




Tecnología de formación en la autoorganización de los estudiantes en la enseñanza de lenguas extranjeras

Technology of forming students' self-organization in teaching foreign languages

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Abstract

This paper examines the structure, criteria of self-organization, synergetic conditions and theoretical description of the authors' technology in the process of teaching foreign languages at technical institute. To achieve this goal, a set of scientific methods: theoretical analysis of papers on the problem; diagnostic and statistical methods to process data and results of pedagogic observation of forming students' self-organization competences were applied. The novelty of the authors' flexible technology is based on personal-oriented education and synergetic methodology to meet modern education requirements to a person's sustainable development in education environment. The results contribute to synergetic methodology of forming self-organization and didactic aspects of teaching foreign languages. Statistically verified data confirm appearance of students' self-organization competency. The efficiency of authors' technology is proved experimentally. Implications for conceptualization and measurement of self-organization are determined. In this context, the study has a theoretical foundation and practical application.

Keywords: Self-organization, synergy, self-control, self-regulation, technology, teaching, foreign languages.

Resumen

El presente artículo examina la estructura, los criterios de autoorganización, las condiciones sinérgicas y la descripción teórica de la tecnología de los autores en el proceso de enseñanza de lenguas extranjeras en el instituto técnico. Para lograr este objetivo, un conjunto de métodos científicos: análisis teórico de trabajos sobre el problema; Se aplicaron métodos diagnósticos y estadísticos para procesar datos y resultados de la observación pedagógica de la formación de las competencias de autoorganización de los estudiantes. La novedad de la tecnología flexible de los autores se basa en una educación orientada al personal y una metodología sinérgica para satisfacer los requisitos educativos modernos para el desarrollo sostenible de una persona en el entorno educativo. Los resultados contribuyen a la metodología sinérgica de formación de la autoorganización y los aspectos didácticos de la enseñanza de lenguas extranjeras. Los datos verificados estadísticamente confirman la aparición de la competencia de autoorganización de los estudiantes. La eficacia de la tecnología de los autores está probada experimentalmente. Se

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determinan las implicaciones para la conceptualización y medición de la autoorganización. Por ello, el estudio tiene fundamento teórico y aplicación práctica.

Palabras clave: Autoorganización, sinergia, autocontrol, autorregulación, tecnología, docencia, lenguas extranjeras

Introduction

Contemporary social societies and institutions are dynamically self-organizing systems going through a succession of modernization stages with ambiguity, uncertainty and crises (bifurcation points) are known to be triggers of a person's self-organization (Gorlova et al., 2020). To survive a person (a system) must acquire stronger qualities, competences and characteristics (Anikeeva et al., 2019). The complexity of education goals, ever increasing requirements to professionalism combined with students' problems of personal development, their fears and uncertainty in choosing their future profession and changeable synergetic educational environment are also triggers of students' self-organization. For conscious self-organization management, it is necessary to form students' self-organization competences.

Therefore, forming students' self-organization is one of the main priorities of professional education as mentioned in the strategy approved by the European Commission "EU 2020" aimed at students' sustainable development in education environment (European Commission, 2010). The need to form self-organization competences is determined by Federal state educational standards of higher education (2020). According to Budanov (2007) and Boguslavsky (1995) the main education goal is to develop students' competences to conscious management of self-organization as appearance of stronger personal qualities based on personal values, integrity, and freedom of choosing individual trajectory of personal and professional self-development.

For the other hand, self-organization is pointed out as a natural way of improving education quality closely related with person's self-development and self-actualization (Adler, 1997) and ensures continuous self-improvement and self-transformation. Knyazeva and Kurdyumov (1994) and Zorina (1996) are pointed out that knowledge, skills, competences are subjected to self-organization in education environment. Andreev (1996) stated that developing self-organization competences is possible due to person's active position, accurate planning, self-control and rational use of time.

Focusing on the understanding of self-organization relevance (Kuprina et al., 2019), it is possible to characterize competences of self-organization as a person's systemic property based on a combination of knowledge, abilities, skills and subjective experience to ensure self-management and self-control aimed at improving effectiveness, self-actualization and success adaptation to rapid changing of social and professional environment (Arshinov, 1997).

For the purposeful development of students' self-organization in education process an effective flexible pedagogic technology is necessary. The lack of technology in pedagogic research papers to ensure self-organization and insufficiently studied potentials of self-organization in the process of teaching foreign languages at technical university in Gural (2011), Lamzin (2002) and Logvinova (2012), partly contribute to using great potential of teaching foreign languages to form self-organization competences. Therefore, the lack of concept uniformity of self-organization, in its structural components, assessment criteria, approved diagnostic methods and the lack of technology of forming and stimulating self-organization determine the research tasks of the study. In conclusion, to fill the existed gaps in research the study is aimed at conceptualization of synergetic ideas in theoretical description of pedagogic technology and measurement of self-organization competences in the process of teaching foreign languages (Tambovkina, 2007).

Literature review

The conducted literature analysis shows that there are various definitions of self-organization in scientific papers. The ambiguity and complexity of the term can be explained by different researchers' approaches and their interests. The analysis showed that self-organization is mainly determined as inner changes (Knyazeva & Kurdyumov, 1994); innovations in personal traits (Gural, 2011; Ustinova, 2000); inborn qualitative changes and personal self-control, stability and balance (Sukhanov & Morozova, 2012); life-meaning strategy (Alisov & Podymova, 2001; Mikhnevich, 2012); personal development (Dmitrieva, 2004; Danilov, 2008), emotional balance (Zimmerman and Schunk, 1989), self-structure process (Petrova, 2013; Peisakhov, 1976; Rubinstein, 1989) resulting in qualitative changes (Logvinova, 2012); conscious activity and motives (Tsagarelli, 2009). The differences in terms is also determined by various criteria of estimating self-organization: self-control, self-regulation, self-actualization or creativity. Taking into account studies (Mukhina, 2008; Slastenin et al., 2013) the main criteria in the paper are the self-organization competences, personal structures of consciousness and self-actualization.

Forming self-organization competences is aimed at improving education quality (Soltovets et al., 2019). Psychologists as Kotova (2008), Kirschner (2009) determined the following self-organization competences – goal setting, analysis of available resources, planning, self-control and self-education, volitional regulation and correction of behavior or goals as response to changing circumstances. These competences can be formed and estimated in communicative situations (Kuznetsova, et.al, 2014, Drozdova 2009, Kuprina & Mikhnevich, 2012). The main criterion of effective self-organization is communicative creativity to ensure contradictive ties of balance and crises, non-liner and liner thinking etc. It is stated (Soltovets et al., 2019) that positive effect of self-organization is new levels of competences appeared in critical- problem communicative

situations (Hasan et al., 2010). Thus, the relevance of forming self-organization competences allows to solve urgent issues: to improve education quality, to ensure personal and professional growth, to achieve goals (Nasonova 2009; Tambovkina, 2007). These competences are based on various ability characteristics showing the way to achieve goals, to use new methods; to improve the work organization, to clarify information, to set task priorities, to adjust plans; to perform tasks on time, to be creative. To form these competences different pedagogic tools and models were designed (Zaenutdinova, 2000; Kolb et al., 1986; Kolb & Kolb, 2013).

Some researchers analyzed technologies and stressed the efficiency of developing self-organization in foreign communicative creativity. For example, Khitrova (2019) pointed out that linguistic situations stimulate formation of conscious self- processes. Robinson (2005) argues that the process of learning a foreign language ensures the transition of students' cognitive abilities to describe the knowledge features. Thus, some researchers appeal to teaching methods of foreign communication to form self-organization (Breygena, 2002; Serebryantseva, 2009). The need of modeling effective self-organization is also stated (Strizhakova et al., 2015; Podnebesova, 2013). The authors' technology of forming self-organization is a flexible model of students' conscious transition to higher levels of personal and professional self-development. The technology stimulates and regulates students' communicative creativity to form necessary competences (Stepanisheva, 2012; Kotova, 2008; Poutanen et al., 2011). The main aim of the technology is to ensure qualitative personal and professional development. The main pedagogic principles are based on humanistic values: cultural consistency of communicative situations, authenticity, value-semantic content orientation, openness, subjectivity, dialogue culture orientation, persuasive communication and critical analysis.

The personal component is aimed at developing personal features, values and cultural senses in various communicative situations (Ustinova, 2000; Zotova & Rodina 2009). Based on the theory (Ignatova, 2001) effective self -organization appears in complex problem non-linear communicative situations. For the other hand, to model communicative situations is denoted as a complex of personal-developing knowledge skills (Ishkov, 2014) generated by the cognitive consciousness in teaching foreign language and indirectly contribute to the self-organization competences by forming a value-motivated attitude to their professional activities and personal aims. Taking into account synergetic methodology (Arshinov, 1997) a procedure of adapting synergy principles to the peculiarities of subject and object of the study was applied. Communicative situations must meet the following conditions: 1) previous structures cannot cope with the requirements of the communicative situations; 2) the main source for emergence of new qualities must be "fed" from the outside, 3) the new structures are open; 4) the communication is free and subjective 5) contain complementarities (Dmitrienko, 2003). Critique reflexivity and

novel meaning of foreign communication led to a conceptual change in students' consciousness due to the appearance of diverse dialogues and interactions between students and contextualized learning objects (Bryman, 2012; Neuman, 2013)

Methodology

In accordance with the tasks, the methodology included both theoretical analyses, methods of induction and deduction, comparative analysis, modeling and generalization, empirical observation and diagnostic methods (Crotty, 1998; Singleton & Bruce, 2010). The integration of different education approaches: personal oriented, communicative, competent and synergetic determined the aims, principles of technology and evaluating the results of students' self-organization competences This is a qualitative research aimed at the observation of students' self-organization in teaching foreign languages. There were two interconnected research stages including the process of modeling and evaluating of the research results. To prove its efficiency self-actualizing test (SAT) and self-organization diagnostic methods were applied. A designed questionnaire with questions of open and closed types where the respondents were to choose a variant of the answer proved the efficiency of applied technology.

Participants

105 students from Technical and Technology faculty were invited to participate in the experiment. 57 students were included into 2 experiment groups. 48 students were invited to participate in two control groups. Initially the students of all groups were asked to fill the questionnaires to diagnose their knowledge about self-organization and to assess initial levels of their self-organization competences. The students were to express their attitudes to various situations and problems. Their answers were registered and evaluated in accordance to the description of the author's questionnaires (Mandrikova, 2010). Then, the scores were summed up and compared with the results of each student of the groups. The procedure was repeated twice at the beginning and at the end of the experiment. The experiment was carried out in 2020 at the Institute of Service and Business (branch) of Don State Technical University. The study was carried at foreign language chair at technical institute.

Diagnostic methods for evaluating students' self-organization

Considering pedagogical diagnostics as the part of the technology, the authors developed a program for studying the dynamical changes in personal structures as appearance of self-organization competences. The scientific approach to diagnostic methods was applied to prove the effectiveness of the authors' technology. It was necessary to measure not only the final results but

to identify the prerequisites, conditions and results of the educational process of teaching a foreign language. In this regard, the assessment of the effectiveness was carried out on the basis of students' real levels during the experiment. The pace and scale of self-organization competences of each student can be positive results of the technology.

The subprogram for measuring the qualitative changes of students' self-organization competences was developed by indirect indicators. Their purpose is to determine the initial and final levels of students' self-organization competences, to diagnose the development of the basic structures of consciousness-reflection, autonomy, criticality, motivation, and self-regulation.

The use of indirect indicators is explained due to two circumstances: a) the indirect nature of the chosen means of communicative conditions for actualizing activity of personal structures of consciousness in a joint communicative activity; b) the activity of personal structures of consciousness, have no direct empirical expression. Guided by these assumptions, a set of diagnostic techniques to test indirect manifestation of personal structures of consciousness activities was determined. Their main focus was on personal self-control and self-actualization in communicative creativity. So, self-organization could be measured statistically by means of applying methods: a self-actualization test (SAT), tests of autonomy-dependence, subjective self-control (as one of the most striking manifestations of self-organization), a test "I-concept of creative self-development", questionnaires of motivation, attitude to risk, changes in self-attitudes (Gozman et al., 1995).

The second subprogram for measuring the quantitative effectiveness of innovations was done by direct indicators. Its purpose is to diagnose the development of students' abilities and skills to "objectify" new personal traits in the operational - objective - verbal sequence, which is the prototype of the self-organizing consciousness advancement to the highest levels. The analysis contained generalized description of competences based on personal structures activities as the competences to establish connections between explicit and implicit contradictions (reflection); to analyze different views(criticality); to be convincing (argumentation); to distinguish between moral and technocratic communicative values (motivation); to express critical analyze of the established information (invariant thinking); to identify obvious and hidden sources of contradictions, problems, conflicts in the considered communication situations (collision); to overcome the contradictions between the prescribed (given) understanding of the content of communication and personal freedom of understanding it in the context of changing communicative conditions; to add own meanings(meaning creation); to support and empathize with the interlocutor (empathy).Such description of personal structure activities could be fixed by means of direct observation in the learning process. It has a frequency statistical characteristic, i.e. can be represented by the frequency of manifestations. Finally, to prove the efficiency of the

authors' technology it was necessary to evaluate levels of students' self-organization at each stage of the experiment.

Results

The results of using questionnaire degree of self-organization and self-regulation of structuring personal time, plans and goal setting were received. The applied questionnaire has 6 scales to determine self-organization of each student on the following scales: "Planning", "Purposefulness", "Perseverance", "Fixation", and "Self-organization due to external means" and "Orientation on present". The total indicator is a sum of students' progress in self-organization.

The scores on the scale "Purposefulness" showed students' abilities to plan and achieve personal goals and life perspectives. The indicators on the scale "Self-organization by using external means" determined the abilities to appeal to external means of self-organization. The results on the scale were rather low due to uncertainty and inability to accept their own image.

The assessment analyses were performed for students of experimental s and control groups. It is easy to see the difference of results in increasing levels of self-organization competences; they are presented in Tables 1, 2. The high scores were received on basic scales, they mean constant conscious planning, a purposeful activity to achieve targets despite any difficulties. The high scores characterize a strong-willed and organized person, with competences to structure behavioral and communicative activity, striving to complete the work and achieve goals. The main personal traits were: will, perseverance, creativity in communication leading to inflexibility and "using careful planning.

Table 1

The results of students' self-organization in experimental groups (self-organization activity questionnaire)

Scales	At the beginning of the experiment			At the end of the experiment		
	The scores of students of experimental groups					
	St.1	St.2	St.3	St.1	St.2	St.3
Systematic approach	11.4	12.3	14.1	18.4	17.3	19.1
Purposefulness	31,9	32,1	30.4	32,9	34,1	32.4
Perseverance	14.5	21.1	20.2	19.5	22.1	24.2
Fixation	14.6	13.3	12.8	18.6	19.3	17.8
Self-organization by using external means	5.7	6.1	7.9	11.7	10.1	9.9
Orientation on present	5.5	4.4	4.43	8.5	7,4	8.4
General indicator	83.6	89.2	89.8	107.6	110.3	110.8

Source: developed by Mandrikova (2010) and adapted by the authors of the paper.

The authors compared the received results in experimental and control groups. And the received results among students of control groups were lower at the end of the experiment. They are given in Table 2.

Table 2

The Indicators of students' self-organization in control groups (self-organization activity questionnaire)

Scales	At the beginning of the experiment			At the end of the experiment		
	The scores of students of control groups					
	St.1	St.2	St.3	St.1	St.2	St.3
Systematic approach	12.4	12.3	13.1	12.9.	13.1	14.0
Purposefulness	31	32,2	31,6	32,9	33,1	32.4
Perseverance	14.5	11.1	12..2	16.5	12.1	13..2
Fixation	14.6	13.3	12.8	16.6	14.3	15.8
Self-organization by using external means	5.7	6.1	7.9	6.7	7.1	7.9
Orientation to present	5.5	4.4	4.3	6.5	7,4	6.4
General indicator	83.7	79.4	81.9	92.1	87.1	89.7

Source: developed by Mandrikova (2010) and adapted by the authors of the paper.

The increased indicators on Fixation scale can be explained by students' strong concentration on reaching goals that leads to inflexible communication and difficulties with outsider's position as a way of compromising. The comparison of the results convinced that all students of experimental groups show increased levels of self-organization on all scales. To prove the efficiency of the technology, it is necessary to assess innovative qualities based on personal structures appeared as the result of creativity in communicative situations. As self-actualization is the result and criteria of self-organization SAT was applied (Gozman et al., 1995).

The practice of using SAT in various studies has shown that the "average level of self-actualization" corresponds to 55-70 points. But 45-55 scores are known as statistical normal result. The applied SAT shows the increased dynamics of students' self-organization. Each student is characterized by a certain increase of self-organization at the end of the experiment as qualitative changes in students' personal structures of consciousness. These changes are shown in Tables 3, demonstrating results of applied SAT recording the self-organization of each student of the groups, in accordance with their individual abilities, internal motivation and needs in self-development.

The evaluation of self-organization was carried out for every student on each scale (highest score = 100) by translating the results into standard points, which are the basis for compiling profile

forms. On this form, depending on the mean of 50 points and the standard deviation of 10 points, each scale has its own scores.

Table 3

Individual dynamics of students' self-organization (according to the results of a self-actualization test, in scores)

Scales	The beginning of the experiment			The end of the experiment		
	St.1	St.2	St.3	St.1	St.2	St.3
1. Competenceintime	43	37	52	54	40	64
2. Support	52	46	64	57	59	71
3. Valueorientations	62	41	59	69	56	79
4. Flexibilityofbehavior	41	38	51	53	46	68
5. Sensitivity	34	32	45	46	40	53
6. Spontaneity	46	34	51	52	50	61
7. Self-respect	60	34	56	65	47	78
8. Self-acceptance	56	36	59	64	49	68
9.Represent.aboutnature	36	41	49	45	49	56
10. Synergy	31	30	35	49	46	52
11.Acceptance ofaggression.	32	39	46	45	51	56
12. Contact	42	36	49	54	47	61
13. Cognitiveneeds	35	31	46	49	45	58
14.Creativity	46	36	51	58	48	64

Source: developed by Gozman, Croz and Latinskaya (1995), and adapted by the authors of the paper.

For the reliability of the obtained results, pedagogical observation was used during the experiment. Pedagogic observation can give detailed description of students' communicative abilities and self-organization competences in the process of teaching foreign languages.

The students of the experimental groups demonstrated significantly increased indicators on the scale of self-acceptance .Thus; it can be assumed that the authors' technology helped the students of experimental groups to accept themselves as they were, regardless of the assessment by other people, critical attitudes.

Comparison of the average SAT indicators of students in the experimental and control groups at the beginning of the experiment revealed significant differences between these groups of students on both basic scales (competence in time and support), as well as an additional scale of flexibility of behavior.

Thus, the students of experimental groups showed higher levels of holistic perception of life, greater independence of values and behavior from external influences, and a greater ability to quickly and adequately respond to a changing situation. They demonstrated creativity while the students of experimental groups just imitated speech patterns. The summarized results for the control and experimental groups as a whole are presented in Tables 4, 5.

To decide whether the changes in indicators on the SAT scales occurred as a result of the introduction of the authors' technology were statistically significant; the Student's t-test was applied as a secondary method for statistical processing of experimental data.

Basic formula $t = (M1-M2) / \sqrt{(D1^2+D2^2)/2}$, where M1 is the average value of the indicator at the beginning of the experiment; M2 is the average value of the indicator at the end of the experiment; D1 is the root-mean-square (standard) deviation of the sample (the beginning of the experiment), D2 is the root-mean-square (standard) deviation of the sample (end of the experiment).

Using the above formula, the t index was calculated for all scales, both for samples of experimental and for a sample of control groups. For a given number of degrees of freedom (control is 40, experimental is 32) and the probability of an acceptable error is $\alpha < 0.05$, the tabular value of t is 2.02 and 2.04, respectively. The calculated value of t exceeded the tabular value in both samples on two scales: the scale of support and the scale of flexibility of behavior.

Thus, it could confidently assert that the technology developed self-organization on knowledge integration, cultural values and communicative competences as abilities to be independent, free from outside influence guided by their own goals and beliefs, control achieving goals. It lead to reducing the degree of flexibility in communicative behavior, but applied principle of complementarities improved the ways of interaction as shown in Table 4. So the authors are sure that it can be regulated by special communicative situations and synergetic principles.

Table 4

Generalized results of the Effectiveness of using technology in the process of teaching a foreign language (SAT)

Scales	Control groups			Experimental groups		
	M-1	D-1	T(b)	M-1	D-1	T (b)
At the beginning of experiment						
1. Competenceintime	2.66	7.1	0.71	7.8	2.57	0.42
2. Support	45.8	7.63	2.14	46.8	6.8	2.50
3. Valueorientations	3.31	11.0	1.5	11.4	3.97	0.50
4.Flexibility in behavior	3.37	14.0	2.14	14.8	3.84	3.17
5. Sensitivity	6.64	7.0	1.56	6.7	2.58	1.25
6. Spontaneity	6.60	2.8	1.0	6.3	2.50	2
7. Self-respect	2.94	8.7	0.43	8.6	2.96	1.90
8. Self-acceptance	3,17	10,1	0.	10,4	3,22	2.56
9.Represent.aboutnature	2,04	4,2	0.71	4,8	2,29	0.71
10. Synergy	1,76	3,1	1.5	4	2	1.21
11.Acceptance ofaggression	2,84	8,1	2.02	7,8	2,79	0
12. Contact	3,16	1,0	2.29	10,6	3,25	1.79
13. Cognitiveneeds	2,30	5,3	1.5	5,5	2,34	1.56
14.Creativity	2,50	6,3	1.86	6,1	2,46	1.43

Source: the authors.

Table 5*Effectiveness of using technology in the process of teaching a foreign language (SAT)*

Scales	Control groups			Experimental groups		
	M-2	D-2.	T(f)	M-2	D-2	T(f)
At the end of the experiment						
1. Competenceintime	7.2	2.68	0.71	7.9	2.81	0.42
2. Support	46.4	6.84	2.14	47.6	6.89	2.50
3. Valueorientations	10.7	3.2	1.5	11.4	3.97	0.50
4. Flexibilityofbehavior	13,4	3,66	2.14	13.5	3.67	3.17
5. Sensitivity	6.5	2.54	1.56	6.7	2.58	1.25
6Spontaneity	6.6	2.56	1.0	7.1	2.76	2
7. Self-respect	8.4	2.89	0.43	9.3	3.03	1.90
8. Self-acceptance	10.1	3.17	0.	11.4	3.37	2.56
9.Represent.aboutnature	4.1	2.02	0.71	4.9	2.21	0.71
10. Synergy	3.7	1.92	1.5	3.6	1.89	1.21
11.Acceptance ofaggression	8.8	2.96	2.02	10.1	3.7	0
12. Contact	10.8	3.28	2.29	10.1	3.17	1.79
13. Cognitiveneeds	4.8	2.19	1.5	6.2	2.44	1.56
14.Creativity	7	2.64	1.86	6.5	2.54	1.43

Source: the authors.

Table 6 indicates generalized results of t at the beginning and end of the experiment can show the presents of increased levels of self-organization. It is calculated by comparing results at the beginning and the end of the experiment.

Table 6*Generalized results of t at the beginning and end of the experiment*

Average	T (b)	T(f)
1. Competenceintime	2,31	1,94
2. Support	3,57	5,45
3. Valueorientations	0	2.18
4. Flexibilityofbehavior	2,50	1,0
5. Sensitivity	1,71	1,0
6Spontaneity	1,56	1,56
7. Self-respect	1,0	2,16
8. Self-acceptance	1,36	2,95
9.Represent.aboutnature	1,54	1,78
10. Synergy	1,84	0,59
11.Acceptance ofaggression	1,36	2,43
12. Contact	2,0	2,12
13. Cognitiveneeds	1,0	2,4
14.Creativity	1,2	1,56

Source: the authors

A significant qualitative increase is noted among students of the experimental groups on the scale motivation (+ 11.2% compared to +1.4% in the control); criticality (+ 9.7% compared to 0). Significant changes occurred in all measured parameters during the transition of students from

a low to an intermediate level (in the experimental groups, on average, +18.5% compared to +1.3% in the control groups).

In general, the growth of positive indicators of self-organization was pointed out on all scales and it should be noted that the students in the experimental groups showed increase of self-organization competences in a range from +11.4% to +27.6% (transition from a low to an average level of development). In the control groups it was, respectively, from -2.2% to +3.3%. So it is possible to notice a significant progress in the experimental groups. The data obtained, even with significant discrepancies on the scales served as individual indicators of self-organization, proved the efficiency of the technology. It should be emphasized that the noted discrepancies exist mainly between positive and not between negative values.

Discussion

Since the problem under study is complex and multifaceted, the work does not claim to be comprehensive and fully disclose the studied phenomenon. The general restrictions of this study were due to relatively small samples of respondents, limited duration of conducting research, education approaches and technology aimed at forming students' self-organization in teaching foreign languages. The assessment methods were taken subjectively and later were adapted by the authors as valid criteria of self-organization. At the same time, in our opinion, the data obtained, was a limitation factor as it did not allow gaining complete confidence in the effectiveness of the proposed innovations. In this regard, it was decided to carry out clarifying diagnostic procedures to identify indirect and direct changes in the person's structures of consciousness as a foundation of forming self-organization competences.

Preliminary data for the experimental groups were obtained as a result of individual testing and pedagogic observations of specific changes in students' communicative activities. The general observation results showed that at the beginning of the experiment most students' communicative activity had imitating character: so communicative imitation can be described as low stage of self-organization as pointed out by Daurova, and Filonenko (2015). But we consider that imitation had positive results as it became a starting point for students' searching sense activity when a person determines own communicative "I position".

By his part, Dyachuk (2010) stressed that to evaluate the dynamics of learning systems; the representation of the interactive learning process in the form of Markov's chain is possible. This allowed us to describe and investigate many of technology properties: the dynamics of the changes of the processed states; the average number of communication process necessary for each state and the variance of the values; the limiting probabilities of finding the system in the states of the ergodic set. Therefore, the division into various self-organization stages was based on the

differences in the frequency and intensity of personal characteristics activity that directly and indirectly affects the student's self-organization. Taking into account personal characteristics is reported to determine the success of self-organization and efficiency of training (Ustinova, 2000). In the frame of the paper it is possible to describe low level of self-organization competences, which is characterized by weak activities of personal structures of consciousness (especially on the scales criticality, sense-making activity and reflection), as the detailed description is given (Serebryantseva, 2017), so it is possible to note the most significant components.

Pedagogic observation proved that students' with low self-organization competences showed strong dependence on external circumstances of communicative situations. It can be explained by a low degree of internal motivation helping students to achieve high results in the communicative situations and interpersonal interaction. Bazhenova (2015) described students with low self-organization demonstrated poor abilities in determining successes and failures; and in accordance with that it is possible to describe a person with low levels of personal self-reflection, self-confidence, perception of language communication, inability to accept other people as significant communicative partners, low level of self-acceptance, self-leadership, self-consistency, self-understanding; lack of internal enthusiasm in communicative situations for reaching communicative aims, competitive motives, motives for changing cognitive activity; showed a weak expression of volitional communicative efforts, low self- assessment abilities. They had very low or absence of communicative skills: to identify obvious and latent contradictions in the proposed situation; to establish connections of meanings between explicit and implicit contradictions; uncertainty in expressing own point of view if it is different from other opinions and low skills to argue; to distinguish between moral and technocratic values of a communicative phenomenon, idea, fact; inability to critical analyses to state the established (invariant) point of view on the phenomenon; they could not seek and find new guidelines in communication, put forward a hypothesis; overcome the contradictions between the prescribed understanding of the situation and the need for freedom of understanding in the context of new circumstances; supplement the teacher's presentation of the situation with their own meanings and exchange them with others.

To evaluate organization levels, special diagnostic methods should be applied as indicated by Ishkov (2003). But, evaluation of students' self-organization in the study is done in accordance to three technological components. The main one is personal, so assessment methods of Self-actualization test, assessment diagnostic of motivation, self-control, self-assessment techniques were applied to estimate students' consciousness activities as basis of personal self-organization. The above stated diagnostic methods can be correlated with indicated in the study by Nazarova and Ostapenko (2011).

It was stated that sufficiently high levels of motivation to avoid problems were based on an overestimated (or extremely underestimated) self-esteem, which was accompanied by unjustified ambition with a satisfactory level of knowledge, but the lack of knowledge systematization and skills to transfer knowledge. A person with low level avoids discussions, participates only in collective reflective activity, and shows a willingness to agree with someone else's point of view. In case of difficulties, a person stops educational activity and loses interest in it. A person prefers to use ready-made schemes and algorithms. Creativity is not well developed. Humanistic values are recognized, but they are not beliefs. The professional "I-concept" is comprehended only in general terms. There is no desire for self-improvement in communicative activity.

The registration of the activity of the personal structures of consciousness was carried out by means of using "point" diagnostic methods where each of the structures (systems) of interest to us was measured by one method. This operation made it possible to obtain a general idea of the development of the structure in accordance to four parameters. An exception was the estimation of autonomy as described in the paper by Morozova and Maslak (2020).

This was difficult due to the peculiarities of the methods used, which did not allow differentiating the qualities of autonomy-dependence according to the levels. However, the results obtained for these parameters were used as qualitative indicators of general changes within the progress of every student to a new quality stage: from dependence to autonomy. The independent self-organization nature of educational activity is acquired "without a teacher" (Hawkins and Blakesley, 2007). The student's actions are determined by subsequent communicative actions and random reinforcements from the problem learning environment as autonomy self-organization.

It should be noted that this study has a number of limitations. The main limitations were: Firstly, the collected data are presented by students of one faculty; due to the fact that they were obtained by using typical communicative situations, the frequency of appearing self-organization is rather low. This situation could create some distortion in the studied dependencies of forming students' self-organization, the variety of communicative situations could give greater disperse. . Secondly; the research was conducted for a year; it is a short period of experiment duration. This situation could distort the obtained results and cannot give a real picture of technology efficiency. Thirdly; generalized results were presented by the students of Don state technical university. This situation can be based on the same professional interests conditioned by cultural education environment of technical university. Forth; the collected data were based on different students' linguistic skills and barriers. Fifth; small sample sizes based on 105 respondents' results do not provide a quantitative result representation. Sixth, the interpretation of qualitative research data is

subjective, since it is based on subjective interpretation of diagnostic methods and subjective linguistic comments and verbal responses, rather than quantitative estimates or rankings.

These limitations could create some distortion in the studied dependencies and they should be considered. Therefore, the following recommendations can be made: it is necessary to involve students of different faculties and education institutions, to increase the duration of experiment at least to five years, to differentiate experimental and control groups paying attention to their linguistic skills, age, gender, cultural and regional differences, increase the number of sample sizes. Taking into account the received results it is necessary to correct diagnostic assessment methods and introduce quantities methods.

Conclusion

The main conclusions were obtained by means of solving the research tasks. The solution of the first task let us clarify the key concepts of the study and determine the main approaches to the process of forming students' self-organization in teaching foreign languages. The most adequate understanding of self-organization was found in the analysis of the principles of personal-oriented education and pedagogical synergy. After authors' interpretation these principles became a methodological basis for constructing a theoretical model of the technology that ensures self – organization, and improves professional competency and quality of language education.

Pedagogical technology of forming students' self-organization competences was constructed with the help of principles and criteria of the stated approaches. Based on statistically reliable data obtained during the experimental testing, it is stated that the technology meets the basic requirements of personality-oriented and synergy methodology. Its application shows a small but steady growth of personal structures and communicative skills in sense-seeking activity and creativity as self-organization components. Therefore, the selected and additionally developed diagnostic set allows us to reveal a clear picture of both dynamical changes in self-organization competences and personal and professional development. The noted discrepancies of indicators exist mainly between positive values. This allows us to judge, in general, about the effectiveness of the proposed technology.

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