



Mechanisms for the formation of empathic culture of students of pedagogical and medical universities

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ABSTRACT. The relevance of this study is caused by the insufficient methodological development of the mechanisms and methods for the empathy formation among students of pedagogical and medical universities, which is an important professional competence of future teachers and doctors. The empathic culture of teachers and doctors is an integral part of the personal culture, a component of profession skill that requires purposeful formation and development. The purpose of the study is to theoretically substantiate and experimentally test the mechanisms of formation of the empathic culture in students of pedagogical and medical universities. The main research method is based on the selected diagnostics: 1. The method of diagnosis of communicative control (M. Schneider); 2. Assessment program of non-verbal communication (A.M. Kuznetsova); 3. Methodology 'Balanced Emotional Empathy Scale' (A. Mehrabian, E. Epstein). Results. In the profession of a doctor and teacher, we have demonstrated that empathy is an important professional quality. The majority of students of pedagogical and medical universities showed average levels of empathic culture. Emotional and activity channels of empathy are more developed among teachers, and cognitive channels are more developed among physicians. Practical significance. The results of the study can be used in the professional training of students of pedagogical and medical universities.

Keywords: empathy; empathic culture; student; teacher; medical worker; pedagogical university; medical university.

Mecanismos de formação de cultura empática de alunos de universidades pedagógica e médica

RESUMO. A relevância deste estudo se deve ao insuficiente desenvolvimento metodológico dos mecanismos e métodos para a formação da empatia entre estudantes de faculdades pedagógicas e médicas, importante competência profissional de futuros professores e médicos. A cultura empática de professores e médicos é parte integrante da cultura pessoal, um componente da habilidade profissional que requer formação e desenvolvimento propositais. O objetivo do estudo é fundamentar teoricamente e testar experimentalmente os mecanismos de formação da cultura empática em alunos de universidades pedagógicas e médicas. O principal método de pesquisa baseia-se nos diagnósticos selecionados: 1. O método de diagnóstico do controle comunicativo (M. Schneider); 2. Programa de avaliação de comunicação não verbal (A.M. Kuznetsova); 3. Metodologia '*Balanced Emotional Empathy Scale*' (A. Mehrabian, E. Epstein). Resultados. Na profissão de médico e professor, temos demonstrado que a empatia é uma importante qualidade profissional. A maioria dos alunos das universidades pedagógicas e médicas apresentou níveis médios de cultura empática. Os canais emocionais e de atividade da empatia são mais desenvolvidos entre os professores, e os canais cognitivos são mais desenvolvidos entre os médicos. Significado prático. Os resultados do estudo podem ser utilizados na formação profissional de alunos de universidades pedagógicas e médicas.

Palavras-chave: empatia; cultura empática; estudante; professor; trabalhador médico; universidade pedagógica; universidade médica.

Mecanismos para la formación de cultura empática de estudiantes de universidades pedagógicas y médicas

RESUMEM. La relevancia de este estudio se debe al insuficiente desarrollo metodológico de los mecanismos y métodos para la formación de la empatía entre estudiantes de universidades pedagógicas y médicas, la cual es una importante competencia profesional de los futuros docentes y médicos. La cultura empática de profesores y médicos es una parte integral de la cultura personal, un componente de la habilidad profesional

que requiere formación y desarrollo con propósito. El propósito del estudio es fundamentar teóricamente y probar experimentalmente los mecanismos de formación de la cultura empática en estudiantes de universidades pedagógicas y médicas. El principal método de investigación se basa en los diagnósticos seleccionados: 1. El método de diagnóstico del control comunicativo (M. Schneider); 2. Programa de evaluación de la comunicación no verbal (A.M. Kuznetsova); 3. Metodología 'Escala de Empatía Emocional Equilibrada' (A. Mehrabian, E. Epstein). Resultados. En la profesión de médico y docente hemos demostrado que la empatía es una cualidad profesional importante. La mayoría de estudiantes de universidades pedagógicas y médicas mostraron niveles medios de cultura empática. Los canales emocionales y de actividad de la empatía están más desarrollados entre los docentes, y los canales cognitivos están más desarrollados entre los médicos. Significado práctico. Los resultados del estudio pueden ser utilizados en la formación profesional de estudiantes de universidades pedagógicas y médicas.

Palabras clave: empatía; cultura empática; alumno; maestro; trabajador médico; universidad pedagógica; universidad médica.

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Introduction

In the process of professional training future teachers and doctors, it is especially important to develop an empathic culture as a basic professional quality for a modern specialist.

Teachers and doctors do activities in the person-to-person system, where they try to liken themselves to another person in order to 'understand' the experiences and feelings of another person, to take the position of a communication partner. The problem is that in the process of education and training of medical students, much attention is paid to the acquisition of clinical skills and abilities, while there is a need to develop empathy in medical students. The empathy of a doctor is manifested in the ability to feel empathy and understand the emotional state of the patient, to sympathize with him. A person's empathy is derived from the double contradiction between their own experiences and the perceived experiences of another person.

The Professional Standard of a Teacher states that a teacher of primary general education must:

- be able to communicate with children, recognizing their dignity, understanding and accepting them;
- be able to analyze the real state of affairs in the class;
- be able to protect the dignity and interests of students;
- be ready, as the most significant adult in the social situation of the development of a primary schoolchild, to communicate in conditions of an increased degree of children's trust in the teacher (Professional Standard of a Teacher, 2013).

Pedagogical activity is associated with a high emotional load of the teacher.

A teacher's most important moral quality, which contributes to the formation of his professional communicative competence, is empathy in relations with people. Empathy contributes to the balance of interpersonal relationships, the moral growth of the person, effective mutual understanding in communicating with children. In the conditions of a shortage of 'warmth' of human relations, sharp negative changes in the socio-economic structure, people face the problem of loneliness and indifference. In this regard, the problem of empathy as an ability for sympathy and empathy becomes relevant in the context of teacher training (Dolgova & Melnik, 2014).

The empathic culture of a teacher is an integrative quality, manifested in the ability to emotionally respond to the feelings of students, build relationships with them, taking into account their internal position.

Empathy is an indicator of the professional success of a teacher and a doctor. In this regard, it seems relevant to study the mechanisms of empathy formation as a professionally important quality.

The problem of empathy is included in the circle of general problems of personality formation, as a scientific problem. Without its understanding, it is difficult to perform a productive analysis of the mechanisms and basic properties of the spiritual and moral development of a person. Several foreign authors, such as Jung (1996), Lipps (1907), Rogers (1994), and Kohut (2000), have studied empathy in its various forms.

Carl Jung (1996) saw the essence of empathy in the projection of subjective contents: 'Since the essence of empathy consists in the projection of subjective contents, the unconscious act preceding it must have the opposite character, namely, the redemption of the object's effectiveness. Self-activity fills this object to a certain extent and thus adapts to the perception of subjective empathic content'.

Theodor Lipps (1907) represented the content of empathy as the self-objectification in an object different from *Me*, regardless of whether the objectified name of the feeling deserves or not. According to Carl Rogers (1994), teacher must possess the following abilities:

- the desire for maximum flexibility;
- the ability to empathize, sensitivity to the needs of schoolchildren;
- the ability to give personal coloring to the process of education and training;
- attitude on the creation of positive reinforcements for self-perception of children;
- possession of a style of easy, informal, warm communication with children; emotional balance, self-confidence, cheerfulness.

Heinz Kohut (2000) considered empathy to be a universal need for development. The infant's experience of empathic 'mirroring' of the caregiver is a necessary component in the development of a connected self and, conversely, traumatic failures in the provision of empathic 'mirroring' play a critical causal role in the development of defects and pathology of the self.

Foreign scientists (Zhou et al., 2021) made a systematic review of approaches to teaching and assessing empathy in medicine and concluded that empathy is one of the core competencies of medical workers, which they can use to provide successful patient and relationship oriented care. A high level of empathy is essential for the development of professionalism in students training for the medical professions.

Other scientists (Krishnasamy, Ong, Loo, & Thistlethwaite, 2019) have conducted research on how perceptions by medical students, patients and teachers affect empathy; how education influences empathy and how compassion is expressed in medical students. The results of the authors' research include important decisions for health care educators and health curriculum developers.

Foreign authors Yu et al. (2022) studied empathy in students, teachers, doctors, physicians and identified 3 factors of empathy stability. High stability factors form the foundation of an individual's trait empathy. Low stability factors are those that are highly situation specific. Medium stability factors are those that are persistent in the environment and can affect empathy levels over the long run.

Scientists Sobczak and Popowicz (2019) compared the levels and scales of empathy in people studying according to different educational strategies: students of medical specialties, nursing, obstetrics, physical therapy, psychology, pedagogy and sociology. Scientists have noticed a serious decrease in the level of empathy among medical students. Empathy declines in students after the third year of study, regardless of the type of university.

Other researchers – Kanchan, Krishan, and Dehal (2018) – believe that the medical profession has come under scrutiny due to declining quality of healthcare services. This decline is attributed to the weakening of human values and the lack of empathy and communication skills among physicians.

Scientist Geffrey (2017) found that the medical profession has adopted a cognitive model of empathy or detached concern in its professionalism and practice. There is currently a gap in physician empathy, as evidenced by lapses in patient care in the UK. During their studies, medical students can also develop empathy deficits.

A group of scientists (Lermen et al., 2022), based on a study of the level of empathic communication among students, came to the conclusion that empathy is an important component of personal qualities, as well as the ability to manage emotions, affect the quality of communication between them and patients.

Russian researcher Nemov (1999) suggests several classifications of the empathy types: 1) emotional empathy; 2) cognitive empathy; 3) predicative empathy; 4) aesthetic empathy; 5) egocentric empathy; 6) humanistic empathy.

Zakharova, Ezhova, and Rakov (2019) study empathy as the basis of doctor-patient communication, consider the development of empathic behavior in future teachers and doctors. The analysis of the views of Russian and foreign scientists reflecting the essence of the concept of 'medical empathy' is given. Empathy is the core of interpersonal relationships based on effective professional communication between medical professionals and patients.

Shkitina, Elagina, and Nemudraya (2014) reveal the features of pedagogical empathy. They believe that empathy in the professional activities of a teacher will be not so much a tool as the main strategy of a teachers' activity. For a teacher, empathy is a more complex quality, which implies the organization of a certain educational influence. The result will not always be productive communication between the teacher and the student, since the educational process can go its own way and get out of control due to serious influences from several random factors.

The personal qualities of a teacher are inseparable from professional competencies. Podlasy (2004) refers scientific enthusiasm, love for one's professional work, erudition, mastery of the subject and teaching methods, mastery of technologies of pedagogical work, organizational skills and abilities, pedagogical tact, mastery of communication technologies, oratory, spiritual sensitivity to these professional competencies.

In the process of studying the professional component of the psychological and pedagogical competence of the teacher, Sinyagina and Derkach (1998) revealed that the teacher's empathy, along with reflection, flexibility, sociability, and the ability to cooperate, stimulates a state of emotional comfort, intellectual activity, creative search, and promotes mutual understanding in relations with the student.

Thus, the analysis of psychological and pedagogical literature shows the interest of researchers in empathy and allows us to define empathy as a personality trait expressed in sympathy, compassion, engagement, based on genetically determined abilities of projection, emotional response to another person.

Materials and methods

The 'purpose' of the study is to theoretically substantiate and experimentally test the levels of formation of the empathic culture in students of pedagogical and medical universities.

Research objectives

1. Determining the most effective methods for the formation of empathy among students majoring in education and medicine;
2. Experimental check of the level of empathy formation among students of pedagogical and medical universities;
3. Developing a special course on the formation of empathy among students of a pedagogical university.

In order to test the hypothesis, we used various methods that complement each other:

- Theoretical methods. They include the analysis of the works of teachers, psychologists, physicians on the research problem; analysis of methodological and educational literature; theoretical analysis of the main provisions of the proposed methodology, on the basis of which the research hypothesis was put forward; theoretical substantiation of the research problem;
- Empirical methods – involved observation, summative and formative pedagogical assessment, questioning, testing, analysis of the results of experimental work.

Within studies, the authors used quantitative research methods, an anonymous survey of 65 first year students majoring in General Medicine of the Faculty of General Medicine of the Kirov State Medical University; 60 first year students of the training program 'Primary education and foreign (English) language' of the Institute of Psychology and Education of Kazan Federal University.

As an experimental group, we selected 1st year students majoring in 44.03.05 'Primary education and a foreign (English) language'; as a control group, we selected 1st year students majoring in 31.05.01 'General Medicine'. The process of separating groups of students to conduct an experimental study is based on the importance of empathy for the teaching profession. The development of high professional empathy of a teacher is the result of teaching special skills: autoanalysis, sensitivity, attention and listening. The teacher directly affects the life of the student, becoming a part of it. For a physician, empathy acts as a psychological mechanism that enhances the therapeutic effect and helps the patient recover. Doctors demonstrate the possibility of integrating two types of therapeutic interaction: 'care' and 'cure' (care and treatment). The doctor's understanding of the psychological state, the patient's personality is an additional factor that can improve the quality of medical care provided.

For the study, we have chosen following diagnostics:

1. The method of diagnosis of communicative control by M. Schneider (Fetiskin, Kozlov, & Manuilov, 2002);
2. Assessment program of non-verbal communication by A.M. Kuznetsova (Fetiskin et al., 2002);
3. Methodology 'Balanced Emotional Empathy Scale' by A. Mehrabian and E. Epstein (Fetiskin et al., 2002).

1. The method of diagnosis of communicative control by M. Schneider is aimed at identifying the level of communicative control. The participants have to read 10 statements reflecting reactions to some situations of communication and evaluate each one as true (t) or untrue (u) in relation to oneself, putting the corresponding letter next to each item. 1 point is awarded for the answer 't' to the questions n^o 1, 5, 7 and for the 'u' answer to all other questions. The total score is calculated as follows: 0-3 points correspond to the low

communicative control; 4-6 points correspond to the average communicative control; 7-10 points correspond to the high communicative control.

2. Assessment program of non-verbal communication of A.M. Kuznetsova. Test participants need to answer 20 questions. There are 4 answer options: A – always; B – often; C – rarely; D – never. Each question has four answer options and each option is assigned a certain score from one to four (A – 4 points; B – 3 points; C – 2 points; D – 1 point). This technique makes it possible to diagnose three parameters of non-verbal communication: 1) General assessment of a person's non-verbal repertoire in terms of its diversity, harmony, differentiation (questions n° 1, 5, 8, 12, 15 and 17). The quantitative assessment of this parameter can vary from +9 to -9 points. 2) Sensibility, sensitivity of a person to the non-verbal behavior of another (expert observer), the ability for adequate identification (questions n° 2, 4, 7, 11, 14, 18 and 20). The quantitative assessment varies from 28 to 7 points 3) The ability to manage own non-verbal repertoire adequately to the purpose and situation of communication (questions n° 3, 6, 9, 10, 13, 16 and 19). The quantitative assessment varies from 23 to 2 points. The level of development of each of the described abilities is calculated as the sum of points for answers to the corresponding questions (for questions n° 5, 8, 12, 19, the points obtained are subtracted from the total amount for each of the three parameters). For each evaluated parameter, the arithmetic mean of three expert ratings is found. Based on the total scores for the three analyzed parameters, a general indicator of the level of development of a person's perceptual and communicative abilities is determined. This indicator can vary from 0 to 60 points. Next, a qualitative analysis of the structure of the non-verbal communication of the test person is carried out.

3. The 'Balanced Emotional Empathy Scale' of A. Mehrabian and E. Epstein allows analyzing the general empathic tendencies of the study participant, such parameters as the level of expressiveness of the ability to emotionally respond to the experiences of another and the degree of correspondence/inconsistency of the sign of the experiences of the object and the subject of empathy. The objects of empathy are social situations and people with whom the participant could empathize in everyday life. The questionnaire consists of 25 closed judgments. The participant must assess the degree of his agreement/ disagreement with each of them. Each answer is awarded from 1 to 4 points. There are the following levels of expressiveness of a person's ability to emotionally respond to the experiences of other people (empathy): 82-90 points - a very high level; 63-81 points - high level; 37-62 points - normal level; 36-12 points - low level; 11 points or less is a very low level.

Results

At the summative stage of the experiment, in order to determine the level of communicative control, study the cognitive component in the experimental, and control groups, the method of diagnosis of communicative control (M. Schneider) was used.

Diagnostics showed that most of the experimental group (48.3%) has an average level of communicative control. Some respondents (16.7%) have a high level of communicative control, and 35% showed a low level of communicative control (Table 1).

Most of the study participants have an average level of communicative control (46.6%) and do not experience difficulties in interaction. 18.3% of the total number of subjects have a high level of communicative control, have well-formed communication skills. A low level of communicative control is typical for two study participants (40%) (Table 2).

Table 1. Diagnosis of communicative control of the experimental group (M. Schneider). (Schneider, 1999).

Level	Number	Percentage
High (7-10)	10	16,7
Average (4-6)	29	48,3
Low (0-3)	21	35

Table 2. Diagnosis of communicative control of the control group (M. Schneider). (Schneider K, 1999).

Level	Number	Percentage
High (7-10)	11	18,3
Average (4-6)	28	46,6
Low (0-3)	24	40

At the summative stage of the experiment, the diagnosis of A.M. Kuznetsova was used to determine the level of expert assessment of non-verbal communication in the experimental and control groups.

The diagnostic results indicate that the general assessment of the non-verbal repertoire of student teachers in terms of its diversity, harmony, differentiation in 9 respondents has high rates (15%), 27 persons (45%) got an average level, and 24 (40%) respondents have a low level.

10 (16.7%) study participants of the experimental group have a high level of sensitivity to the non-verbal behavior of other and the ability to adequate identification. This group is dominated by a tendency to empathy, compassion. 22 persons (36.6%) have low rates; they do not experience negative emotions when watching a movie or reading, as they have a low level of sensitivity. 28 persons (46.7%) found the average level of sensitivity.

A high ability to control their non-verbal reactions is noted in 11 study participants (18.2%). Most of the participants have skills to control their facial expressions, gestures and postures. When interacting, such people tend to use non-verbal means of communication at the right time and are able to control them. In 20 participants (33%), a low ability to manage their non-verbal repertoire was revealed, which manifests itself in the replacement of words with gestures. Most of the subjects (48.8%) showed an average level of ability to control their non-verbal behavior (Table 3).

In the control group, high levels of the non-verbal repertoire were observed in 4 persons (6.6%), the average level was observed in 30 persons (50%), and the low level was observed in 31 persons (53.4%)

Indicators of sensibility, sensitivity of a person to the non-verbal behavior of others in the control group are as follows: high - 7 persons (10.8%), average - 28 persons (43%), low - 29 persons (46.2%).

A high ability to manage their non-verbal repertoire is noted in 8 persons (12.1%). Most of the study participants (29 persons - 44.5%) have an average level of control over their facial expressions, gestures and postures. 28 persons (43.4%) showed a low ability to manage their non-verbal repertoire. They have difficulties in the correlation between gestures and words. Often such people replace words with gestures in a way that they are not able to explain their thought (Table 4).

At the summative stage of the experiment, the diagnostics of A. Mehrabian and E. Epstein was used to determine the level of emotional response in the experimental and control groups.

According to the results of diagnostics, the predominance of the average, optimal level of emotional response is in 28 persons (47.8%), 16.7% of the subjects had a high level of emotional response. 4 persons have a very high level (6.7%). 6 subjects (10%) showed very low level (Table 5).

Table 3. The results of the assessment program of non-verbal communication of the experimental group (Kuznetsova, 2002).

Indicators	General assessment of the non-verbal repertoire in terms of its diversity, harmony (%)	Sensibility, sensitivity of a person to the non-verbal behavior of others (%)	The ability to adapt one's nonverbal repertoire to the purpose and situation of communication (%)
High	15	16.7	18,2
Average	45	46.7	48,8
Low	40	36.6	33

Table 4. The results of the assessment program of non-verbal communication of the control group (A.M. Kuznetsova, 2002).

Indicators	General assessment of the non-verbal repertoire in terms of its diversity, harmony	Sensibility, sensitivity of a person to the non-verbal behavior of others	The ability to adapt one's nonverbal repertoire to the purpose and situation of communication
High	6.6	10.8	12.1
Average	50	43	44.5
Low	53.4	46.2	43.4

Table 5. The results of the methodology 'Balanced Emotional Empathy Scale' of the experimental group (A. Mehrabian and E. Epstein). (Zimina, 2015).

Level	Number of subjects	Percentage
Very high (82-90)	4	6.7
High (63-81)	10	16.7
Average (37-62)	28	46.6
Low (12-36)	12	20
Very low (11 or less)	6	10

Diagnostics showed the predominance of the average level of emotional response (33.9%). Students with an average level of empathy tend to judge others by their actions rather than trust their personal impressions. In the control group, 7.6% of the subjects have a very high level of emotional response. Most of the subjects (38.7%) showed a low level of emotional response (Table 6).

The experiment took place in three stages: summative (September 2022), formative (September 2022 - February 2023), control (February 2023).

In the course of the formative experiment, during the 2022-2023 academic year, in order to form an empathic culture of students majoring in education, the experimental group conducted lectures, practical classes, trainings on the special course ‘Empathic Culture of a Student-Future Teacher’ developed by the authors, which includes the following blocks:

Block 1. Formation of the emotional component of empathy.

Block 2. Formation of the cognitive component of empathy.

Block 3. Formation of the activity component of empathy.

The main goal of the special course is theoretical and methodological support for the process of forming a teacher's empathic culture.

The main tasks are the formation of empathy as a professional life value, knowledge of ways to express empathy in various situations in the pedagogical process, use empathic listening in dialogue, and show empathy in non-verbal reactions in speech.

The special course ‘Empathic Culture of a Student-Future Teacher’ (Table 7) consists of 24 lecture and 48 practical hours (72 hours = 2 credits).

For implementation the special course in the process of studying the course ‘Children's Literature’ by students, active methods of teaching students (brainstorming, theatricalization, trainings) were used; also the program of teaching practice for students in schools, mentoring in the ‘Rainbow’ children's theater of the Kazan Federal University was implemented.

Practical classes in the form of brainstorming were conducted based on the works of P.P. Yershov ‘The Little Humpbacked Horse’, Leo Tolstoy ‘The Shark’, ‘Jump’, ‘The Lion and The Dog’; V. F. Odoyevsky ‘The Snuff-Box Town’. A theatrical performance based on the work of S.T. Aksakov ‘The Scarlet Flower’ was staged.

During the reading and analysis of these literary works, the method of empathic reading was used, aimed at the formation of the primary reactions of readers (the level of direct impression), the formation of emotional reactions (the level of emotional experience) and the development of rational comprehension (analysis of the situation).

Table 6. The results of the methodology ‘Balanced Emotional Empathy Scale’ of the control group (A. Mehrabian and E. Epstein). (Zimina, 2015).

Level	Number of subjects	Percentage
Very high (82-90)	5	7.6
High (63-81)	5	7.6
Average (37-62)	22	33.9
Low (12-36)	25	38.7
Very low (11 or less)	8	12.2

Table 7. Special course ‘Empathic Culture of a Student-Future Teacher’.

N°	Topic	Lectures	Practical studies
1.	The emotional component of empathy (professional life value)	8	12
2.	The cognitive component of empathy (knowledge about empathy, its essence and place in professional activity)	8	12
3.	The activity component of empathy (the ability to analyze and adequately interpret the state of the subject, use empathic listening in dialogue, show empathy in non-verbal reactions in speech)	8	24
Total		24	48
In all:			72

Reading and analyzing the works of children's writers contributed to understanding the concept of ‘empathy’, awareness of one's emotions and feelings; development of skills for recognizing the emotional states of the character; the formation of empathic abilities, empathic understanding.

Theatricalization of works of children's literature is aimed at understanding and developing empathy. Tasks of theatricalization are to develop the skills of recognizing one's emotional states and emotional states of a partner; to develop empathic abilities.

The teaching training of students in elementary school is aimed at studying the personality of younger schoolchildren, the psychology of the child, compiling the individual characteristics of the schoolchild, identifying the empathic understanding and feeling of the child by the student.

Mentoring in the 'Rainbow' children's theater of the Kazan Federal University is aimed at developing the emotional, cognitive, activity component of empathy in students - future elementary school teachers. Students conducted classes with children of primary school age, studied various ways of interaction, communication with younger schoolchildren in the process of working on the performance, and showed the activity component of empathy.

The special course 'Empathic Culture of a Student-Future Teacher' was suggested by us as an elective course for the students of a pedagogical university majoring in 'Primary education and a foreign (English) language' to improve the level of professional competencies, to form empathy as an integrative professional quality of a future teacher. That is, students choose this special course for a deeper and more detailed study of the empathic culture of the teacher, which contributes to the understanding of the mechanisms and methods for the formation of the emotional, cognitive, behavioral component of empathy. Such a special course is introduced into the work program of the profile of study 'Primary education and foreign (English) language' in the 2nd semester of the 1st year.

The special course 'Empathic Culture of a Student-Future Teacher' can also be used as a teaching theoretical and methodological material in advanced training courses for primary school teachers. The process of empathy formation in the proposed special course is based on the following components: theoretical lectures; practical-methodological classes; autonomous study. Such advanced training courses are organized by Kazan Federal University systematically, 3-4 times a year. Thus, in one academic year, about 400-500 elementary school teachers can pass the special course 'Empathic Culture of a Student-Future Teacher' proposed by us.

Thus, the formative experiment in the experimental group made it possible to develop three components of empathy: 1) emotional component, 2) cognitive component, 3) activity component.

At the stage of the control experiment, the main goal was set to determine the most effective mechanisms for the formation of an empathic culture of students of pedagogical and medical universities. Among the experimental and control groups of students, the following tests were performed: 1. The method of diagnosis of communicative control (M. Schneider) (Table 8); 2. Assessment program of non-verbal communication (A.M. Kuznetsova) (Tables 9 and 10); 3. Methodology 'Balanced Emotional Empathy Scale' (A. Mehrabian, E. Epstein) (Table 11).

The diagnostics revealed the dynamics in the development of communicative control among the students of the experimental group. They are dominated by high and average levels of development of empathic control. The students of this group showed sensitivity to the needs and problems of others, magnanimity, interest in people, emotional responsiveness, sociability and the ability to avoid conflicts and find compromise solutions.

The majority of respondents in the control group showed a low level of empathic abilities, which indicates the need for their development (intuitive, rational and emotional channels of empathy, managing their emotions) in order to form communicative professional competencies.

The diagnostics showed the ability of students of the experimental group to analyze and adequately interpret the state of the subject, use empathic listening in dialogue, show empathy in non-verbal reactions in speech, which indicates the development of the activity channel of empathy.

Table 8. Comparative diagnostics of communicative control of the experimental and control groups (Schneider, 1999).

Level	Experimental group, %	Control group, %	Difference
High (7-10)	20	17	3% more
Average (4-6)	55	49.2	5.8% more
Low (0-3)	25	38.8	8.8% less

In the experimental group, the students demonstrated the dynamics of changes in empathic abilities during the process of vocational training as future elementary school teachers. The students of this group are dominated by the emotional component of empathy, followed by the cognitive and activity components.

The control stage of the experiment demonstrated the development of the emotional component of empathy in students - future teachers. For students of this group, empathy manifests itself as a professional life value, a positive emotional attitude to the situation in professional pedagogical activity, a positive emotional attitude towards people.

The experimental group developed a cognitive component of empathy, which consists of a certain knowledge about empathy, its essence and place in professional activity, understanding the specifics of situations in pedagogical activity, and the ability to understand a person and put oneself into his situation.

The diagnostic results demonstrated the development of the activity component of empathy in the students of the experimental group as the ability to analyze and adequately interpret the state of the subject in the educational process, use empathic listening in dialogue, and show empathy in non-verbal reactions in speech and behavior.

It is especially important that the formation of the emotional component of empathy in the experimental group took place - the ability to empathize and sympathize, to put oneself in the place of a schoolchild, to understand his feelings and emotions. The results of the study demonstrated the gradual development of all three components of empathy among teacher students, while the cognitive component of empathy became the predominant component of medical students.

The experimental study demonstrated that an empathic culture is essential for future elementary school teachers and general physicians to be competent in the person-to-person profession.

The developed and implemented special course on the formation of components of the empathic culture of students of pedagogical and medical universities contributes to the development of empathy as an important professional quality of a teacher and a physician. The special course helps to form the emotional, cognitive, activity components of empathy, the formation of an empathic culture of students of pedagogical and medical universities.

The results of the study can be used in the professional activities of elementary school teachers, medical students, and general physicians.

Table 9. Comparative diagnostics of assessment program of non-verbal communication of the experimental (EG) and control groups (CG) (Kuznetsova, 2002).

Indicators	General assessment of the non-verbal repertoire in terms of its diversity, harmony, EG and CG	Sensibility, sensitivity of a person to the non-verbal behavior of others, EG and CG	The ability to adapt one's nonverbal repertoire to the purpose and situation of communication, EG and CG
	High	18.4 (EG); 6.1 (CG)	20 (EG); 10.8 (CG)
Average	53.3 (EG); 47.5 (CG)	55 (EG); 46.1 (CG)	53.4 (EG); 46.1 (CG)
Low	28.3 (EG); 46.4 (CG)	25 (EG); 43.1 (CG)	25 (EG); 41.8 (CG)

Table 10. Comparative diagnostics of the difference in expert assessment of non-verbal communication of the experimental (EG) and control groups (CG) (Kuznetsova, 2002).

Indicators	General assessment of the non-verbal repertoire in terms of its diversity, harmony, EG and CG (%)	Sensibility, sensitivity of a person to the non-verbal behavior of others, EG and CG (%)	The ability to adapt one's nonverbal repertoire to the purpose and situation of communication, EG and CG (%)
	High	12.3 more	9.2 more
Average	5.8 more	8.9 more	7.3 more
Low	17.9 less	17.9 less	16.8 less

Table 11. Comparative diagnostics of the level of emotional response according to the method 'Balanced Emotional Empathy Scale' of the experimental and control groups (A. Mehrabian, E. Epstein). (Zimina, 2015).

Level	Experimental group (%)	Control group (%)	Difference (%)
Very high (82-90)	13.4	7.6	5.8 more
High (63-81)	23.3	10.8	12.5 more
Average (37-62)	23.3	30.7	14.3 more
Low (12-36)	15	38.7	23.7 less
Very low (11 or less)	3.3	12.2	8.9 less

Discussion

One of the main reasons for the ineffective professional activity of teachers and doctors is the low level of empathy, which leads to a significant decrease in professional success. Foreign and domestic scientists prove the connection between high professional success and a high level of empathy in a number of works.

According to the point of view of Rogers (1975), the ability of one person to help another depends on the creation of warm, sincere empathic relationships. The doctor must feel the patient's inner world as if it were his own, without losing the quality of 'if.' In medical practice, empathy is considered as an integral stable personal attribute that affects the social-perceptual and communicative spheres in the 'doctor-patient' system. Scientists consider empathy to be a skill of communication that can be mastered, and to a lesser extent as a purely subjective emotional experience or as an inherent, unchangeable personality trait.

Haque (2020) considers empathy to be the most important professional quality that needs to be formed in the process of studying a student at a medical university. Omid, Haghani, and Adibi (2018) revealed the relationship between empathy and human emotional intelligence: the higher the empathy, the higher the emotional intelligence. Shapiro, Morrison, and Boker (2004) investigated the process of teaching empathy to first-year medical students through the assessment of an elective course in literature and medicine. Foreign scientists Chen et al. (2019) analyzed data on the mediating role of anxiety, self-efficacy, and sleep quality in the relationship between physician-reported empathy and patients' illness.

Garnett, Dambha-Miller, and Stuart (2020) conducted an online survey to quantify the level of empathy among British medical students. It turned out that by the 3rd year of study, the level of students' empathy decreases, while in the 1st year, medical students had a higher empathic culture.

Medical empathy is defined as the ability to understand the patients' situation, point of view, and feelings, to show their understanding in a conversation, to act on this understanding, and to provide the patient with help (therapeutic) support. According to the scientist Friedemann (2013), for empathic behavior person does not need to experience the patient's feelings, which can lead to excessive identification of the doctor with the patient and going beyond professional boundaries.

Rogers (1994) points to the process side of empathy: it is entry into the inner world of another person, sensitivity to constantly changing meanings. Pedagogical empathy is an emotional feature of the teacher, which plays a big role in the relationship between the participants in the educational process, the perception of each other, in establishing mutual understanding between them. Ilyin (2013) confirm that teachers' empathy as a basic professional skill should be manifested in the form of sympathy. Sympathy leads to the activation of relationships of warmth, trust, care, openness, support for the child.

Simonova (2013) considers it appropriate to abandon the technocratic model of training future doctors. The integration of the humanitarian component into clinical disciplines will solve the problem of training a competitive specialist with a stable system of values, the necessary set of general cultural and professional competencies that allow them to perform their professional duties with high quality and responsibility.

Empathy contributes to the balance of interpersonal relationships, it makes a person socially adapted. Empathy developed in a person is a key success factor in those activities that require understanding one's own 'I', feeling a partner emotionally and, above all, in training and education. Therefore, empathy is considered as a professionally important quality of a teacher and a doctor.

Conclusion

In the course of our study, it was found that the following components are distinguished in empathy: 1) cognitive; 2) emotional; 3) active. The formation of empathy mechanisms is carried out through the implementation of the model of the special course 'Empathic culture of the student-future teacher':

1. The use of active teaching methods for students;
2. Using the method of empathic reading;
3. Theatricalization of literary works;
4. Pedagogical practice of students at school;
5. Mentorship in 'Rainbow' children's theater of the Kazan Federal University.

The implementation of the special course made it possible to develop three components of empathy in the experimental group: 1) emotional component 2) cognitive component 3) activity component.

The data of our study showed that students of a pedagogical university demonstrated dynamics in the level of development of empathy. The general assessment of the non-verbal repertoire in terms of its diversity, harmony: high - more by 3.4%, average - more by 8.3%, low - less by 11.7%. Sensibility, sensitivity of a person to the non-verbal behavior of another: high - more by 3.3%, average - more by 8.3%, low - less by 9.6%. The ability to manage one's non-verbal repertoire adequately to the purpose and situation of communication: high - more by 3.4%, average - more by 4.6%, low - less by 8%. We can see the dynamics in the level of

development of the emotional response in the experimental group. Very high - more by 6.7%, high - 6.7%, average - less by 1.6%, low - less by 5%, very low - less by 6.7%. According to the results of diagnostics, it can be noted the predominance of the average, optimal level of emotional response is in 27 respondents (45%), 23.3% of the respondents have a high level of emotional response. 8 persons have a very high level (13.4%). Very low level was revealed in 2 persons (3.3%). Diagnostics showed that the high level of communicative control in the experimental group became higher by 3.3%, the average level decreased its value by 6.7%, the low level - by 10%.

The results of this study can be used in the training of students - future teachers of elementary school and students of medical universities majoring in 'General Medicine'.

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