

## **Psychological peculiarities of formation of environmental concepts among the students**

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### **ABSTRACT**

The paper presented the results of research aimed at improving the effectiveness of methods for forming students' environmental perceptions. The specialists tested the ideas about the motivation of decision-making related to environmental law, the system of environmental representations, moral behavior, and features of attitudes to natural and existential reality (reality) on a sample of 441 students of the Tashkent State Pedagogical University, Andijan State University, Kokand State Pedagogical Institute, and Navoi State Pedagogical Institute.

The research revealed such typologies of students as "anxious-fearful," "adaptable to life," and "cultivated" according to the dynamics of the development of environmental concepts and moral consciousness. It was determined that students' environmental concepts contribute to forming their pragmatic and aesthetic attitude to nature, cognitive, pragmatic, and aesthetic attitude to themselves and society. For example, "moral introject," "morality as a criterion for establishing relationships with others," "morality as a criterion for individual responsibility of the individual" were identified, which express the properties of students behavior that formed under the influencing of the development of environmental concepts. Psychometric standards were developed to ensure the reliability, objectivity, and validity of the "Alternative" and "Naturafil" methods.

**Keywords:** environmental awareness, ecological education, individual-psychological foundations, development, personal qualities, attitude to nature, decision-making behaviors.

### **INTRODUCTION**

The relationship of behavior with the understanding of the world, individual, and social limits of the relationship to nature is currently being studied while analyzing human reactions and the natural environment. We are beginning to understand more clearly that the industrial revolution destroyed the relationship between man and nature. It is considered an actual problem that requires a psychological analysis of the relationship between nature and man.

According to various studies, ecological consciousness is a complex mental formation that includes cognitive, regulatory, emotional, ethical and other aspects (Akopov, Cherdymova, 2001; Gagarin, 2003; Deryabo, 1999; Zhuravlev, Guseva, 2000; Kalita, 1996; Medvedev, Aldasheva, 2001; Khashchenko, 2002; Yasvin, 2000; etc.). [1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11]

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Numerous environmental education programs used around the world to form environmental attitudes include both the cognitive and affective aspects of children's interaction with nature [12; 13, etc.] While the younger the children, the more the affective (emotional) aspect is used [14; 15]

According to the viewpoints mentioned above, the definition of ecological and psychological research requires the prior determination of interaction. It specifies the relationship "man-environment" to be studied and determines how ecopsychological interaction is considered:

a) as a subject of study (in this article, for example — as a subject of theoretical analysis) [16];

b) as a theoretical construct (tool) for studying any specific interactions, for example, interpersonal relationships in a student group [17];

c) or as an initial prerequisite for the formation of the methodological position of the study.

In the latter case, we are talking about the fact that we are coming to a methodological alternative: the choice of an epistemological research paradigm or an ontological one.

Individual ecological ideas are developed simultaneously based on experiences of mutual influence with the natural environment. The peculiarities of the attitude of society to nature determined the experience of an individual. These features are reflected in everyday environmental concepts. They, in turn, are directly associated with the choice of specific forms of behavior in significant situations in the environmental aspect.

The attitude to nature manifests in the meaning of significant actions carried out on a person's part from an ecological perspective. And the purpose of such actions is revealed in the ideas underlying the motivational basis.

### **MATERIALS AND METHODS**

The research subject is the ideas about the motives of decision-making related to environmental law, the system of environmental beliefs, moral behavior, and the peculiarities of relations to natural and existential reality (reality).

In the study, the following methods were used: observation, conversation, "Naturafil" method, the method of "Alternative," methods of Dubov I. G. and A.A. Khvostov, "The study of the motives of moral behavior," the method of "Dealing with the life, death in critical situations" of A. A. Bakanova, the method of "The aesthetic scale" of Barron-Welsh, and methods of mathematical statistics – factor analysis, discriminant analysis, correlation analysis, variance analysis, Student's t-test.

The study involved 441 students of Tashkent State Pedagogical University, Andijan State University, Kokand State Pedagogical Institute, and Navoi State Pedagogical Institute.

Psychometric standards were developed to ensure the reliability, objectivity, and degree of validity of the "Alternative" and "Naturafil" methods for practical use in local conditions adapted to the national and cultural environment.

### **RESULTS AND DISCUSSION**

The practical results of the study consist of the followings:

- the features of the ideas about the motives for making important decisions related to the environment and the system of environmental values were revealed;

- the psychological characteristics of the relationship between moral behavior and intrapersonal conflicts with the development of environmental concepts in students were determined;
- psychological features of ecological representations as a system derivative are determined, and scientific data on the terms appearing at different levels of reflection were obtained;
- a program of socio-psychological training on the Correction of students' ecological ideas was developed.

The reliability of the research results is determined by applying psychodiagnostic methods with psychometric requirements and mathematical statistics methods through processing empirical data (factor analysis, discriminant analysis, correlation analysis, variance analysis, Student's t-test).

The scientific significance of the research results:

- expands the scientific understanding of the psychological foundations of environmentally significant behavior.
- can be used in the theoretical supplement of psychoecology.
- enriches scientific knowledge about the role of the student period in the psychological development of the individual.
- shows the possibilities of the psychosemantic approach in the study of problems related to the relationship between man and nature.

The practical significance of the research results:

- obtained serve to increase the effectiveness of measures aimed at the development of environmental culture among young people.
- opens up ways to identify the features of the individual's mental development strengthens the methodology of precise control of the levels of formation of environmental psychology in the process of cognitive development

### **The study results identify the correlation between the perception of environmental values and orientation with the moral behavior determinants**

In the empirical part of the study, the problems of adaptation and validation of the methods used are solved. The compliance of these methods with the goals of the experimental study is proved.

Quantitative and qualitative analysis of the obtained data using psychological diagnostics and the results obtained using mathematical methods of statistical analysis ensured the scientific nature of the conclusions. For research, adapted the methodology of "Alternative" and "Naturafil" studying ecological consciousness.

It was applied methods related to the study of moral behavior's motives because motives can determine relationships. This method was developed by I. G. Dubov and A. A. Khvostov. It allows scientists to study the determinants of moral behavior of everyday consciousness in large groups of the population. However, in the process of adapting the methodology, the method encountered several problems. The most basic of them is the difference between Russians and Uzbeks' morality; that is, it is associated with mental characteristics. The methodology developed by the authors contains 54 statements concerning the determinants of moral behavior, which combined 16 factors. In the study, the data obtained from factor analysis combined not 16 but 17 bipolar factors. In this case, the original analysis's keys given by the methodology's creators turned out to be inadequate since it is worth noting that here scientists may face a

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specific transformation of information in the national environment. That is, the analysis of the original answers given could lead to semantic errors.

The discriminant analysis helps to find solutions for problems related to two groups.

1. In interpreting the differences between different classes, that is to say, answers the following questions: how exactly one type differs from another type using a given series of variables; in determining which of these variables has a high degree of importance in distinguishing classes.

2. In the classification of objects based on the value of each object's discriminant variables, in determining which class it belongs to.

As a nominative variable of the discriminant analysis, it was taken student training courses (1-2-3-4-courses). Based on this, each of the 54 statements was considered on a different scale. The discriminant analysis was performed using the SPSS-11.5 program. The results of the discriminant analysis will be shown in Table 1.

The statements included in the first canonical factor consist of the followings:

In the positive pole: "because then you will not suffer because of your actions" (0.918), "because your position in society requires it" (0.521).

In the negative pole: "because if everyone is moral, there will be no place for evil." (-0.564), "because otherwise, you can't adapt to life" (-0.505).

*Table 1*

**Normalized coefficients of the canonical discriminant function**

Questionnaire statements	Function		
	1	2	3
Because otherwise, you can't adapt to life	-0,505	-	-
Because doing good is your duty	-	-	0,843
Because your position in society requires it	0,521	0,516	-
Because morality you think is a reasonable thing	-	-	0,506
Because morality is suitable for everyone	-	-0,628	-
Because if everyone is moral, then there will be no place for evil	-0,564	0,590	-
Because then you will not suffer because of your actions	0,918	-	-
Because you think you need to value relationships with other people	-	-0,408	-0,462

An informative analysis of this factor shows the presence of an external locus of control among students. If you act within the framework of morality, then you maintain your position in society and not suffer from it in the future.

However, it should be underlined that the negative pole of the factor shows the possibility of people using moral behavior to cause evil: since morality is an adaptation to life, even if everyone is honest, there is still a place for evil.

This factor is called "morality as an introject."

The second factor included the following statements:

In the positive pole, "because if everyone is moral, there is no place for evil" (0.590), "because your position in society requires it" (0.516).

In the negative pole: "because there is a benefit for everyone in morality" (-0.628), "because you believe that you need to value relationships with other people" (-0.408).

An informative analysis of this factor shows that students have the following opinion about morality. If everyone acts according to their position in society, there will be no place for evil. After all, a person (the negative pole of the factor) who does not value relationships with other people believes that morality does not benefit everyone.

This factor is conventionally called "morality as a measure in relations with others."

The positive pole of the third factor included "because doing good is your duty" (0.843), "because you consider morality a reasonable thing" (0.506), and the negative pole of this factor included "because you believe that you need to value relationships with other people" (-0.462).

An informative analysis of the third factor shows that morality consists of good, and it is a human duty, so following morality is a reasonable thing. In essence, the negative pole of the factor reveals this factor's distinctive feature from the two previous factors: since morality is a helpful thing, it is emphasized that relationships with other people should not affect it.

The third factor is conventionally called "morality as a measure of individual responsibility."

The discriminant analysis also serves to create a classification of specific nominative values. It was observed how the differences between the courses on the concepts of moral behavior determinants are reflected. The results of the analysis will be reflected in the following table (Table 2).

The canonical discriminant functions in the first year are closer to the negative pole of the first factor (-1.007). In the second year, having changed their views, they moved to this factor's positive pole (0.905). They, studying in the first year, believed that if you act within the morality framework, you maintain your position in society and not suffer from it in the future. By the second year, they agree that morality is a means of adapting to life because even if everyone is moral, there is still a place for evil.

**Table 2 Functions relative to group centers (centroids)**

Student's course	Function		
	1	2	3
1 <sup>st</sup> year	-1,007	-0,180	0,121
2 <sup>nd</sup> year	0,905	-0,422	0,183
3 <sup>rd</sup> year	0,284	0,906	0,258
4 <sup>th</sup> year	0,147	0,097	-0,954

This situation is explained by students' transition from one cultural environment (family and school or academy and college) to another sharply different environment, in which they become indifferent. This situation means that the process of adapting students to the new environment is complicated. And by the third and fourth years, students are close to achieving a certain level of factor equilibrium (0.284 and 0.147, respectively).

It can be noted that the ideas about the morality of second and third-year students also undergo sharp transformations. If they are closer to the negative pole of the second factor in the second year, by the third year, their opinions are closer to the positive pole of this factor. That is to say, if, in the second year, they believed that if everyone acts according to their position in society, there will be no place for evil. By the third year, they changed their opinion that a person

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should "value" relationships with other people while extracting a specific benefit or benefit for himself or showing himself as if he values.

By the fourth year (the most challenging situation that arose in the course of life and training), students concluded that if morality means "valuing relationships with other people," you do not need to value such relationships.

The following types can be conditionally distinguished: first-year students – "anxious," second-year students – "adapting to life," third-year students - "becoming indifferent" and fourth-year students - "cultured" (that is, they understand morality only as a sign of culture) considering the facts mentioned above.

The purpose of creating such a typology was to determine the features of the ecological consciousness of individuals belonging to these "types." In other words, finding out how changes in attitudes to both the natural and social environment affect their ecological perceptions.

So, it can be said that a person is a part of nature; his or her changes become an impetus for changing nature.

Studying the changes in the moral consciousness of students that occur in the process of life and learning, in the framework of the research work, it might be coming to the following conclusions:

1. Features of the formation of the moral consciousness of the student period is determined by the transition from a narrow family environment to a broad social environment;
2. The moral consciousness of students under the pressure of life and learning in the student period undergoes sharp deformations;
3. The dynamics of the development of the moral consciousness of students made it possible to classify the subjects of the educational process as the object of research;
4. Considering students' moral consciousness as a static phenomenon leads to disagreements in psychological diagnostics.

Also, the psychological features of the relationship between ecological ideas and the attitude to nature were revealed.

Based on our research's objectives, we tested the relationship between the results of the "Naturafil" method and the "Study of Moral Behavior motives" method using the technique of correlation analysis of mathematical statistics.

As a result, it was revealed that the scale "morality – taking individual responsibility for oneself" has a direct correlation with "intensity of relations to nature" and "morality-the mechanism of social adaptation." It has an inverse correlation with the scales "cognitive attitude to nature" and "pragmatic attitude to nature."

**Table 3 Results Correlation of the "Naturafil" method with the results of the "Study of the motives of moral behavior" method**

Demonstrations of attitude to nature	Taking individual responsibility	Social adaptability
Cognitive relationship to nature	0,047	-0,206(*)
Practical attitude to nature	0,031	-0,155
A pragmatic attitude towards nature	-0,035	-,179(*)

The scale of naturalistic erudition	-0,050	-0,148
The intensity of relationship to nature	222(*)	-0,031

Note: \* - $p \leq 0.05$

It is tried to return to the problem emphasized by S.D. Deryabo, by analyzing the data obtained. According to his practical research, in adolescence, the intensity of relations to nature with a pragmatic modality increases. At the same time, the manifestation of attitudes associated with a pragmatic attitude to nature decreases.

In contrast to S. D. Deryabo, the data shows a strengthening of the pragmatic attitude. Simultaneously, the obtained data explain, at least a little, why this phenomenon occurs. The inverse correlation between the cognitive, practical attitude to nature in adolescence and social adaptation mechanisms in many aspects can be associated with the assimilation of a new cultural environment as the "adult world."

The study's data showed a decrease in morality's importance as a social adaptation mechanism: its indicator is among students 1-year students 9.58, 2-year students-8.54, 3-year students 9.00, and 4-year students 7.43. [18]

The dynamics of a decrease in attitudes towards the morality of the study period among young students is noted.

It means that cognitive and pragmatic attitudes towards nature are strengthened. The mental attitude in many aspects means defining character by "how useful it is for a person." This phenomenon, in our opinion, is due to the influence of compensatory mechanisms due to students' disillusionment with social life.

It is revealed that higher education does not fulfill its main task in terms of taking on individual responsibility by young people in their relations to nature and morality. For students on this scale, it is observed that the recorded results during training in an educational institution do not statistically change.

According to the conducted research, the following conclusions can be drawn:

1. The scale "morality – taking individual responsibility for yourself" has a direct correlation with the scale "intensity of relations to nature";

2. The scale "morality – the mechanism of social adaptation" has an inverse correlation with the scales "cognitive attitude to nature" and "pragmatic attitude to nature";

The methodological basis of the program for the formation of ecological ideas is also justified. Simultaneously, the program's effectiveness for the formation and Correction of students' ecological ideas was evaluated.

It was recorded that the relationship with nature and ideas before the Program for the formation and Correction of ecological concepts and after implementing this program using V. A. Yasvin "Naturafil" and "Alternative" methods to assess the Program effectiveness for the formation of students' ecological ideas. The arithmetic averages of the initial and subsequent results were compared using the Student's t-test, designed to compare dependent groups' results. The respondents' data is distributed accordingly for 1, 2, 3, 4-courses.

*Table 4*

№	Scales	Course 1	Course 2	Course 4	Course 4
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		before the experiment	after the experiment	before the experiment	after the experiment	before the experiment	after the experiment	before the experiment	after the experiment
1	Cognitive attitude	2,48	3,12	2,04	3,41	3	2,94	2,16	2,87
2	practical attitude	2,6	2,8	2,66	3,29	2,84	3,94	2,58	2,83
3	Pragmatic attitude	2,76	3,64	3,08	3,16	3,82	2,63	3,12	3,75
4	Aesthetic attitude	2,8	3,84	3,58	4,84	3,31	4,47	3,12	2,7

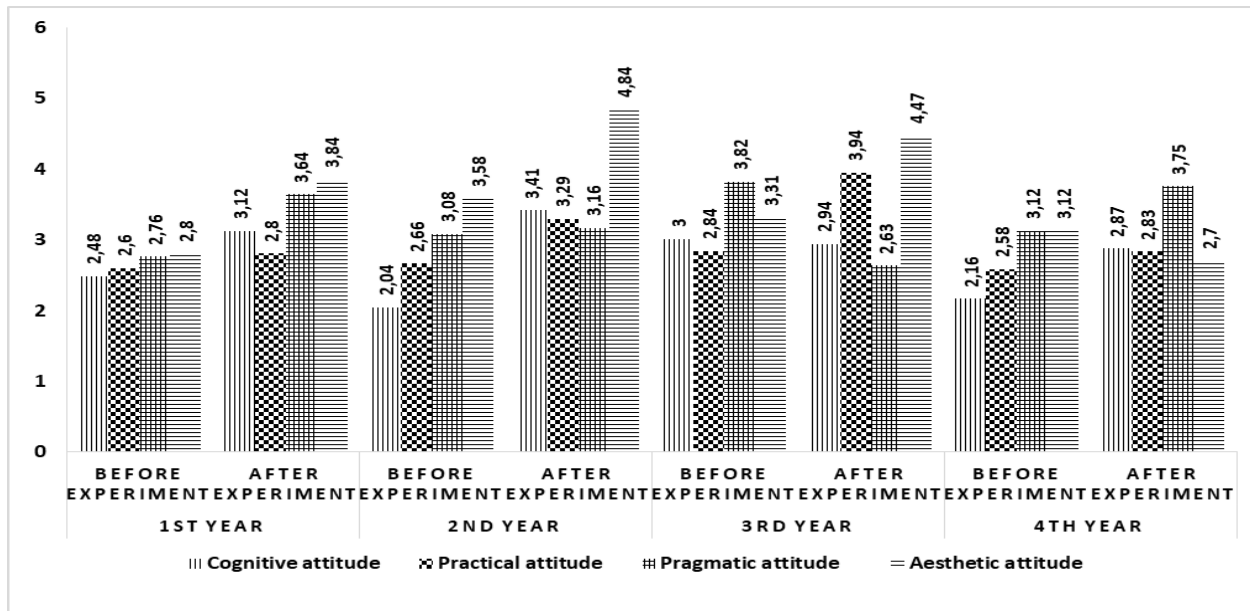


Figure 1. Diagram of the results of the "Alternative" method before and after the experiment (1st-4th year students)

The factors that express the features of environmental perceptions in first-year students can be described using the following scales:

If we observe the work on the formation and Correction of environmental representations, then on the scale of cognitive attitude, the result before the experiment was  $\mu= 2.48$  and  $\delta 1, 084$ . And the results after the experiment on this scale significantly changed by  $\mu= 3.12$  and  $\delta=1.332$  ( $p \leq, 005$ ). On the scale of practical attitude, the result before the experiment was  $\mu= 2.60$  and  $\delta 1$ . The results after the experiment on this scale changed to  $\mu= 2.80$  and  $\delta=1.322$ . But the level of



significance of these changes is low ( $p \leq, 593$ ). The results before the experiment were  $\mu = 2.76$  and  $\delta = 1.507$  on the pragmatic attitude scale, and then the results significantly changed to  $\mu = 3.64$  and  $\delta = 1.551$  ( $p \leq, 048$ ). On the aesthetic attitude scale, the indicators before the experiment were  $\mu = 2.80$  and  $\delta = 1.224$ , and the results on this scale significantly changed to  $\mu = 3.84$  and  $\delta = 1.106$  ( $p \leq, 004$ ).

Factors that express the characteristics of environmental perceptions in second-year students can be described using the following scales:

On the cognitive scale, the result before the experiment was  $\mu = 2.04$  and  $\delta = 1.398$  then changed at  $\mu = 3.41$  and  $\delta = 1.248$  ( $p \leq, 05$ ). On the scale of practical relation, the result before the experiment was  $\mu = 2.66$  and  $\delta = 1.203$ . And the results after the experiment on this scale were  $\mu = 3.29$  and  $\delta = 1.517$ , but no statistical significance was observed ( $p \leq, 217$ ). On the scale of the pragmatic attitude, the differences are also not significant. On the aesthetic scale, the result before the experiment was  $\mu = 3.58$  and  $\delta = 1.348$ . The results after the test on this scale significantly changed to  $\mu = 4.84$  and  $\delta = 1.488$  ( $p \leq, 048$ ).

On the practical attitude scale, the result before the experiment was  $\mu = 2.84$  and  $\delta = 1.500$ , then the results after the experiment on this scale significantly increased by  $\mu = 3.94$  and  $\delta = 1.508$  ( $p \leq, 038$ ). On the aesthetic attitude scale, the result before was  $\mu = 3.31$  and  $\delta = 1.600$ . While the values after the experiment significantly changed to  $\mu = 4.47$  and  $\delta = 1.218$  ( $p \leq, 042$ ).

Factors that express the characteristics of environmental perceptions in fourth-year students can be described using the following scales:

On the cognitive scale, the result before the experiment was  $\mu = 2.16$  and  $\delta = 1.493$ , then the results after the test significantly changed to  $\mu = 2.87$  and  $\delta = 1.075$  ( $p \leq, 047$ ). In the subsequent scales (practical, pragmatic, aesthetic scales), significant differences were not observed.

*Table 5*

№	Scales	Course 1		Course 2		Course 4		Course 4	
		before the experiment	after the experiment	before the experiment	after the experiment	before the experiment	after the experiment	before the experiment	after the experiment
1	Cognitive attitude	4,56	4,8	4,04	4,95	4,31	5,52	4,87	5,29
2	practical attitude	3,8	5,88	3,87	5,7	5,47	5,68	3,7	5,41
3	Pragmatic attitude	4,28	6,44	4,37	6,04	5,84	6,42	4,04	5,7
4	Aesthetic attitude	4,2	5,4	4,54	4,87	4,57	5,36	4,54	5,12
5	Naturalistic erudition	3,08	5,04	3,5	3,62	3	3,63	3,16	3,25

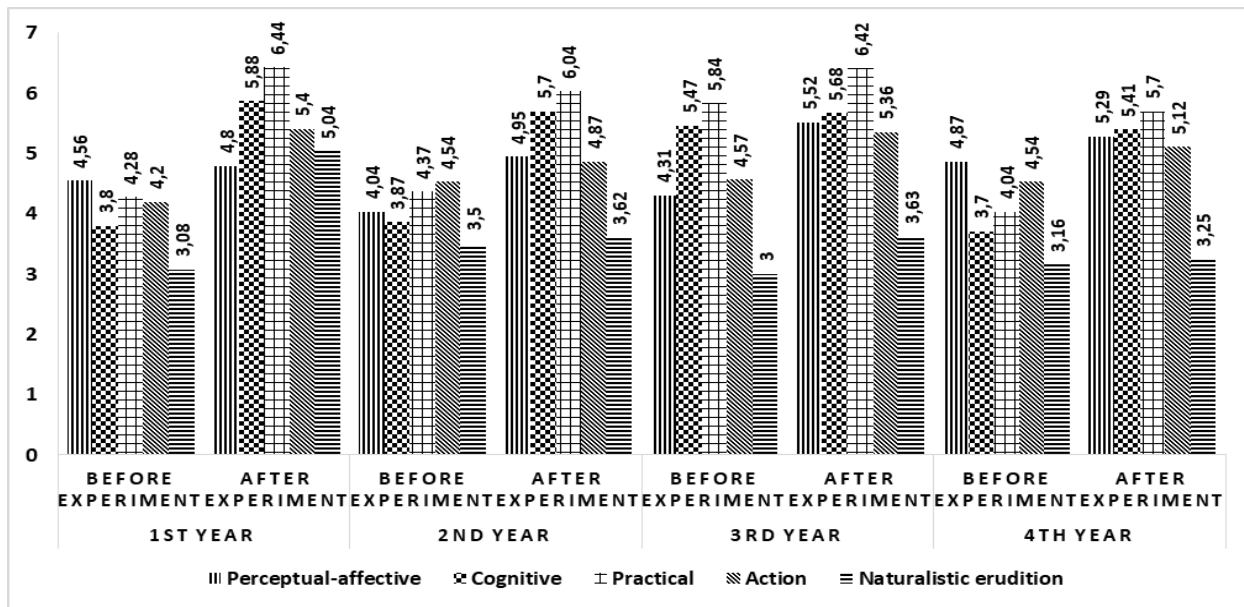


Figure 2. Diagram of the results of the "Naturafil" method before and after the experiment (1st-4th year students)

Changes in the characteristics of the relationship with nature in students were reflected in the following scales: If the perceptual-affective scale showed the result before the experiment was  $\mu=4.56$  and  $\delta=1.193$ , then the indicators on this scale changed at  $\mu=4.8$  and  $\delta=4.80$ , but the significance between these changes is not observed ( $p \leq, 617$ ). According to the cognitive scale, the indicators before the experiment were  $\mu=3.80$  and  $\delta=2.254$ . And the results on this scale were  $\mu=5.88$  and  $\delta=1.833$  ( $p \leq, 001$ ). On the practical scale, the indicators were  $\mu=4.28$  and  $\delta=2.354$ , while the indicators after the experiment significantly changed to  $\mu=6.44$  and  $\delta=1.709$  ( $p \leq, 001$ ). On the scale of the action, the results were  $\mu=4.20$  and  $\delta=1.683$ ; then the results significantly changed to  $\mu=5.40$  and  $\delta=1.732$  ( $p \leq, 026$ ). According to the scale of naturalistic erudition, the indicators before the experiment were  $\mu=3.08$  and  $\delta=1.869$ , and the results on this scale significantly changed to  $\mu=5.04$  and  $\delta=1.619$  ( $p \leq, 001$ ).

Changes in the relationship characteristics with nature among students were reflected in the following scales:

On the perceptual-affective relationship scale, the result was  $\mu=4.04$ , and  $\delta=1.488$  then results changed to  $\mu=4.95$  and  $\delta=1.545$  ( $p \leq, 026$ ). On the cognitive extent, the effect before the experiment was  $\mu=3.87$  and  $\delta=2.07$ , while the values after the test showed  $\mu=5.70$  and  $\delta=1.731$  ( $p \leq, 002$ ). On the practical subjective attitude scale, the results before the experiment were  $\mu=4.37$  and  $\delta=2.683$ , the results after the test were  $\mu=6.04$  and  $\delta=1.731$  ( $p \leq, 027$ ). There are no significant differences in the scales of action and naturalistic erudition.

Changes in the characteristics of the relationship with nature among students were reflected in the following scales: if the perceptual-affective scale results before the experiment were  $\mu=4.31$  and  $\delta=1.634$ , then the results on this scale significantly changed to  $\mu=5.52$  and  $\delta=1.611$  ( $p \leq, 041$ ). The differences are not significant on the extent of action and naturalistic erudition, cognitive and practical scales.

On the cognitive scale, the result before the experiment was  $\mu=3.70$  and  $\delta=2.196$ , then the results after the experiment on this scale showed noticeable changes at  $\mu=5.29$  and  $\delta=1.931$  ( $p \leq, 013$ ).

On the scale of practical attitude, the results before the experiment were  $\mu= 4.04$  and  $\delta=1.988$ , then the results on this scale showed noticeable increases by  $\mu= 5.70$  and  $\delta=2.367$  ( $p\leq, 003$ ).

On the scales of action and naturalistic erudition, perceptual-affective scale, the differences are also not significant.

### **CONCLUSIONS**

1. The peculiarities of the formation of the student period's moral consciousness are determined by the transition from a narrow family environment to a broad social environment.

2. Considering students' moral consciousness as a static phenomenon leads to disagreements in psychological diagnostics.

3. The formed moral criteria in a person, having created harmony together with a conscience, give rise to active behavior.

4. Motivational ways of relationship with nature to a certain extent are derived from the personal experience of the subject. These relations reflect the system of relations in many aspects to themselves, society, existential (existential: defining humanity, which is the meaning of life reality) reality, their "true" meaning is transformed under the influence of psychological defense mechanisms.

5. The particular program developed to change the subjective attitude to nature proved its power of influence.

6. According to the strength of the program's influence, a change in students by differences was revealed.

7. It is advisable to conduct this program at the beginning of the student life or in separate courses, optional classes.

### **CONFLICT OF INTERESTS AND CONTRIBUTION OF AUTHORS**

The authors declare the absence of apparent and potential conflicts of interest related to this article's publication and report on each author's contribution.

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