# The influence of intelligence types on the professional choice of high school students: on the example of specialized classes of psychological and pedagogical orientation

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**Abstract.** At present, the problem of increasing the prestige of the teaching profession and attracting school graduates to higher educational organizations of a pedagogical orientation is acutely identified. In this regard, measures have been taken at the state level to create specialized psychological and pedagogical classes. This article is devoted to the consideration of the influence of intelligence types on the professional choice of high school students studying in profile classes of a psychological and pedagogical orientation. It has been found that people with a certain type of intelligence may be more drawn to a career that requires certain skills or abilities. For example, people with strong analytical skills may be attracted to a career in engineering or finance, while those with strong interpersonal skills may be attracted to a career in the human-to-human field, which is the teaching profession. As a result of the application of the diagnostic technique of the plurality of intellects by H. Gardner, the dominant types of intellect of students in profile classes of a psychological and pedagogical orientation were identified. Determination of pronounced and less pronounced types of intelligence in high school students made it possible to determine the vectors of further interaction with students to consolidate them in the teaching profession.

## 1 Introduction

The current social changes and sudden crises are having a profound impact on education and the teaching profession. Many countries face such a problem as a shortage of highly qualified teachers. In this regard, measures to reduce these risks in the future come to the fore. On the other hand, young people starting professional teaching activities have rather vague ideas

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about what awaits them in this profession. Many are beginning to realize that they are not ready to stay in it throughout their careers. This situation, in turn, actualizes issues related to the training of teaching staff.

One of the directions for solving the staff shortage of teachers was the announcement of 2023 in Russia as the Year of the Teacher and Mentor. Several instructions given by the President are aimed at increasing the prestige of the teaching profession, at their social support and at ensuring the professional growth of teaching staff.

To implement this Decree of the President of the Russian Federation, the order of the Cabinet of Ministers of the Republic of Tatarstan approved an action plan dedicated to the Year of the Teacher and Mentor. Such events include the organization and development of a network of profile classes of a psychological and pedagogical orientation. To date, 180 pedagogical classes have been created in Tatarstan in 150 schools with more than 3.5 thousand students who plan to connect their lives with pedagogy.

It should be noted that the experience of pedagogical training of schoolchildren in Russia has its roots in the 19th century. So, in 1848, pedagogical classes were opened at the Smolny Institute. Particular attention was paid to the choice of the teaching profession by schoolchildren in the Soviet period. In particular, in the 60s of the 20th century, elective courses in pedagogy and psychology functioned in the schools of the Soviet Union, and faculties of pre-professional training of schoolchildren were created at universities. In the 1990s, applicants who graduated from pedagogical classes had the opportunity to enter pedagogical universities on special conditions.

One of the areas of work with students of profile classes of a psychological and pedagogical orientation is the identification and development of their abilities and potential for professional and pedagogical activities, as well as assistance in professional orientation. To understand the strengths and weaknesses of future potential students of higher pedagogical educational organizations, it is considered appropriate to conduct psychological and pedagogical diagnostics at the stage of their pre-professional training.

The purpose of this study is to identify the dominant types of intelligence of students in profile classes of a psychological and pedagogical orientation.

## 2 Materials and Methods

Intelligence is considered one of the most complex human abilities. The problem of determining the essential and meaningful characteristics of the intellect is the subject of controversy and discussion among many scientists. V. Stern understood intelligence as “the general ability of a person to consciously adapt thinking to new requirements” [1]. Thus, V. Stern focuses his attention on the fact that intelligence is such a person's mental ability to adapt to new conditions, which was formed on the basis of previous experience.

D. Wechsler agrees with the opinion of V. Stern. However, unlike V. Stern, D. Wechsler considers intelligence as “the total or global ability of a person to act purposefully, think rationally and effectively cope with the environment” [2]. Here we are talking about purposeful rational thinking, which allows people to find the best solutions, and not about the spontaneous adaptation of a person.

Another point of view belongs to J. Piaget. He believed that intelligence is “a form of adaptation in which knowledge is created by each person through two complementary processes of assimilation and adaptation” [3]. J. Piaget also emphasizes that as a person grows older, the intellect undergoes various changes. Unlike V. Stern and D. Wechsler, for J. Piaget, intellect is a generalized regulator of behavior.

Considerable attention was paid to the concept of “intelligence” in Russian psychology. Unlike V. Stern, D. Wechsler and J. Piaget, S.L. Rubinstein considered intelligence as a system of mental operations, such as analysis, synthesis and generalization. He noted that the

intellect is the equivalent of the general giftedness of the individual and is a combination of general mental abilities.

B.G. Ananiev had a special approach to the study of the phenomenon of intelligence. He called intelligence "a complex mental activity, which is a unity of cognitive functions of different levels" [4, p. 49-60].

Modern interpretations of the concept of intelligence also have significant differences from the classical ones. So, M.B. Pozina considers intelligence from three points of view. On the biological side, intelligence is "the ability to consciously adapt to a new situation". From the point of view of pedagogy, intelligence is "the ability to learn, learnability", from the psychological point of view, it is "the totality of certain abilities" [5].

O.V. Bakhtina calls intellect "the result of creative mental activity, which is formed in the process of individual development of the personality and contains elements of productive thinking; the ability to adequately perceive, understand, reproduce, transform and apply the information received" [6, p. 38], [7].

Attention should also be paid to the point of view of H. Gardner, who believes that intelligence is both a set of skills that allow a person to solve life's problems, and the ability to create an effective product or offer a service that is valued in culture, and the potential for finding or solving problems, which includes the collection of new knowledge [8].

In accordance with the many interpretations of the concept of "intelligence" by various scientists, there is also a variety of ways to measure intelligence. In most cases, the measurement of intelligence is reduced only to the determination of the Intelligence Quotient, i.e., IQ. However, this does not allow to get a complete picture of the abilities of the individual.

Based on the foregoing, the methodological basis of our study was the theory of multiple intelligences of H. Gardner [8], according to which intelligence is not considered a single basic intellectual ability, but is considered as a set of cognitive abilities of a person acting as independent systems, each of which is responsible for different skills.

The first part of the study consisted of questioning students of profile classes of a psychological and pedagogical orientation in the city of Elabuga (36 schoolchildren, including 19 boys and 17 girls) and Bugulma (112 schoolchildren, including 82 girls and 30 boys) of the Republic of Tatarstan to determine their types of intelligence. In total, 148 schoolchildren aged 16-17 took part in the survey.

As a diagnostic technique, the "Multiple Intelligence Test" by H. Gardner was used, which allows assessing the level of development of such types of intelligence as linguistic, logical-mathematical, spatial-visual, musical, bodily-kinesthetic, interpersonal, and intrapersonal.

The choice in favor of this technique was made since, on the one hand, along with the definition of the dominant type of intelligence, it also allows to determine those types of intelligence that are less pronounced but are necessary for a comprehensive determination of a person's abilities for specific types of professional activity. On the other hand, this technique makes it possible to trace a person's predisposition to a certain type of activity, which, in turn, can be very important for schoolchildren who are in a state of active professional self-determination.

The second stage of the study consisted of a detailed interpretation of the test results by the authors of the study and a conversation with those schoolchildren who wanted to receive a detailed interpretation of the results.

## 3 Results

To determine the prevailing types of intelligence in schoolchildren, we chose the 3 most pronounced types of intelligence, and singled out the type of intelligence that was not

characteristic of a particular student. The calculation of the average indicator was carried out separately for boys, and for girls from each region separately.

As a result, we found that in Elabuga the most pronounced type of intelligence in girls is musical intelligence. At the second place among girls were such types of intelligence as bodily-kinesthetic, linguistic, and intrapersonal intelligences, in third place were logical-mathematical, bodily-kinesthetic, spatial-visual, and interpersonal intelligences (Table 1). Least of all girls had a logical-mathematical intelligence.

**Table 1.** Distribution of types of intelligence by severity in girls (Elabuga).

| Place | Intelligence types |
|---|---|
| 1 | Musical intelligence |
| 2 | Bodily-kinesthetic intelligence<br>Linguistic intelligence<br>Intrapersonal intelligence |
| 3 | Logical-mathematical intelligence<br>Bodily-kinesthetic intelligence<br>Spatial-visual Intelligence<br>Interpersonal intelligence |

In boys the distribution of intelligence types was as follows: at the first place, they, like the girls, had musical intelligence, at the second - logical-mathematical, bodily-kinesthetic, spatial-visual, intrapersonal types of intelligence. At the third place were logical-mathematical, musical, and interpersonal types of intelligence (Table 2). Least of all, boys had such types of intelligence as linguistic, interpersonal, and intrapersonal.

**Table 2.** Distribution of the type of intelligence by severity in boys (Elabuga).

| Place | Intelligence types |
|---|---|
| 1 | Musical intelligence |
| 2 | Bodily-kinesthetic intelligence<br>Logical-mathematical intelligence<br>Spatial-Visual Intelligence<br>Intrapersonal intelligence |
| 3 | Logical-mathematical intelligence<br>Musical intelligence<br>Interpersonal intelligence |

When summarizing the test results of both boys and girls studying in profile classes of a psychological and pedagogical orientation in the city of Elabuga, it was revealed that musical intelligence comes first, bodily-kinesthetic intelligence comes second, and spatial-visual intelligence takes the third place (Table 3.). The declining types of intellect in these schoolchildren were linguistic and logical-mathematical intellects.

**Table 3.** Summary table of the distribution of intelligence types in girls and boys (Elabuga).

| Place | Intelligence types |
|---|---|
| 1 | Musical intelligence |
| 2 | Bodily-kinesthetic intelligence |
| 3 | Spatial-visual Intelligence |

As for the results for students in Bugulma, it was obtained: in girls, the most common type of intelligence, which took both the first and second places, was musical intelligence, intrapersonal intelligence was at the third place (Table 4.). Logical-mathematical and interpersonal types of intelligence were the least pronounced in girls.

**Table 4.** Summary table of the distribution of intelligence types in girls and boys (Elabuga).

| Place | Intelligence types |
|---|---|
| 1 место | Musical intelligence |
| 2 место | Musical intelligence |
| 3 место | Spatial-visual Intelligence |

Boys studying in specialized classes of psychological and pedagogical orientation in the city of Bugulma had the following results: such types of intelligence as logical-mathematical, musical, and bodily-kinesthetic came to the fore. At the second place was linguistic intelligence. At the third place are logical-mathematical, bodily-kinesthetic, and spatial-visual types of intelligence (Table 5.). Boys show the least interpersonal intelligence.

**Table 5.** Distribution of intelligence types by severity in boys (Bugulma).

| Place | Intelligence types |
|---|---|
| 1 место | Musical intelligence<br>Logical-mathematical intelligence<br>Bodily-kinesthetic intelligence |
| 2 место | Linguistic intelligence |
| 3 место | Logical-mathematical intelligence<br>Bodily-kinesthetic intelligence<br>Spatial-visual Intelligence |

When comparing the results for girls and boys in Bugulma, we found that the first and second places were occupied by musical intelligence, the third place was taken by linguistic, logical-mathematical, spatial-visual, and intrapersonal types of intelligence (Table 6.). Interpersonal intelligence has become an unpopular type of intelligence in this sample.

**Table 6.** Summary table of the distribution of intelligence types in girls and boys (Bugulma).

| Place | Intelligence types |
|---|---|
| 1 | Musical intelligence |
| 2 | Musical intelligence |
| 3 | Spatial-visual Intelligence<br>Linguistic intelligence<br>Logical-mathematical intelligence<br>Intrapersonal intelligence |

## 4 Discussions

The most pronounced type of intelligence, which was in the first two positions, both among boys and girls in these settlements, was musical intelligence (34.45%). On the one hand, the popularity of this type among adolescents can be explained by the fact that music has many

socio-psychological effects on people at different periods of their development [9], [10]. According to F.Rice, music is an important component of adolescence, as it helps to relax and improves mood, music can accompany a social event (party, meeting friends), music helps to spend time and overcome boredom, music helps to express their own feelings, and teenagers often identify himself with singers and musicians [11, p. 578]

On the other hand, based on the point of view of H. Gardner [12] that musical intelligence is a person's ability to create and evaluate rhythm, pitch and timbre, as well as understand the form of musical expressiveness, we can say that people with this type of intelligence are very sensitive to finding tones, rhythms, melodies and timbres in a particular piece of music.

However, it is worth noting that it is not necessary to reduce musical intelligence only to musical abilities. In our case, the development of musical intelligence among schoolchildren can be interpreted as a creative and intuitive component of students, which "has a high degree of intellectual energy, that is, it can compress information without depleting intellectual resources, but, on the contrary, increasing the individual's mental energy due to emotional charge of musical information and even its redundancy" [13].

At the third place among students in the cities of Elabuga and Bugulma was spatial-visual intelligence (21.6%). H. Gardner considered spatial intelligence to be the ability to accurately perceive the spatial world, transform the initial perception and recreate aspects of one's visual experience. The main abilities that characterize spatial-visual intelligence are "the ability to accurately perceive the visible world, perform transformations and modifications according to the first impression, as well as the ability to recreate aspects of visual experience even in the absence of a corresponding physical object" [14, p. 373].

So, in general, in boys, spatial-visual intelligence is more pronounced than in girls. Attention should also be paid to the fact that, for example, in girls in the city of Bugulma, spatial-visual intelligence does not stand out as dominant, and in boys in the city of Bugulma it is at the third place in terms of frequency of manifestation. For schoolchildren in the city of Elabuga, girls have this type of intelligence at the third place, and boys at the second place. This is explained by the fact that, according to the study of A.V. Kruglik [15, p. 452–457], there is a relationship between the development of spatial-visual intelligence and the topographic features of the respondents' area of residence. Elabuga is a larger city with more developed infrastructure than Bugulma.

One of the sinking types of intelligence among students who took part in the diagnostics turned out to be the interpersonal type. A feature of this type of intelligence is the ability of a person to empathize and interact with other people in any social environment using verbal and non-verbal means. In addition, a person whose interpersonal type of intelligence is quite pronounced can manage their emotions. This allows them to successfully adapt to the environment and manage the situation. Researchers point out that the interpersonal type of intelligence is quite actively manifested in business and group games, as well as during the group solving various types of tasks, when coordination of the group's work is required to achieve the goals [16]. The diagnostic results indicate that the schoolchildren who took part in it do not show activity in group interaction. This fact is pointed out by A.V. Arefieva, N.N. Grebneva and T.V. Sazanov, noting that curricula are largely focused on the development of logical-mathematical and verbal-linguistic abilities of schoolchildren [17].

Attention should also be paid to significant differences in the types of intelligence by gender. Scientists note differences in intelligence between men and women. Men use their brains faster to act and deal with problems. Women have a better ability to analyze complex topics [18]. So, for example, the predominant types of intelligence in the girls we interviewed are intrapersonal, when boys have logical-mathematical, bodily-kinaesthetic and spatial-visual intelligences.

## 5 Conclusion

Studies show [19], [20], [21] that different types of intelligence can influence career choice and career orientation. For example, people with high logical and mathematical intelligence may be inclined to choose careers related to scientific and technical fields such as engineering or information technology.

People with a high level of verbal intelligence may be inclined to choose a career that is related to communication and communication, such as journalism, public speaking, or teaching. People with high emotional intelligence may choose professions that allow them to work with people and resolve conflicts, such as the medical profession, social work, or psychology.

In addition, individual preferences and interests can also play an important role in career choice. It is important to remember that each person is unique and can find their ideal profession, regardless of their abilities and types of intelligence.

The results of our diagnostics showed that one of the sinking types of intelligence among students of specialized psychological and pedagogical classes is interpersonal intelligence. In our opinion, this type of intelligence is of particular importance for the profession of a teacher, as it is expressed in the ability of an individual to see and understand the goal, motivation, and desire of people.

Teacher interpersonal intelligence is the ability to understand and communicate effectively with other people, including students, colleagues, parents, and other members of the community. This is an important quality for a teacher, as in addition to imparting knowledge, they are also responsible for creating a relaxed and productive learning environment for students. Some key interpersonal intelligence skills that can be useful for a teacher include the ability to listen effectively and understand others, the ability to express thoughts and ideas clearly and clearly, the ability to connect emotionally with students and understand their needs and interests, adapt to different student personality styles and colleagues, and the ability to effectively resolve conflicts.

Teachers with developed interpersonal intelligence have high social abilities to easily find a common language and communicate with other people. According to the theory of interpersonal intelligence, this type of intelligence has a relationship with speech activity, which connects people with those with whom they communicate. It's all about how to detect, respond, and build interactions with other people. The way a person communicates with others will show his own interpersonal intelligence. In other words, when they speak, their words and actions will depend on their interpersonal intelligence.

Schoolchildren can be helped to develop interpersonal intelligence using the following approaches:

- teaching emotional literacy and awareness (this will help children understand their own emotions and feelings, as well as understand how they affect others);
- teaching empathy (this will allow children to better understand other people's emotions and feelings, develop the ability to empathize and understand the feelings and experiences of others);
- teaching communication skills (schoolchildren should be able to speak without aggression and manipulation, be able to listen and ask questions, learn the importance of linguistic and non-verbal signals);
- train the ability to cooperate and work in a group (participation in team games and projects helps children learn to cooperate, negotiate and find common solutions);
- to teach schoolchildren conflict resolution (to help children develop communication skills and conflict resolution in different situations);
- conduct classes focused on the development of social and interpersonal competencies.

The application of these approaches can help students develop interpersonal intelligence and improve the quality of their interpersonal relationships.

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