May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

Factors Affecting the Intellectual Dynamics of the Individual

Avlaev Orif Umirovich, Associate Professor of Tashkent State Agrarian University
Burkhanov Abduvali Abdullaevich, Chirchik State Pedagogical Institute of Tashkent region Department of "Pedagogy and Management"
Ismoilova Dilafruz Muxiddinovna, Chirchik State Pedagogical Institute of Tashkent region Department of "Pedagogy and Management"
Norkuzieva Manzura Abdurahmonovna, Jizzakh State Pedagogical Institute teacher Preschool education department

Article Info
Volume 83
Page Number: 693 - 702
Publication Issue:
May - June 2020

Abstract
In this article, the factors that provide the dynamics of intelligence in the process of personal development, the transfer of intellectual activity methods to new conditions, students have proven that the components of general intelligence have a specific dynamics in educational stages and areas of study. Factors influencing the dynamics of general intelligence and correlations in the process of student professional formation are analyzed. The general intellectual potential of students studying at different stages of education is identified. It has been found that a student can achieve professional maturity if the interactive methods are chosen correctly and the psychological pedagogical and didactic bases are taken into account. The results obtained on the psychological impact of interactive methods on the mental development of students were analyzed. It has been proven that the dynamics of general intelligence in the development of the student's personality is very important and has different characteristics. The results of the study were processed by statistical methods and scientific conclusions were made.

Article History
Article Received*: 11 August 2019*
Revised*: 18 November 2019*
Accepted*: 23 January 2020*
Publication*: 09 May 2020*

Keywords: *student, personality, maturity, intellect, "Intellectual lability", "Distinguishing important signs", "Quantitative relations", "Complex analogy", social intellectual, visual-action thinking, visual-figurative thinking, creative thinking, practical thinking, theoretical thinking, interactive method.*

Introduction

The intellectual maturity of a person is the main quality of his psyche, which includes knowledge of the objective world, as well as human experiences.

Determining the intellectual structure of the individual attracted the attention of scientists at the beginning of the century, especially psychologists. The famous American scientist Spearman (1904) singled out some "head" factor of the intellect based on the behavior of the individual, and as a result called it the G factor. According to him, the human brain never works in the same way when solving an arithmetic problem, repairing a car engine, or learning a foreign language. While some people have the same level of general intelligence as others, there is a clear advantage in performing certain types of activities. Therefore, Spearman introduces factor C into science in addition to factor G. The author calls it an indicator of special ability. According to Spearman's theory, each person reflects (characterizes) a certain level of general intelligence, which, in turn, depends on his or her relationship with the external environment. According to Spearman, each person has different levels of ability development, which are evident in the process of solving obvious problems [3].

When considering the phenomenon of intellectual activity of a person in modern cognitive psychology, it can be seen that it is interpreted as a

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

process and through it new representations are formed on the basis of complex mental mechanisms of information change. It is noted in the literature that intellectual activity is influenced by the ability of the subject to use existing information, its change, the structure of new representations. The intellectual activity of an individual is of a focused nature, in which there are many alternatives that ensure the achievement of a particular result, and selection, planning, and decision-making are of great importance.

The development of a person's intellectual activity is associated with the formation of general and special abilities. As it develops, the process of an individual's intellectual activity facilitates the acquisition of knowledge and the formation of knowledge and skills. The development of the process of intellectual activity of a person gives a positive dynamics to the acquisition of knowledge, skills and abilities, as well as the strengthening of their acquisition. Individual-psychological differences, which are closely related to the process of a person's intellectual activity, contribute to the success of one or more activities, provide ease and speed of acquisition of knowledge and skills [7].

Literature review

L.A. Wenger distinguishes oriented motor actions that are indicators of the development of mental activity, allowing to solve a variety of problems, including intellectual ones. Existing individual differences allow the use of differentiated educational programs to improve the quality of education. Educational technologies developed with literacy, taking into account individual differences in the intellectual activity of the individual, ensure the rapid development of the individual [5; 130].

While determining the individual characteristics of a person's intellectual activity, D.B. Bogoyavlenskaya found that people are divided into three groups according to the degree of expression of intellectual activity: "reproductive", "heuristic" and "creative". Interestingly, only the "creative" are able to pose a new problem, in the "reproductive" - cognitive activity is minimal, and the "heurists" are mentally mobilizing all their forces to optimize the applied solution [4].

It is well known that one of the types of intellect at present is the study of social intellect and the scientific substantiation of its place in the perfection of the individual. The main function of a person's social intellectual activity is to guide the subject in the world around him. Studies have shown that the results of social intelligence in students showed a correct correlation with the ability to understand the feelings, thoughts, intentions of the communicator, the understanding of nonverbal behavior and a clear idea of verbal expression. Also, students 'social intelligence criteria were able to form a number of positive relationships with other IQ indicators. At the same time, the ability to understand the feelings, thoughts and intentions of the participant has a positive effect on the development of general intelligence and understanding of complex logical relationships, the ability to distinguish important and insignificant aspects of concepts through the visual processing of information. indicates that [1].

Renowned psychologist LS Vygotsky is one of the scientists who made a worthy contribution to the study of the problem of education and development. LS Vygotsky puts forward the socio-historical aspect of this problem and seeks to shed light on the fact that the acquisition of knowledge is a process of participation in the culture created in the historical development of mankind. According to the cultural-historical theory of the development of mental functions, the development of mental activity is understood as the acquisition of a "cultural" form (form), assuming first external and then internal expression with various symptoms, directly reconstructing its "natural" form (appearance). [2, 8, 9].

L.S. Vygotsky dwells on the question of the relationship between education and development, and puts forward the conclusion that education always goes ahead of development. He strongly opposes the interpretation of education and

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

development by foreign scholars E. Thorndike (USA) and J. Piaget (Switzerland) as one and the same, and seeks to interpret his objections rationally [6].

LS Vygotsky and VR Sakharov in collaboration developed an important methodology for determining the level of mental development of students. They called this method the "Method of Forming Artificial Concepts." The authors chose the process of categorizing geometric shapes based on the methodology, and therefore required thinking about the classification operation, which allows it to play the role of a criterion of mental development. means double stimulation (geometric shapes, their colors, size, as well as unfamiliar, meaningless inscriptions attached to them c a others).

Many psychologists have linked human mental development to various mechanisms, sources, and factors. For example, the well-known former Soviet psychologist P.P. Blonsky sought to interpret the mental development of students by linking them directly to the content of the curriculum [9]. Therefore, we conduct a psychological analysis of the results of the impact of interactive methods on student mental development.

Methodology

Methodological bases of research: principles of determinism, unity of mind and activity, unity of development, thinking and speech of psychology; A.N. Leontev's theory of activity, S.L. Rubinstein's views on thinking and mental development, P.Ya. Galperin's psychological bases of gradual formation of mental actions serve as a methodological basis of research.

Research methods: interview, observation, discussion, test methods, including the following methods calculated by Wexler and Amthauer methods: Subtest "Separation of important features", subtest "Quantitative relations", Methodology "Intellectual lability", subtest "Complex analogy" , Mathematical and statistical methods were used to prove the scientific value of the subtest "Compasses" and empirical materials.

Main parts

The following elements of thinking were identified for this study as a criterion for determining students' mental development:

1. The method of "separation of important features" helps to distinguish the features of thinking, important differences between objects and events, as well as to assess the mastery of concrete or abstract methods of thinking.

2. The criterion of "logical thinking" allows us to determine the possession of visual-action thinking, visual-figurative thinking, creative thinking, practical thinking, theoretical thinking.

3. The "lability of the intellect" takes into account the student's acquisition of knowledge, skills or abilities at different speeds and the assessment of rigidity in thinking.

4. The criterion of "complex analogy" is aimed at determining the student's ability to distinguish complex logical relationships and abstract connections.

5. Spatial imagination involves the assessment of the student's constructive thinking and technical creativity. Although, in fact, our subjects are language students, these methods were chosen taking into account that the state of development of spatial imagination also serves to ensure that they do not face problems when working on texts and topics related to professional and technical activities.

3rd year students of Tashkent State Agrarian University and Chirchik State Pedagogical Institute of Tashkent region were selected as the object of research. Because the students studying at this stage have certain professional skills and knowledge, as well as a quick and thorough understanding of the purpose, are inclined to cooperate.

The research aims to identify the psychological features of the impact of special seminar-training and interactive methods on the mental development of students. Because the psychological characteristics, social characteristics of the subjects are among the factors that directly affect the results of the study.

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

It is known that the role of interactive methods in student mental activity is great. Therefore, it is necessary to correctly interpret the role of interactive educational technologies, which reflect the modern look of the educational process:

- The impact of pedagogical technologies on the professional development of students for their intellectual development;
- What factors reflect the pedagogical and psychological significance of the impact;
- The role of interactive teaching methods in determining the level of general and social intelligence of the student.

During the experiment, we were able to assess changes in student attitudes in the process of using interactive methods such as problem-based learning, brainstorming, design method, small group work, used in the application of pedagogical technologies in the educational process. To do this, we were able to assess students in what ways these methods have an impact on performance or personal-professional growth. The general IQ is a high determinant of students' knowledge acquisition. We emphasized the scale assessment of the pedagogical technologies used in applying these methods. According to this method, students were asked to rate the impact of the innovative teaching methods used for its activities on a 5-point scale if it was the most important, and 1 point if it was the least important. These indicators also led us to further examine the coefficients of interaction of students with general intelligence, emotional and social intelligence. It was also important for us to determine the level of knowledge that students acquire in the process of professional formation. Let us focus on the results of our organ experience on the impact of educational technologies on student performance (Table 1).

Table 1: Indicators for assessing the impact of educational technologies on student performance in the educational process

Educational directions	Problematic education	Mental attack	Planning	Work in collaboration	Working in small groups	Average
Mathematics	4,19	3,70	4,80	4,33	4,63	**4.33**
History	4,58	4,15	4,60	4,70	4,72	**4.55**
Natural sciences	4,49	3,78	4,30	4,60	4,28	**4.30**
Philology	4,71	4,25	4,11	4,58	4,60	**4.44**
Average arithmetic-vertical quantity	**4,50**	**3,97**	**4,45**	**4,55**	**4,55**	**4.40**

One thing we must admit is that a comparative study of the situation in which students' performance at the end of this month compared to the indicators of mastery of educational technologies before the month of implementation.

Due to the importance of the methods used, all methods were able to have a positive effect on students in the learning process (almost all methods are above average), but problem-solving, collaborative and small group work technologies showed slightly higher results (4.50, 4.55 and 4.55). . However, the mental attack method was characterized by a slightly lower rate than other methods. This is reflected in the lower values (3.97), although the technology of application of this method is slightly easier than other methods. It can be seen that it is not the ease or complexity of the teaching method used that proves that effective and

TEST Engineering & Management

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

appropriate use of the method can have a positive effect on teaching [3].

In turn, when observing these results in the areas of education, the results did not lose their positive significance: Mathematics - 4.33, History - 4.55, Natural Sciences - 4.30, Philology - 4.44. It turns out that the use of teaching methods is not without benefits for the learning process. Even this situation is reflected in the mastering of students by the results of the month of pedagogical technologies.

The results show that the introduction of educational technologies in teaching students has a positive impact on their professional formation in the acquisition of knowledge in the educational process.

The first stage of achieving the research goal was to determine the level of intellectual development of students, which in the next stage serves to ensure the objectivity and reliability of the results achieved. To do this, they were divided into experimental, experimental, and control groups. In the identifying phase, students in both groups were tested on research methods. At the detection stage, no conditionally or exceptionally significant indicators were taken into account in the group selections. They were conditionally divided into experiments and a control group. Only in the next stage of the research was the experimental group trained on the basis of a special seminar-training program that incorporated educational technologies, and the control group on the traditional training program. In the second phase of the study, the results of these two groups will be compared.

In the introductory phase of the experiment, the level of intellectual development of students on six methods was determined.

In Table 2, where the empirical data are presented, each methodology is evaluated as an evaluation criterion of mental development.

We move on to both qualitative and quantitative analysis of the experimental results.

Table 2

Mental at the stage of students 'identifying experiments

development outcome indicators (N = 150)

Criteria	Groups	**x**	**δ**	**t**
Distinguish important signs	Experiment	5,60	1,18	1,524
		5,72	1,26	
Logical thinking	Control	5,41	1,18	-1,658
	Experiments	4,89	1,26	
The lability of the intellect		8,51	2,12	-0,359
	Control	8,39	2,13	
A complex analogy	Experiments	4,91	1,58	-0,790
		5,02	1,53	
Spatial cross-sections	Control	5,02	1,54	-2,720*
	Experiments	4,31	1,54	

Description: * $p \leq 0.05$

At the detection stage, no significant differences were observed between the experiments and the performance of the control group: 5.60 in the experimental group and 5.72 in the control group; 5.41 in the experimental group and 4.89 in the control group on "logical thinking"; 8.51 in the experimental group and 8.39 in the control group on "lability of intellect"; On "complex analogies" - 4.91 in the experimental group and 5.02 in the control group; 5.02 in the experimental group and 4.31 in the control group on "spatial imagination"; Of these results, only one case showed a statistically significant difference between the experimental group and the control group in terms of spatial projections, i.e., 5.02 and 4.31, (t=-2.720; $p \leq 0.05$). It can be seen that among the students of the experimental group, students who are able to demonstrate technical design, technical creativity, as well as spatial perception, area, distance, location of three-dimensional objects may have an advantage over students of the control group, otherwise the results on all criteria limited to the average value in the case. Indicators of "intellectual instability", which characterize the ability of students to the educational process, also reflect the average lability according to the standard norms of research methodology. In the analysis of the results of the

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

study, attention was paid to the correlation analysis in order to study the interrelationships of the existing criteria. The results of both groups examined the interrelationships of the methodologies used as criteria for assessing mental development, the results of which are presented in Tables 3 and 4 below.

Table 3. Correlation between the criteria of mental development of students of the experimental group (determining experimental phase)

	Separation of important characters	Logical thinking	Intellect of lability	A complex analogy	Spatial cross-sections
Separation of important characters	1	0,142	-0,392**	-0,091	-0,091
Logical thinking		1	-0,262	-0,072	0,061
The lability of the intellect			1	0,330**	0,312*
A complex analogy				1	0,149
Spatial cross-sections					1

Description: ** p≤0.01 * p≤0.05

Although coefficients reflecting the correlation dependence of the experimental group on all criteria were observed, no correlation was formed on a number of criteria. Although the results of the experimental group of subjects on the criterion of "separation of important traits" reflected only the association with "lability of the intellect", it also reflected a negative correlation (r=-0.392 p20.01). This suggests that the indicators of the criterion “Separation of Important Characters” have a higher level in those with a low score of “Intellectual lability”, i.e., those with “intellectual lability” are less likely. For those who have the ability to “distinguish important characters”. In other words, the extreme mobility of the mind interferes with complex logical activity such as the separation of important characters. Because this activity requires the ability to analyze the situation in a hurry.

There is also a significant correlation in the criterion of "logical thinking". In this regard, the training of students as specialists is based on visual-motor thinking, visual-figurative thinking, creative thinking, practical thinking, theoretical thinking, concepts, logical constructions.

There was also a correlation between the criterion of "lability of intellect" and the criterion of "complex analogy" of students of the experimental group (r=0,330, p≤0.01). The internal connection between the criteria characterizes that the readiness of students for the educational process serves to ensure the understanding of complex logical relationships and abstract connections at a high stage of professional training.

The next task is to interpret the internal relationship between the criteria of mental development on the basis of the indicators of the control group controllers (Table 3).

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

Table 4. Criteria for mental development of students in the control group correlation between (diagnostic test phase)

	Separation of important characters	Logical thinking	The lability of the intellect	A complex analogy	Spatial cross-sections	Ability to learn a language
Separation of important characters	1	0,263*	-0,182	-0,113	-0,121	0,088
Logical thinking		1	-0,336**	0,289*	0,091	-0,059
The lability of the intellect			1	0,239	0,124	-0,109
A complex analogy				1	0,316*	-0,212
Spatial cross-sections					1	-0,311*
Ability to learn a language						1

Description: ** $p \leq 0.01$ * $p \leq 0.05$

Controllers in the control group, as well as their peers, observed significant correlations in a number of cases. A positive correlation coefficient was determined between their criterion of “distinguishing important features” and “logical thinking” ($r=0,263$, $p \leq 0.05$). It can be seen that in this group of subjects, the indicator of distinguishing important aspects of events in the educational process is in line with the indicator of logical thinking. It follows, therefore, that it is reasonable to acknowledge that both circumstances may to some extent contribute to the acquisition of professional knowledge by students. In this group, a negative correlation coefficient was determined between the criterion of "logical thinking" and "lability of the intellect" ($r= -0.336$, $p \leq 0.01$). In this group there is a connection between logical thinking and a "complex analogy" ($r=0,289$, $p \leq 0.05$). It can be seen that the positive correlation between the two criteria of mental development is important in the process of professional formation of students and they complement each other. The student’s understanding of complex logical relationships, abstract relationships, shows that he is developing in proportion to logical thinking.

However, a negative correlation was found between “spatial imagination” and “language learning ability” in this group ($r=-0.311$, $p \leq 0.05$). The inverse relationship here suggests that subjects with high spatial perceptions have a lower level of language learning ability. That is, if one of these indicators is high in the subjects, the other, conversely, is low. So, these activities do not require each other. The study also sought to examine the age characteristics of the subjects in order to focus on a more in-depth analysis of the issue of mental development. In this case, the experimental and control group students were divided into two stages. Students aged 18-21 in the first group and 24-26 in the second group were conditionally separated. Although their age indicators did not differ by a single criterion, and in terms of the psychology of life cycles, they were specific to one period, but they led us to distinguish adolescence as the range of active and early stages of maturity.

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

In the results of the age stages of the experimental group, we cannot record any different results as in our previous analyzes. At the experimental stage, which determines their performance, is limited to average values, such as the control group, logical thinking, abstract thinking, state of readiness for the learning process, ability to learn the language and other criteria are repeated in our analysis. The results may shed light on such general traditions from the coefficients obtained from the correlation analysis of the indicators.

Table 5: Age indicators of the results of the experimental group in the determining experimental phase (18-21 years old)

	Separation of important characters	Logical thinking	The lability of the intellect	A complex analogy	Spatial cross-sections	Ability to learn a language
Separation of important characters	1	-0,019	-0,287	0,237	0,219	0,131
Logical thinking		1	-0,226	0,412*	0,218	0,226
The lability of the intellect			1	-0,108	0,171	-0,281
A complex analogy				1	0,135	0,026
Spatial cross-sections					1	0,108
To learn a language						1

Description: ** $p \leq 0.01$; * $p \leq 0.05$

A single positive correlation coefficient was observed in the experimental group on the indicators of mental development assessment criteria of subjects aged 18-21 years. This indicator, like the general indicators of the subjects, coincided with the criteria of "logical thinking" and "complex analogy" ($r=0,412$, $p \leq 0.05$).

This coefficient implies that there is a mutually compatible development between students 'logical thinking and a complex analogy, while there is no proportional development with the remaining criteria.

It was found that there were a number of correlation coefficients that differed from the previous case among the indicators of the subjects of the experimental group aged 24-26 years.

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

Table 6: Age indicators of the results of the experimental phase of the determinant in the experimental group (24-26 years old)

Mezon	Important characters to separate	Logical thinking	The lability of the intellect	A complex analogy	Spatial cross-sections	Ability to learn a language
Separation of important characters	1	0,238	-0,460**	-0,151	-0,169	0,132
Logical thinking		1	-0,212	-0,121	0,051	0,154
The lability of the intellect			1	0,510**	0,481**	-0,242
A complex analogy				1	0,163	-0,031
Spatial cross-sections					1	-0,346*
Ability to learn a language						1

Description: ** p≤0.01; *p≤0.05

In subjects of this age group, as in the general analysis, the criterion of "separation of important features" reflects the inverse relationship with the "lability of the intellect", which reflects the objectivity of our results (r=-0.460, p≤0.05). This shows that the preparation of students in the educational process shows the need to take measures to eliminate their backwardness in the method of teaching. However, it is noteworthy that students of this age group are able to solve complex logical relationships, laws of abstraction, technical and creative concepts, spatial imagination in the educational process (r=0,510, p≤0.01; r=0,481, p≤0.01). They lag behind in combining “spatial perceptions” with “language learning ability” (r=-0.346, p≤0.05). Therefore, in the formative experiment phase, it is advisable to organize trainings with special attention to similar cases.

Integral and consistent linkages in the empirical data describing the criteria for assessing the mental development of students in the defining phase of our study were also observed in the experimental group and the control group. This makes it necessary for us to study interactive methods and factors that serve to ensure the intellectual development of students, and in turn to conduct research that encourages the main goals, objectives of our research, to prove the hypothesis of scientific research. In our study above, we examined the positive effects of interactive methods on student intelligence. This paves the way for the student to achieve personal maturity in mental development.

Conclusion

1. The high level of mental development in students was confirmed by indicators that have a correlation or correlation between its criteria. No such relationship was observed during the investigative experimental phase of the study.

2. Average, below-average values were observed on the general indicators of the criteria for assessing the mental development of the experimental and control groups.

3. In the results of the experimental group, the results of the criterion "spatial perception" differed from the results of the control group in terms of

May-June 2020
ISSN: 0193-4120 Page No. 693 - 702

reliability. No significant differences were identified for the remaining criteria.

4. In the experimental and control groups, the indicators of "lability of the intellect" mean that the readiness of students in both directions for the educational process is moderate.

5. Coefficients reflecting consistency and coherence were not observed in the correlation relationship between the criteria of the stages of mental development of the subjects at the diagnostic stage. Positive correlations between some criteria were identified. In the experimental group, “lability of intellect”, “complex analogy” ($r=0.316$; $p\leq0.05$) and “spatial perception” ($r=0.311$; $p\leq0.05$) formed a positive correlation.

6. In the control group, a positive correlation coefficient was determined between the criterion “separation of important features” and “logical thinking” at the diagnostic experimental stage ($r=0{,}263$, $p\leq0.05$).

7. Although interactive methods are focused on a specific aspect of the learner in terms of content and structure, they simultaneously affect other psychological aspects of the learner, such as his or her communication, willpower, cognitive processes, and so on. Future research of these effects and systematic sequencing of the collected results will allow the learner of pedagogical technologies to create an integrated map of psychological effects.

8. At the formative stage, teaching through interactive methods has achieved growth in the criteria for assessing the intellectual development of students. This is due to the fact that the students of the experimental group have the characteristics of thinking, the ability to distinguish important and insignificant features of objects, the formation of abstract thinking style, the manifestation of a specific style of thinking depending on the situation. $p\leq0.05$), provided the formation of a perception of technical-creative concepts in professional activity.

References

1. Avlaev, O.U., & Mamatkulova, Z.G. (2019). The dynamics of the interpersonal relationship of the components of social intelligence of students. Science and education today, (12 (47)).
2. Foziev E.F. Psychology. - T: Kitucci, 1994.
3. Burlakova N.S., Oleshkevich V.I. Projective methods: theory, practice of application to the study of the personality of a child. - M., 2001 .-- 352 p.
4. The Epiphany, D. B. The psychological basis of intellectual activity: dis. ... Dr. Psychol. Sciences: 19.00.01 / Epiphany Diana Borisovna. - M., 1988 .-- 395 p.
5. Wenger, L.A. Perception and learning / L.A. Wenger. - M., 1969 .-- 365 s.
6. Workshop on developmental psychology / Ed. L.A. Golovey, E.F. Fishing. - St. Petersburg, 2001 .-- 688 p.
7. Telegin, E.D. Psychological regulation and self-regulation of creative mental activity of a person: dis. ... Dr. Psychol. Sciences: 19.00.01 / Telegina Eleonora Davidovna. - M., 1993 .-- 370 p.
8. Tunic E.E., Zhikhareva Yu.I. Slosson Intelligence Test. - St. Petersburg, 1999.
9. Shmelev A.G. Fundamentals of psychodiagnostics: Textbook. allowance. - Rostov n / A: Phoenix, 1996 .-- 544 p.