows the teacher to better take into account their individual needs, peculiarities and level of knowledge. This helps to increase the efficiency of the educational process and provide better quality education. Secondly, tutor training helps future teachers to develop their psychological stability. In work with students and pupils there are often difficult situations that require the ability to control their emotions, the ability to find a way out of conflict situations and make effective decisions. Tutor training helps students to develop these skills and increase their psychological stability. Thirdly, the use of tutor technologies helps to increase cognitive activity and motivation of students. Due to individual approach and use of interactive teaching methods, tutor technologies create conditions for active work of students, their participation in the learning process and interest in gaining knowledge. This affects the quality of learning and contributes to its successful completion. Fourthly, tutor training helps future teachers to implement individualised approaches in teaching. Tutors are in direct contact with students and have the opportunity to better understand their needs and
learning preferences. They are able to adapt teaching material, methods and forms of work according to these individual characteristics. This approach allows the pupil to master the learning material more successfully and achieve the set educational goals.

Summarising, we can conclude that tutor training of future teachers is an actual and necessary part of their education. It helps to develop skills of individualisation of education, to increase psychological stability, to activate students and to implement individualised approaches in teaching. It is important for creation of qualitative and effective educational process.

2 Materials and Methods

Theoretical and methodological analysis of psychological and pedagogical literature and other sources allowed us to reveal that domestic scientists T. M. Kovalyova, N. V. Rybalkina, E. A. Sukhanova, G. P. Shchedrovitsky, S. A. Schennikov, etc. made a great contribution to the development of the scientific problem of comprehension of the institute of tutoring, consideration of the problems of formation of tutor position. [8, 9].

We agree with the opinion of scientists that at the present stage of development of Russian education tutor support is appropriate to consider "as an organisation of educational movement, which is based on the reflexive correlation of its achievements with the needs, aspirations and interests" [8, 9]. Considering from this position the process of formation of psychological stability in future teachers in the implementation of tutor support of students with HL, we believe that it will provide not only a rational approach to meet the necessary educational needs of students with HL in the learning process, but also will allow more effective implementation of adapted basic educational programmes for them at the stages of primary and basic general education.

The experimental work was organised and carried out in the South Ural State Humanitarian-Pedagogical University on the basis of the Faculty of Inclusive and Correctional Education. In order to form psychological readiness of future teachers to tutoring, for effective implementation of individualization of education of students with HL, we have selected diagnostic methods, developed, theoretically substantiated and tested a set of pedagogical conditions for the formation of psychological stability of future teachers in the implementation of tutoring support in educational organisations.

We believe that psychological stability of a future teacher at the implementation of tutor support should be studied using the following criteria: the degree of professional training; the ability to organise his/her activity as a tutor; the level of motivation to improve the quality of professional activity of a future specialist [10-12].

In order to objectively investigate the level of formation of psychological stability in future teachers, we anonymously conducted a questionnaire survey among 4th course students, in which 44 people took part. We guaranteed the confidentiality of the data and used them only for research purposes. The questionnaire was voluntary, students had the opportunity to refuse to participate.

The questionnaire consisted of 35 questions, each of which offered students to choose a certain answer option or to give a score on a scale. Statistical data processing was used to analyse the results.

The first component - motivation to organise professional activity - was assessed by asking students about the extent to which they had formed goals and motivation in the professional sphere, their interest in learning activities and opportunities for personal growth. The second component - the ability to create a situation of success and build co-operation in a children’s team - was assessed through questions about the ability to work in a team, establish positive contact with children, resolve conflicts, make decisions and achieve goals. The third component - tolerance in a multicultural youth environment - was assessed through
questions about students' readiness to work with children from different cultures and nationalities, including those of different ethnic backgrounds, their attitude to differences in culture and religion, and their ability to accept other people without prejudice.

After collecting all the answers, we calculated average values for each component and analysed the data. The obtained results allowed us to formulate conclusions about the level of students' psychological stability, as well as to identify the peculiarities of their development within the educational process. These results were the basis for the development of special programmes and techniques aimed at strengthening the psychological stability of future teachers and preparing them for tutor support in the conditions of modern educational space, characterised by many problems and challenges.

To assess the motivation for the organisation of professional activity, we offered students to estimate how much it is important for them to work with children, to carry out their development, to make positive changes in the educational environment, to develop as a professional, to receive recognition and respect, to have a stable and highly paid workplace, to be able to combine work with personal life, to be creative. To assess the ability to create a situation of success and build co-operation in a children's team, we suggested that students assess how important their skills are: to maintain a positive atmosphere in the group, to help children achieve success, to interact with parents and colleagues, to resolve conflicts and obstacles, to apply individual approaches to each child. To assess tolerance in a multicultural youth environment, we asked students to rate how important it is for them to: respect and accept differences in culture and nationality, be open to new ideas, be able to adapt to changes in the environment, understand and empathise with other people, and participate in the learning process and social activities.

For each question, students were asked to rate the importance on a 10-point scale, where 1 is "not important" and 10 is "very important". We used the mean values of assessments for each component and the total sum of scores to determine the level of formation of psychological resilience in students. Further, we conducted statistical analysis of the obtained data to identify general trends and differences between students.

3 Results

We will analyse the obtained data after conducting a questionnaire among students in the framework of the experimental work. The total final calculation of the number of points allowed us to differentiate the results of the questionnaire into three levels: high - 26 points and more; average - 18-25 points; respectively, low - up to 17 points.

So, out of 44 people participating in the questionnaire, 5% (2 people) showed a high level in the formation of their psychological stability. This indicates that these respondents have the ability to effectively cope with stress, adapt to changing situations and maintain psychological balance. Psychological resilience is an important aspect of psychological well-being and can be a further basis for further personal development. 69% (30 people) of the subjects showed an average level of psychological stability. This indicates that most of the studied students have a sufficient level of psychological resilience, which allows them to cope with everyday stressful situations and maintain emotional balance. The average level of psychological resilience is normal and quite acceptable for most people. However, this group of participants is characterised by doubt in their chosen profession. As a recommendation they were offered to develop and improve their professional skills in order to form psychological stability and further effective organisation of tutor's activity. 26% (12 people) of respondents showed a low level of psychological stability formation. Such problems as low self-confidence, inability to cope effectively with difficulties, low motivation and purposefulness, as well as difficulties in taking responsibility for their actions are characteristic of such participants of the questionnaire. To improve their psychological...
resilience, it is recommended to work on developing self-esteem and self-acceptance, improve coping skills, and actively use self-regulation techniques and stress coping strategies. In addition, it is important to help them identify their professional goals and motivations and offer support and encouragement in achieving them.

The study found that future teachers showed professional interest in the tutor's activity and recognised the importance of forming their own psychological resilience in the current conditions of the Russian education system. They realised the necessity to be psychologically stable for effective support of individual educational programmes of students with HL. This indicates that future teachers realise the importance of the psychological aspect and are ready to develop their skills in this area in order to be highly qualified specialists. Within the framework of the conducted experimental work, we have revealed the following difficulties hindering the process of formation of psychological stability in future specialists to the tutoring activity:

- inability to apply tutoring technologies and methods of work with students with HL;
- limited time and educational resources for individual approach to each student with HL;
- insufficient self-efficacy and self-confidence of future specialists;
- difficulties in organising cooperation with parents and other specialists, etc.

To successfully overcome these difficulties, it is recommended to conduct additional professional training of future specialists, to increase their motivation and self-efficacy, to provide the necessary resources and support from the administration and colleagues, as well as the active use of information and communication technologies. We believe that for successful formation of the future teacher's ability to apply knowledge about the basics of tutoring activity, for equipping future teachers with technologies of tutor support, etc., it is necessary to create certain pedagogical conditions in the process of students' training.

Scientists consider the concept of "pedagogical conditions" from different points of view and there is no unified approach to this scientific term. For example, the concept of "pedagogical conditions" E. Yu. Y. Nikitina interprets it as "a set of measures aimed at improving the effectiveness of pedagogical activity" [13]. A detailed analysis of the points of view of modern researchers of the definition of the concept of "pedagogical conditions" gives us in turn the opportunity to identify a set of interrelated pedagogical conditions aimed at increasing the level of formation of psychological stability in future teachers. Let's consider them in detail:

1. Building the process of professional training: it includes training of future teachers in the basics of special education and methods of work with students with HL with the use of tutoring technologies. They receive knowledge and skills necessary for effective support of such students. In the process of training students have the opportunity to practice in real conditions, working with students with HL and receiving feedback from experienced teachers.

2. Providing emotional support: future professionals receive psychological support and training in strategies for managing stress and their own emotions. This helps them to remain calm and emotionally stable when working with learners with HL.

3. Professional learning organisation: students should have access to educational programmes, courses and workshops that will help them develop their professional skills. This includes learning how to organise tutor support for learners with HL, updating knowledge about new research and approaches in special education.

4. Obtaining parental support: future educators also need support from parents of HL learners. Parents play an important role in the education process and can assist educators in developing psychological resilience. This may include working with parents, encouraging their active participation in the learning process and sharing their experiences.

5. Availability of educational resources and materials: for effective tutoring of learners with HL, educators need appropriate educational resources and materials. They should be
accessible and suitable for the individual needs of each learner and may include textbooks, online resources, specialised software, etc.
These pedagogical conditions are interrelated and contribute to increasing the level of psychological stability of future teachers when implementing tutoring support for students with HL. They help students to work effectively with such students and successfully cope with the challenges of modern education.

4 Discussion

Modern trends in Russian education set multifunctional tasks for the teacher. Teacher should be highly qualified and prepared to implement educational and upbringing goals, as well as act as a tutor when working with students with learning disabilities. Such a variety of requirements and tasks defined by the Law "On Education in the Russian Federation" makes it necessary to introduce inclusive practice in educational organisations. To provide professional training of future specialists to the organisation of tutoring activity, it is necessary to create certain pedagogical conditions. These pedagogical conditions will help future teachers to effectively prepare for tutoring activity and successfully work with students with HL. Providing professional training and education, emotional support, parental support, and access to appropriate educational resources are key components of successful tutoring [14, 15].

Involvement of senior students in accompanying junior students, in volunteer movement to accompany children with HL, participating in various events of district, city and regional levels, allows them to gain valuable experience that will be useful in their future professional activity. This experience will help them to develop psychological stability and learn to organise educational and upbringing processes in the format of tutoring. We believe that the use of the proposed set of pedagogical conditions in higher education is appropriate for the formation of psychological stability and tutor position in future teachers at the same time. This will allow them to become successful tutors able to help children with HL in their development and achievement of success.

5 Conclusions

The openness of the Russian education system and the emphasis on individualisation of learning set new requirements and challenges for modern teachers. Together with the organisation and activation of learning activities for students with HL, teachers should also develop their professional competences and personal self-development skills. The analysis of scientific literature shows that to solve the problem of formation of psychological stability in future teachers in the context of application of tutor support of students with HL requires not only educational potential, but also the development of theoretical and methodological basis. The development of psychological stability in future teachers is of great importance because it will allow them to effectively solve the problems of individualisation of the educational process.

Formation of psychological stability in future teachers is important for their preparation for professional activity, especially in the context of application of tutor support of students. It is necessary to create a set of pedagogical conditions that aim to form psychological stability in future teachers. These conditions should contribute to the optimal development of students and their ability to apply technologies of pedagogical support and knowledge of the basics of tutoring activity.

To achieve this goal, the following measures can be considered: supporting students in developing and defining their professional competences, elaboration of individual
development programmes for each student, taking into account their interests and needs; inclusion of practical classes and trainings for developing the skills of organising tutor support: providing students' mentoring, providing students with the opportunity to work with experienced teachers or pedagogues to get feedback, advice, and support; inclusion of practises and methods of tutoring activities. Thus, the development of a set of pedagogical conditions on the basis of these measures will help to prepare future teachers for successful professional activity and effective application of tutor support in the context of individualisation of education.

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