



Развитие эмоционального интеллекта педагогов по работе с одарёнными детьми при проектировании чат-ботов образовательного назначения

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АННОТАЦИЯ

Проблема и цель. Модернизация высшего образования открывает новые перспективы использования технологий искусственного интеллекта для повышения качества обучения педагогов. Применение специальных приложений, позволяющих реализовывать широкий спектр дидактических задач (от сбора обратной связи до решения рутинных задач проверки и автоматизации), удовлетворяет как требованиям к программам подготовки учителей, так и требованиям к уровню развития навыков, составляющих основу эмоционального интеллекта личности. **Цель исследования** – выявить возможности деятельности по проектированию и созданию чат-ботов дидактического назначения для развития эмоционального интеллекта педагогов по работе с одарёнными детьми.

Методы исследования. Информационное взаимодействие и проектирование диалога с чат-ботом реализовано инструментами сервиса SaleBot в рамках дисциплины «Интерактивные образовательные технологии». Опытно-поисковая работа проведена на базе Вятского государственного университета (Российская Федерация). В эксперименте участвует 46 магистрантов по направлению подготовки 44.04.01. Педагогическое образование, профиль «Педагогика одаренности». Для диагностики и оценки сформированности эмоционального интеллекта применён тест Н. Холла. При статистической обработке данных использован критерий χ^2 -Пирсона.

Результаты. Особенность представленного формата работы: с одной стороны, чат-бот является объектом изучения (конструктор сценариев, принципы интеграции, технология управления базой пользователей и отслеживание истории их запросов). С другой стороны, применение цифровых помощников в деятельности педагога по работе с одарёнными детьми – это дополнительный ресурс для вовлечения школьников в дидактическое информационное взаимодействие. Магистранты экспериментальной группы проектируют виртуальные диалоги инструментами платформы SaleBot (работают с готовым проектом, конструируют собственного чат-бота). Выявлены статистически достоверные различия в качественных изменениях, произошедших в педагогической системе ($\chi^2 = 7.558$; $p < 0,05$).

Заключение. Определены факторы, влияющие на качество применения чат-ботов для развития эмоционального интеллекта педагогов: восприятие пользователями цифрового поколения компьютера как равноправного партнёра по общению; возможность создания оригинального оформления и уникального развития диалога под разные группы обучающихся; структурирование информации и выделение ключевых положений.

КЛЮЧЕВЫЕ СЛОВА

цифровая образовательная технология, искусственный интеллект, диагностика одарённости, эмоциональная составляющая, информационное взаимодействие, конструктор чат-ботов, SaleBot

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Лицензия «С указанием авторства — С сохранением условий». Позволяет перерабатывать, исправлять и развивать произведения при условии указания авторства и лицензирования производных работ на аналогичных условиях.



Developing the emotional intelligence of teachers working with gifted children when designing educational chatbots

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ABSTRACT

Problem and purpose. Modernization of higher education opens up new prospects for using artificial intelligence technologies to improve the quality of teacher education. The use of special applications that enable to implement a wide range of didactic tasks (from collecting feedback to solving routine verification and automation tasks) meets both the requirements for teacher training programs and the requirements for the level of developed skills that form the basis of a person's emotional intelligence. *The purpose of the study* is to identify the possibilities of designing and creating didactic chatbots for the development of emotional intelligence of teachers working with gifted children.

Research methods. Informational interaction and development of a dialogue with a didactic chatbot are implemented with the tools of the SaleBot service within the framework of the course "Interactive Educational Technologies". The experimental search work was carried out on the basis of Vyatka State University (Russian Federation). The experiment involved 52 graduates of the field of training 44.04.01. Pedagogical education, profile "Pedagogy of giftedness". The N. Hall test was used to diagnose and assess the formed emotional intelligence. In statistical data processing, the Pearson's chi-squared test was used.

Results. The peculiarity of the presented work format: on the one hand, the chatbot is an object of study (script designer, integration principles, user base management technology and tracking the history of the requests). On the other hand, using digital assistants in the activities of a teacher working with gifted children is an additional resource for involving schoolchildren in didactic information interaction. Graduates of the experimental group design virtual dialogues using the tools of the SaleBot platform (they work with a ready-made project and build their own chatbot). There were revealed statistically significant differences in the qualitative changes that occurred in the pedagogical system ($\chi^2 = 7.558$; $p < 0.05$).

Conclusion. Identify the factors influencing the quality of using chatbots for the development of teachers' emotional intelligence: digital generation users' perception of computers as an equal communication partner; the possibility of creating an original design and unique development of dialogue for different groups of students; information structuring and highlighting key provisions.

KEYWORDS

digital educational technology, artificial intelligence, diagnosis of giftedness, emotional component, information interaction, chatbot constructor, SaleBot

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INTRODUCTION

1. In recent years, UNESCO has been implementing a complex systematic approach in many countries of the world aimed at integrating elements of sustainable development into key subjects and disciplines of the educational curriculum of schools and universities. According to the conclusions of S. Cartagena, L. Pike, these initiatives are implemented within the framework of the educational conception Education for Sustainable Development [1]. The issues of inclusion are also worked out (in particular, how to properly integrate children with special needs into the educational process). In addition, UNESCO supports events and activities related to gifted children at all levels [2]: the UNESCO World Around Us international project (which involves developing creative talent and self-realization of students' personalities); the UNESCO Associated Schools project "Children Explore the world..." (supporting students' collaborations with mentors in conducting advanced scientific research).

J. Wai, C. Benbow substantiate the need to develop and apply special options for psychological and pedagogical support for gifted children: diagnostics and consulting and training activities; modification of course (training) programs; interdisciplinary learning that promotes the development of intelligence, cognitive motivation, and creative activity [3]. S. Kulegel, U. Unsal identify the importance of using ICT for the development of gifted children [4]. A. S. Mohammed makes similar assumptions, only regarding the role of AI [5].

2. Questions, or rather international recommendations on the ethical aspects of the development and use of artificial intelligence were formulated at the UN General Conference on Education, Science and Culture. During the 41st session, held in Paris in November 9–24, 2021, 143 countries signed a corresponding regulatory act. It should be noted, that the document does not contain any strict restrictions on the use of AI. As a result, there is an active introduction of AI (including AI-based chatbots) in the field of education, science and culture [6]. For Russia, the norms of Federal Law No. 123-FZ of April 24, 2020 determine that the use of AI for various spheres of public life is still an experimental legal status [7]. Therefore, there are many controversial situations: whether it is worth using AI-based chatbots in training; how often and intensively; how to assess the quality of knowledge and information received by students during the relevant information interaction.

3. According to the World Economic Forum's Future of Jobs 2023 report, emotional intelligence, computational thinking, and digital literacy are the top-requested skills that determine the demand in the labor market among specialists [8]. This includes teachers who work with children with special educational needs and children without developmental disabilities. E. A. Mamaeva et al. describe a variant of organizing such practical activities for teacher training, in which future mentors of a digital school design didactic chatbots. At the same time, the authors substantiate and prove the importance of such activities both for the development of analytical skills and for the formation of digital competence [9]. E. V. Soboleva et al. describe the ideas of the authors' approach, which allows developing the emotional intelligence of teachers of the future by means of multimedia storytelling [10].

Thus, on the one hand, the development of the emotional intelligence of teachers (including those working with gifted children) using ICT tools is an important area of modernizing higher education. On the other hand, developing and applying AI-based chatbots for didactic purposes includes many insufficiently studied aspects. One of them is the influence of information interaction in the process of creating a chatbot and its inclusion in training on a person's ability to perceive, understand and manage emotions, and apply emotions in cognitive activity, i.e., those abilities that, according to M. Cobo, determine the structure of emotional intelligence [11].

The research hypothesis is that organizing practical activities of teachers working with gifted children on the design and creation of didactic chatbots will provide additional resources for the development of their emotional intelligence.

The purpose of the work is to identify the possibilities of practice in designing and creating didactic chatbots for the development of emotional intelligence of teachers working with gifted children.

Research objectives:

- to clarify the problems and possibilities of using didactic chatbots when training teachers to work with gifted children;

- to describe the use cases of AI-based chatbots in the work of teachers, taking into account the specifics of their training;
- to identify the factors influencing the quality of AI-based chatbots use for the development of emotional intelligence of teachers working with gifted children;
- to experimentally test the effectiveness of the proposed option for organizing practical activities in student education.

MATERIALS AND METHODS

A teacher working with gifted children is an educational professional who specializes in developing and implementing individualized educational programs for children with outstanding abilities, talents or intelligence. A didactic chatbot is a special program that allows you to implement the following range of educational tasks: transferring excessive attention from a teacher to a virtual assistant; collecting feedback; helping a teacher solve routine verification and automation tasks; supporting children's engagement; helping communication participants in finding and analyzing information; planning and organizing work.

The experiment involved 52 graduates from the Faculty of Pedagogy and Psychology of Vyatka State University (Russian Federation), the field of study is 44.04.01 Pedagogical education, the profile "Pedagogy of giftedness". The average age of students is 23 years. The SaleBot service is used to design a chatbot based on artificial intelligence. This resource offers a wide range of functions and integrations that provide all the necessary tools to attract, maintain, and retain user attention. The graduates were involved in information interaction and the design of a dialogue with a didactic chatbot while studying the course "Interactive Educational Technologies".

N. Hall's test was used to diagnose the level of developed emotional intelligence of teachers working with gifted children. It was this method that, in the result of the analytical work of the author's team, was chosen as the main method for verifying the effectiveness of the proposed system of work. The selected diagnostic tools allow you to track the quality which it is planned to determine – the level of formed emotional intelligence of a person. To formulate a conclusion about the formed emotional intelligence, the level was calculated as follows: 70 or more is a "high" level, 40–69 is an "average" level, 39 or less is a "low" level. A more accurate methodology and interpretation can be found in the results of the study. A control group (26 teachers) and an experimental group (26 teachers) were formed. In statistical data processing, the Pearson's chi-squared test was used.

LITERATURE REVIEW

According to the conclusions of experts from the International Society for Technology in Education (ISTE), the following trends are observed in the modern education system, among a range of other areas of pedagogical innovation [12]:

- growing students' interest in learning and applying technologies that will allow them to be active in choosing, achieving and demonstrating their competence in various types of activities (in teaching, research, communication) is;
- didactic practices are developed that support individual learning conditions and feedback from participants in information interaction. Artificial intelligence technologies are of particular interest both for the mentors of the digital school and for their mentees. The latter help to customize educational content in accordance with the needs, interests and preferences of each student, providing differentiated theoretical materials, questions and assignments to them;
- the conditions for ensuring digital well-being of society's users are reconsidered. The digital well-being is understood as a phenomenon that includes the completeness of social integration and communication activity, the level of satisfaction of needs and empowerment through new technologies;

- a range of tools is developed to support the formation of algorithmic, computational thinking;
- the expediency of developing emotional intelligence of highly qualified and demanded professionals of the future is substantiated.

O. Dunne points out that the development of society is closely linked to the training of highly qualified specialists. And this training must necessarily begin with the enrichment of content, forms and methods from the school level [13]. These ideas are similar to the conclusions formulated by Y. Barış, M. Demir that the school system plays an important role in the formation of basic knowledge, skills, and abilities of gifted students that are necessary to work in an innovative field [14]. According to O. Dunne, an effective change of the education system on the example of schools in Ireland requires an integrated approach, which includes updating curricula, using modern teaching methods, mentor support and infrastructure optimization. The main focus of this updating is the development of critical thinking, creativity and communication skills [13]. The author states that in identifying gifted students, their mentors play an active role, first of all, who, using various psychological and pedagogical technologies and a personality-oriented approach in teaching children, design a development path for them.

A. Bildiren, T. Firat, S. Kavruk note that every child has a potential for giftedness at birth and it develops effectively under favorable conditions [15]. The authors analyze the initial aspects of giftedness in such manifestations as fine motor skills, cognitive development, language skills, as well as social and personal development. In their study with gifted children, according to the conclusions of A. Bildiren, T. Firat, S. Kavruk, a mentor should be guided by the following principles: an individual approach to everyone, providing a choice of activities, and finding a balance between collective and individual activities. T. Yuret argues that achievements in science and technology, competitiveness in all areas are directly related to the successful functioning of the national economy of the country [16]. And the search for gifted children (in the author's understanding using examples of mathematical preparation) is one of the most important strategic tasks. The author concludes that the problem of working with gifted schoolchildren is extremely relevant in many countries. At the same time, modern society needs a free individual able to solve emerging problems on his/her own, ready for self-realization and creativity, and standing for his/her independence.

O. Klyuchko, A. Lyablina, O. Gavrilova conclude that differences in giftedness and talent indicators are often explained by genetic, environmental, medical, and spiritual factors [17]. D. Sisk argues that emotional intelligence as a cognitive trait of gifted children is important for their academic achievements [18]. Therefore, it makes sense to teach both children and their mentors the skills of working with emotions. In addition, as the author puts it, emotional intelligence can and should be developed. This thesis is confirmed by his analytical research. He analyzed the provisions and statistical data, which present indicators of the levels of the developed emotional intelligence, and the corresponding successes / failures in students' educational activities. S. Suyitno et al. study potential psychological difficulties, aspects of emotional well-being, and the relationship between the well-being of gifted and talented students and their problems with social adaptation and professional self-determination [19]. E. Mitsea, A. Drigas, and C. Skianis studied the role of virtual reality in solving the problem of improving the quality of education and the involvement of students with special educational needs [20]. E. A. Dudina notes that in science and practical didactics, school teachers are considered the major "suppliers" and experts in identifying giftedness [21].

H. David points out that the importance of teacher training for working with gifted children lies in the fact that when working with them it is necessary to use non-specific methods and means of work [22]. This is due to the fact that gifted children grasp learning information faster, having better self-learning skills. Based on this, the teacher is faced not only with the task of imparting knowledge to the child, but also to stimulate his cognitive processes. Questions how to train teachers to develop their own skills to understand such students, how to match them and look for motivation to work with gifted children are actively discussed in the scientific and pedagogical community. The author suggests using the following "signs", hints that can help teachers recognize the need for additional intellectual support, organizing educational activities, or differentiating the curriculum. H. David regrets that many of these "signs" are often ignored or misunderstood by mentors. The author formulates five key aspects that should be considered by the mentor of gifted children [22]: boredom

(when a student shows a clear lack of interest in the material/task or expresses dissatisfaction); the speed of completing tasks and answering questions; making amendments to the speech of the teacher or other classmates, interrupting them (as an option – entering into arguments, conversations not on the topic of the lesson); failure to complete homework, to prepare for a test; manifestations of intense (often negative) emotions.

V. Galitskaya et al. argue that the introduction of ICT in educating gifted students is an important step towards modernizing the pedagogical process [23]. In addition, it depends on the teacher how to use ICT to direct a gifted child not just to acquire a certain amount of knowledge, but to creatively process it. Here, the mentor should be able to choose such tools that would develop his student's ability to think independently and make non-standard decisions based on the received material. The significance of the study mentioned for the present one lies in the fact that this work talks about teaching methods using ICT when working with gifted children, and, most importantly, if necessary, training of appropriate teaching staff.

S. Dar, S. Geelani reveal that most teachers have a low level of emotional competence, which is to be developed. The authors conducted special group training sessions and individual consultations to develop it [24]. O. Kruzhkova and A. Matveeva study the peculiarities of emotional intelligence among teachers when implementing their professional activities. The authors point out the importance of this problem based on their grounding rapid transition to new ways of communication in the context of designing the educational process [25]. Changing mechanisms of demonstrating, understanding and controlling the emotional manifestations of participants in didactic information interaction while maintaining the importance of the affective component of the learning process determines a new round of scientific interest to the specifics of developing emotional intelligence among participants in the digital educational space communication [26].

I. Serafimovich substantiates that a teacher needs qualitatively special emotional abilities due to the specifics of his work: sensitivity to the condition (successes and failures) of the child, maintaining emotional stability in situations of crisis and stress during informational didactic interaction, the ability to communicate his own experiences (transfer them into a constructive state) [27]. Z. A. Saidov et al. note that there is a similarity in interpreting concepts of "emotional competence" and "emotional culture of the teacher". According to the author's conclusions, this is due to the fact that the structure of these phenomena explicitly contains such components as empathy, emotional stability and emotional flexibility [28].

N. Agarwal, R. Gupta, G. Chandra, examining the features of the developed emotional intelligence of teachers using the example of Delhi specialists, indicate that this quality, which is significant for a modern mentor, should be formed, if possible (recommended), precisely at the stage of preparing for professional teaching [29]. E. Kyriakaki, P. Nikolaidis prove that games based on digital technologies contribute to the cognitive, socio-emotional and internal motivational development of participants in the didactic information process. Moreover, there are additional conditions for developing self-control skills and mastering stress management techniques [30]. A. Y. Rogovets et al. propose a chatbot model to prevent depressive states of social networks users. Their original dialogue agent includes three system components: elaboration of emotional experiences, psychoeducation and acceptance of reality (relief of maximum anxiety) [31]. Undoubtedly, the designed chatbot is not able to implement all the functions of therapy, but it can help reduce the level of emotional stress. At the same time, the very activity of designing chatbots based on artificial intelligence, as shown in the work of E. A. Mamaeva et al., can help create conditions for teachers to develop skills such as self-assessment and emotion regulation, and the ability to use information about emotions to make decisions [9].

The analysis of the literature allows us to objectively conclude that:

- working with gifted children requires special skills from a digital school mentor, including those that form the basis of a person's emotional intelligence;
- new digital tools (for example, gamification services, chatbots) included in didactic information interaction allow creating additional conditions for the development of emotional intelligence of a teacher working with gifted children.

RESEARCH PROGRAM

The first stage included the analysis of the literature and innovative practices of working with gifted children. The didactic capabilities of chatbots based on artificial intelligence were also identified to enhance students' cognition, motivation and emotional involvement in working with theoretical material. The experience of using chatbots for mental change was studied, helping people better manage their own powers, develop psychological self-help skills and find grounds for further cognition.

The interface and functionality of Unisender, PuzzleBot, RoboChat, Aimylogic, Salebot, Botmother, and Chatfma services were also analyzed. Comparison criteria: domestic or foreign service; paid / free functionality, integration with other information resources, the possibility to create a dialogue in different languages, a range of tools, technical support (instructional videos and detailed instructions), adaptation to individual needs, built-in statistics on the number of interactions with the bot. When choosing a methodology for assessing the abilities that form the basis of the emotional intelligence of a teacher working with gifted children, the following tools were analyzed: the WLEIS test for the emotional intelligence model by J. Mayer, P. Salovey and D. Caruso, online methodology "Emotional Intelligence Test", D. V. Lyusin's "EmIn" questionnaire, N. Hall's test. The last was chosen to process the results of the presented work. The reason for the choice is methodology validity, reliability in assessing emotional intelligence of teachers. The methodology is a questionnaire containing 30 question-situations. Analyzing the respondents' responses, it is possible to assess the level of developed emotional awareness, self-management, self-motivation, empathy, and identification of other people's emotions. The integrative indicator (the sum of all scales) to formulate the conclusion about the formed emotional intelligence was considered as follows: 70 or more is a "high" level, 40-69 is an "average" level, 39 or less is a "low" level. This technique was used both before and after teachers' work with chatbots. Control and experimental groups were formed, 26 teachers working with gifted children in each group.

At the second stage of the research, the graduates studied the didactic resources of chatbots and the options of the Salebot tool. Here they also designed their own didactic chatbot and used it in specific situations of information interaction, for example, to organize a digital diary of emotions.

The third stage of the study identified the factors influencing the quality of using AI-based chatbots for developing emotional intelligence of teachers working with gifted children.

THE RESULTS OF THE STUDY

The authors specified that the goals and objectives of training graduates are:

- to identify and develop graduates' abilities for teaching and emotional interest in students' successes;
- to master technologies to create the most comfortable (emotionally) conditions for diagnosing and supporting gifted children;
- to involve researchers and practitioners in developing methods for the emotional involvement of gifted children in the didactic process.

Potential purposes of using didactic chatbots were identified:

- collecting feedback (it will collect questions and comments of schoolchildren automatically);
- the tool can collect data from students to select a system of individual tasks (based on comments and questions received);
- consulting a student on problematic issues, suggestions (the opportunity to bring a "dispute" between a gifted student and a teacher into a virtual environment with a bot).

It has also been revealed that in recent years, students' access to "point-to-point" pedagogical support from a mentor has become much easier due to the advent of chatbots in Telegram. They can't replace a professional teacher, and they shouldn't. But they can become alternative means

for self-reflection, self-help, and support for gifted children. As part of the course "Interactive Educational Technologies", graduates of both groups considered examples of chatbots in the services Unisender, PuzzleBot, Robochat, Aimylogic, Salebot, Botmother, Chatfma. The experimental group revealed that bots on Salebot provide the following didactic advantages:

1. Support for ease of use. Salebot has a user-friendly and intuitive interface. This allows users to easily and quickly create chatbots without having deep knowledge of programming.
2. Saving time. Using the platform allows you to significantly reduce the time on developing and implementing bots. This is possible because most of the functions are already built into the platform and are available for use.
3. Scalability. Salebot allows you to change the functionality of bots in accordance with the growing demands of education. This ensures developing and improving the bot without its complete transforming.
4. Analytics and monitoring. Salebot provides tools for analyzing and monitoring the bots, allowing to evaluate their effectiveness, identify the most popular queries and determine problem areas. Next, the participants of the experimental group designed their own chatbot.

Stage 1. Click on the Salebot link (<https://salebot.pro/>). Registration is required. The registration button is located on the main screen, at the top right. After you click on this button, a window appears in which you either need to fill in all the fields or log in via the suggested social network.

Stage 2. After registration, you will be automatically transferred to the main page. Click on the "Projects" button (it is located in the upper right corner). The "Create a project" window appears. You need to fill in the fields: the name of the project, select the folder to save the project, set the color of the project and click the "Done" button. The starting block is already located on the work field. To start creating a design, you need to click on the starting block. Next, you will see a control panel on the right side. Here you need to set the "Dialogue status". Next, click on the arrow and select the status "Primary condition check". It is necessary to fill in "Message" and "Condition" windows. For example, the text in the Message window is "Hi, I'm a Smart Guy! I am ready to help correct your mark."

In the "Condition" window, you need to write "Hello, Smart Guy". This gives a start to the bot. When the user writes this message, the message that you filled out first will appear. It is important that you select "Ignoring errors and inaccuracies" in the "Match Selection" window. This is necessary so that if the user enters an error message, the bot will recognize it anyway and issue a message. Next, at the bottom of the same panel, click on the "Save and close" button. It is important that you save each of your actions, as the service does not have auto-save options. After you have created the first block, create the second block.

To do this, hover the cursor over the first block. Click on the "gear" and go to the communication settings between the blocks. Next, in the "Delay before response" column, set – "1". This is necessary so that the user automatically receives a message from the second block. After filling in the cell, click "Save and close". Next, select the second block and fill it in. To be more precise, we fill in the "Message" field with the text "In order to understand whom and what grade to give, I am waiting for your full name and class number. Write this information to me in a message." And we save this block. Create a connection from the second block to the third block. Go to the connection settings and here you do not need to set the time. You need to check the box next to "User enters data". Next, write the text "Class number, full name" in the "Input data" window. This is used to ensure that the user enters the data and the bot remembers them. As soon as the data are entered and sent, the bot will send a message from the third block, which has been created but has not yet been filled in.

We also save this connection between the block. Fill in the third block and enter only the "Message". The text of this block, for example, looked like this: "Are you sure you want to try it?" and we save this block. Next, we create 2 additional branches from this block. It is important that there should be links from one block to two different new blocks. Let's fill in the first one. Let's write, for example, the text "Great, then let's get started. Choose a topic for which you want to correct the mark" and save it. Next, fill in the second one created above. In the "Message" column, we write the text "Well, that's okay! Come back when you're ready" and save this block.

Now we set up connections: between the third block and the block that says "Great, then let's get started...". Here we go to the connection settings. In the "Condition" column, write the text "Yes" and check the box next to "Display as a button" and save it. This is necessary in order for the user to have "Yes" and "No" buttons after receiving this message. This will trigger the further development of information events. The same settings apply between the third block and the block with the text "Well, that's okay!". Only now we write "No" in the "Condition" column. Save this connection. Create 3 more blocks from the block with the words "Great, then let's get started" and fill them in with the text:

Block 1 – "You are to answer questions on the topic "Vector graphic editor"";

Block 2 – "You are to answer questions on the topic "Units of measuring information"";

Block 3 – "You are to answer questions on the topic "Creating documents using text editors"".

The block with the words "Great, then let's get started ..." will be considered the zero block. After you have filled in all the blocks, you need to create a connection between them.

Stage 3. Next, we should test the chatbot. To do this, there is a "Test bot" window at the bottom. Click the appropriate button and take the test. In the control panel on the left, the mentor can go to the "Clients" section. There, the developer can see all the users who have passed the test.

Stage 4. Attaching the chatbot to Telegram. To connect the bot to Telegram, click on the "Channels" button on the left panel. Next, click on the Telegram icon. You need to go to your Telegram and type BotFather in the search. Next, click start and write the command "/newbot". Name your bot and set a search link. You should also download the list of clients. To do this, you are to know the ID of the users you will upload.

Stage 5. Using a chatbot on practice. So, the script for the chatbot was created according to the following chain: purposes, scheme, content. Some participants edited ready-made chatbot scripts for their own purposes, but, as practice has shown, it is more effective to use them as an example to develop the own script. The graduates determined the purpose based on the subject of their professional or research activities. For many, there were problems to identify: what question leads to what branch; how to combine the blocks received into a single system. The educational battle "Teacher – profession of the past" aroused great interest among teachers working with gifted children. During this stage, participants were asked to engage a chatbot to discuss various controversial statements about professional teaching, for example, "What inspires teachers to choose a profession?", "What difficulties do teachers have to face in their work?", "What helps them cope the problems?".

The graduates of the control group were not involved in the targeted use of digital services for designing of didactic chatbots and organizing the work with gifted children. For example, they designed and conducted a multi-stage competition involving work with digital technologies. Teachers working with gifted children assembled lego robots; wrote multimedia stories; and invented games for children in an interactive sandbox. Thus, graduates implemented the principle of "Learning through entertainment". They also joined the transformational game "My profession is a teacher".

After informational interaction and designing a dialogue with a didactic chatbot, N. Hall's test was conducted again. And the levels of emotional development of teachers working with gifted children were re-determined. This technique makes it possible to diagnose the level of emotional intelligence in its various aspects: emotional awareness, the ability to manage one's emotions, self-motivation (as an arbitrary control of one's emotions), empathy, and the ability to recognize other people's emotions (as well as to influence their emotional state). Participants were offered a list of statements (30 statements on five scales). Next to each of the statements, they wrote down a number based on agreement/disagreement on its content (from "-3" to "+3"): completely disagree ("-3"); mostly disagree ("-2"); partly disagree ("-1"); partly agree ("+1"); mostly agree ("+2"); totally agree ("+3"). To interpret the results, the levels were introduced: "high", "low", "intermediate". We will describe the essence of the levels in order to evaluate the results of experimental work later.

"Low level" – specialists in working with gifted children do not have the necessary set of pedagogical knowledge, skills and abilities to organize emotional and substantive interaction, during which the cognitive interests of students are identified and directed.

"Intermediate level" – specialists in working with gifted children have slight knowledge of the use of digital and psychological-pedagogical technologies necessary for targeted work with gifted children and youth. Teachers are motivated to develop and implement projects aimed at identifying, supporting and accompanying gifted children and talented youth. Students have the skills of independent work and reflection. However, they are not capable of creative presentation of the educational material used to construct a dialogue in the format of a robotic "question-answer".

"High level" – specialists in working with gifted children are fully prepared to independently solve pedagogical tasks in working with gifted students based on the acquired scientific psychological, pedagogical and ethical knowledge, and also based on innovative digital technologies. Teachers are active and emotionally open to dialogue when analyzing resources, designing a dialogue, and implementing informational messaging in the chatbot format. Various forms of training and self-control are used. They show the ability and willingness to improve themselves on both personal and professional levels.

Table 1 shows the results of the training graduate students who work with gifted children.

Table 1

The level of emotional intelligence of graduates before and after developing chatbots

Level	Groups			
	Control group (26 graduates)		Experimental group (26 graduates)	
	Before the experiment	After the experiment	Before the experiment	After the experiment
High	4 (15%)	4 (15%)	4 (15%)	13 (50%)
Intermediate	18 (70%)	19 (73%)	17 (65%)	10 (38%)
Low	4 (15%)	3 (12%)	5 (19%)	3 (12%)

The following hypotheses were accepted: H0: the level of emotional intelligence of graduates in the experimental group is statistically equal to the level in the control group; H1: the level in the experimental group is higher than the level of the control group. For $\alpha = 0.05$, χ^2_{crit} is 5.991. It is determined that $\chi^2_{observed1} < \chi^2_{crit}$ ($0.140 < 5.991$), and $\chi^2_{observed2} > \chi^2_{crit}$ ($7.558 > 5.991$). Therefore, changes in the levels of emotional intelligence of graduates are not accidental. Let's analyze the dynamics by training levels:

1. In the control group, the level of the majority of students (70%) is intermediate. There are 65% of them in the experimental group. This predominance of mentors with an intermediate level is explained by the fact that initially specialists with certain pedagogical skills and a well-formed pedagogical culture (including an emotional component) go to the master's program.

2. In the experimental group, the dynamics of the "high" level was 35% (from 4 respondents to 13). There is no dynamics in the control group. Such changes are due to the fact that the practice of designing chatbots has helped teachers learn how to cope with acute stressful situations, improved emotional stability while regular use of digital tools in working with gifted children.

In addition, the participants of the experiment identified the following positive didactic possibilities of chatbots: sending newsletters in messengers; managing user requests; providing technical support; automating responses to frequent requests; and helping to register for events. We also note that graduates designed the solution to the same problem using chatbot tools in different ways according to their personal dependence on the plot (emotional component) of the task, for example, the first situation is to design a chatbot to support the work of a coach and create a training plan with proper nutrition. The second situation is to design a chatbot to create a daily routine and diet for a child. Graduates got different blocks, different sequences of questions, and different reaction messages from the bot. Limitations when working with chatbots in the didactic process: assistants may not always be able to evaluate users' responses accurately and correctly; virtual assistants do not take into account all possible answers (therefore, the teacher's task is to develop a well-

structured and accurate set of questions with expected answers); insufficient chatbot resources to analyze the context and understand the specifics of the situation.

Comparing the results shows that including information interaction with chatbots in the practical activities of teachers working with gifted children (designing according to instructions, designing the own dialogue, and using it in teaching) provides increasing the level of their emotional intelligence.

DISCUSSION

The completed research corresponds to the priority areas of UNESCO's activities, which the organization conducts to integrate children with special needs into the didactic process. In particular, while developing didactic chatbots, conditions were created that could contribute to developing various aspects of students' mental activity, and above all, the emotional sphere, attention and memory. Teachers were able to further demonstrate these abilities when planning and conducting events in their educational organizations, for example, "Condition Workshops", where they used a variety of tools to adjust the teachers and children's well-being.

The findings also correspond to the requests of the World Economic Forum's Future of Jobs 2023 about the need for future specialists to develop emotional intelligence, programming skills, and methods of working with AI assistants. The author's conclusions develop the ideas of J. Wai and C. Benbow on the importance of methodological development and application of special options for psychological and pedagogical support for gifted children at the level of diagnosis and consulting and training activities, interdisciplinary learning, developing cognitive motivation, creative activity [3]. The provisions of E. Mitsea, A. Drigas, and C. Skianis on the importance of virtual reality to solve the problem of improving the quality of education and involving students with special educational needs have also been supplemented [20]. The materials of the research are a logical progression of an earlier study by the team of E. V. Soboleva et al. Previously the authors described ideas for using more universal tools (for example, presentations, graphic or video editors), but in the presented research: the area of pedagogical influence is "narrowed" (teachers working with children with special educational needs and gifted children"); the digital tool is specified – a service for developing an AI-based chatbot [10]. As directions for developing and refining the results formulated by the authors in this research, we can suggest:

- including in the work experimental activities with specialized bots suggested by professional psychologists. For example, Faino was developed by psychologists who work in crisis situations. This bot offers self-help techniques aimed at reducing the intensity of emotions.;
- developing alternative instructions for another digital service, for example, PuzzleBot, which is also a chatbot constructor for Telegram. The latter has a mobile application that allows you to create bots for gadgets.

CONCLUSION

So, organizing practical activities of teachers working with gifted children on designing and developing didactic chatbots has provided additional resources for the development of their emotional intelligence. This is due to the fact that the chatbot for educational purposes has the following advantages:

1. Prompt provision of the necessary information (when the user interacts informatively with friends, there is no need to switch between different applications, waste time and experience negative emotions);
2. Easy reading of a short message on a smartphone and computer screen;
3. The ability to endlessly return and save chatbot recordings (allows you to track the dynamics in emotional states and relationships between participants in the dialogue);
4. Cost savings (the user can opt out of paid servers for sending emails and SMS messages and maintain positive emotions during information interaction);

5. Versatility (support on any digital devices);

6. Group distribution (a chatbot, unlike websites and mobile applications, can divide its users into groups, depending on their actions in the bot and make mailing lists for each group individually).

Among the factors influencing the quality of the usage of AI-based chatbots for the development of emotional intelligence of teachers working with gifted children, we highlight the following: the majority of representatives of the digital generation perceive the computer as a communication partner, and, accordingly, they apply the same principles to them as in relation to people; the possibility to create an original design and a unique dialogue for different user groups; a short dialogue message is to convey a specific (understandable to most users) action. We also note the fact that inside the instructions for developing a chatbot during the course, graduates were offered "hidden" detailed instructions on how to complete the steps (creating blocks and links). Also, before and after each lesson, the course teacher compiled a variety of exercises to match the user's stress level (which he showed when completing/ not completing previous assignments).

The results obtained can be used to improve training programs for specialists working with gifted children in terms of mastering those digital tools that will allow teachers to make the process of information interaction more interactive, exciting and encouraging independent acquisition of new knowledge.

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