

Monitoring of health culture formation in schoolchildren

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Abstract:

Purpose: On the basis of theoretical research on the problem of formation health culture of schoolchildren the article describes the socio-pedagogical system for formation health culture of children in an educational institution, which was implemented through various strategies (technologies). To consider the organization monitoring of formation health culture of schoolchildren and the results of implementing different strategies.

Material: The socio-pedagogical system for formation health culture of schoolchildren was developed; it was implemented through the proposed technologies in two strategies. The criteria system for health culture of schoolchildren and set of methods for their study (on 39 indicators of the first level and 130 indicators of the second level) that are the basis for monitoring are developed. The study was carried out for 7 years, the respondents were 288 learners, 100 parents, 64 experts-pedagogues who independently assessed the techniques and the results obtained.

Results: Using of mathematical statistics methods to the results of an experimental study of formation health culture of schoolchildren made it possible to conclude that in the entire sample, changes were observed in all the specified criteria and indicators. Analysis of the obtained data indicates that these changes are most pronounced in the four experimental groups (E1-E4). In these groups, the developed technology was fully implemented (strategy I), less pronounced – in two groups (E5-E6), where it was partially introduced (strategy II), and insignificantly expressed – in control groups (K1-K4), to which active factors of influence were not applied.

Conclusions: The developed socio-pedagogical system was implemented through the technologies proposed by the author, which included a set of techniques. This system made it possible to solve the problem of analytical and prognostic support for monitoring of formation health culture of schoolchildren.

Key words: monitoring, health culture, socio-pedagogical system, pedagogical technologies, criteria system, diagnostic techniques.

Introduction

In the period of intensive development of information technologies, integration of social and educational systems, the emergence of global problems, among which the most important are the decline of culture, deterioration of health and the persistence of a consistently high death rate of the population of Ukraine, there is a need to develop a monitoring system for a health culture of the younger generation.

Analysis of modern scientific literature, periodicals and other sources indicates that monitoring plays an important role in various spheres of society's life. It acquires special significance in the medical, psychological, pedagogical branch. A common view is monitoring as a type of management activity. Monitoring reveals the state of the management object on the basis of a system of various indicators, such as: compliance with organizational standards, management experience, etc. The main task of implementing a monitoring system is to prognose the further development of the management object through information and analytical support (Skubashevs'ka, 2008). This view is important, and the task is unconditionally reasoned. But, in our opinion, the monitoring task should be viewed in a broader context: as an analysis of the situation; as an identification of the problem and its causes; as the development and implementation of measures or the creation of conditions for the elimination of negative trends; as the prognosis of development of the phenomenon under study; as the development of recommendations. This will link each of them to the monitoring stages. Such an integrated approach will help to overcome the fragmentation of the solution of the problem, establish analytical and prognostic support for management decisions, and make monitoring dynamic in relation to the needs of society.

One of the most actual needs of society is the study of the health of the younger generation. Scientists considered this problem in the apex of developing a socio-cultural concept of health care (Apanasenko, and Popova, 2002; Entwistle, 1994; Kaznacheyev, 1997).

Holistic and integrated approaches to the problems of organization of youth health care are highlighted in the works of Dykhan, Kukushkin, and Trushkin, 2005; Grombakh, 1988.

Formation of personality and health problems is revealed in the studies of foreign psychologists (Assagioli, 1975; Berne, 1968; Freud, 2010; Moreno, 2012; Perls, 1973).

The problems of improving schoolchildren are reflected in the works of Garber, 2006; Lopez, 2006; Mayorga, Viciano, and Cocca, 2012; Rice, and Gunstone, 1986.

Scientific works have theoretical value and practical importance for the development of issues of the culture of individual health:

- taking into account age features (Gorashchuk, 2003; Shakhnenko, 1995);
- taking into account individual features (Dragniev, 2009; Yermakova, 2015);
- taking into account national features (Bulger, 2015; Yermakova, 2015);
- in the sphere of health and medical care (Iwelunmor, Newsome, and Airhihenbuwa, 2014; Lavizzo-Mourey, 2017; Plough, 2014);
- in the sphere of vocational training of future teachers for the formation of the health culture and social health of schoolchildren (Babich, 2015).

However, the problem of the formation of schoolchildren's health remained insufficiently developed in the socio-pedagogical aspects, there were no technologies and verified methods of investigating the personality that would answer this problem as a whole.

Whole analysis of the socio-pedagogical activity on the formation of the health culture of schoolchildren is presented in the publications of Melnyk, in which the author substantiates the model of the health culture of the personality (Melnyk, 2004), integrated training and educational programs (Melnyk, 2012), technologies (Melnyk, 2009), methodical support of socio-pedagogical activity on this problem (Melnyk, 2012).

The current state of the formation of schoolchildren's health in educational institutions makes it possible to reveal the obvious contradictions between the need of society in a culturally developed healthy personality and the low level of the formation health culture of the younger generation. In connection with this the formation health culture of schoolchildren in modern educational institutions on the basis of the introduction of the socio-pedagogical system and monitoring its effectiveness is one of the complex and key problems of pedagogy.

The purpose of the research is to consider the organization monitoring of formation health culture of schoolchildren and the results of implementing different strategies.

Materials and Methods

The study of the problem for the formation health culture of personality and the search for ways to solve it led us to understand this process as something that occurs in a certain socio-pedagogical system.

We understand the socio-pedagogical system as a kind of social system in which the socio-cultural experience is aimed at developing the personality of the subjects of the pedagogical process. Specifying this concept on the problem, we will consider the essence of the definition «socio-pedagogical system for the formation health culture of personality». We define this system as an invariant social system characterized by a specially organized socio-pedagogical activity in a sociocultural environment, which ensures the development health culture of personality in accordance with the characteristics (age, individual, etc.) of its subjects.

Participants. The components of the social-pedagogical system are the subjects of the pedagogical process (teachers, pupils and their parents). Functions of the system are represented by the following areas of activity: education, upbringing, development, socialization. The structure of this system has direct and feedback links. Being invariant, it allows integrating the specified directions of activity, providing all-round development health culture of personality of pupils (Melnyk, 2008).

The respondents were 288 learners, 100 parents, 64 experts who independently assessed the techniques and the results obtained.

There is a process in the socio-pedagogical system that is described by socio-pedagogical technology, further – technology (Melnyk, 2009). The technology has an integrated, two-level nature, consisting of two parts: organizational-managerial and pedagogical, each of which is implemented in accordance with certain technological stages. The first technology is theoretical: the design of school management, the planning of activities for the academic year, the formation health culture of schoolchildren, diagnostic. The second – analytic-prognostic: stimulating-motivational, information-target, content-procedural, treatment-correcting.

Procedure. System-forming factor of the social-pedagogical system in the statics are goals, in the dynamics – management. The management is carried out purposefully at each stage of the technology. It is these steps that are the components that make up the system. The social-pedagogical system has the following levels: personal, group (class), degree of educational institution (primary, basic and senior), level of educational institution (school, gymnasium, etc.), territorial community (district of residence), society (individual region), the education system (state), the educational space of Europe.

As practice shows, the weakest point of the monitoring system is the work with information, including analysis and systematization. Using mathematical methods will help to solve this problem. Consider this on the example of a study of health culture of schoolchildren.

The research was carried out for seven years and included the following interrelated stages: search-analytical, analytical-correcting, experienced-experimental, generalizing. We will concentrate our attention on the experienced-experimental stage, within which the technology is realized. This technology was implemented

in full and without the implementation of one of its components – pedagogical technology. This restriction is due to the school curriculum, where it was introduced, which also gave us the opportunity to explore the significance of each of the components of technology for the formation health culture of younger schoolchildren. The study of the level of health culture among learners was conducted in accordance with the model of the personality's health culture developed by us. The model consisted of structural and functional components and the corresponding of criteria system: the components of individual health (physical, mental, social, spiritual); the main spheres of personality (motivational, cognitive, affective, value, behavioral), as well as academic achievements of learners in the preservation and promotion of health (Melnyk, 2012).

Statistical analysis. Monitoring of health culture is carried out on the basis of sociological, psychological, pedagogical, medical methods and tools. The author has developed and verified a set of diagnostic techniques for studying the development health culture of schoolchildren, in particular: «Passport of class health», «Diary of learner's health», «Determining the level of personality learner's health culture», «Test multilevel assignments under the «Health Culture» course program» (Melnyk, 2012). These techniques allow systematically investigating the level of formation health culture of schoolchildren.

To determine the changes in the constituent indicators of the individual health of the learners, we used the technique «Passport of class health». 16 indicators characterize physical, mental, social, spiritual health. The level of individual health of a schoolboy is defined as the arithmetic dependence on the sum of the scores of the indicators that they contain.

For the analysis of indicators of individual health components of learners and mathematical processing of data, we have established a score for them:

- indicators of physical health: the presence of congenital malformations (0 points – physical and mental disabilities, 1 point – physical disabilities, 2 points – mental deficiencies, 3 points – no flaws); dispensary registration (0 points – is registered with chronic diseases, 1 point – is registered with infectious diseases, 2 points – is registered with diseases that are subject to cancellation after a certain time, 3 points – is not registered); group of health (0 points – IV, 1 point – III, 2 points – II, 3 points – I); medical group (0 points – released, 1 point – special, 2 points – preparatory, 3 points – basic);

- indicators of mental health: temperament (0 points – melancholic, 1 point – choleric, 2 points – phlegmatic, 3 points – sanguine person); character (orientation) (0 points – inactive (receptive, exploitative, mercenary, market), 1 point – a combination of varieties of inactivity orientations, 2 points – fruitful (thinking, activity, love), 3 points – a combination of varieties of fruitful orientations); emotional sphere (0 points – unstable, 1 point – weak (quickly gets tired and exhausted), 2 points – strong (and passive), 3 points – established (and active)); motivation and cognitive activity (0 points – avoid punishment, 1 point – solvency, 2 points – self-assertion, 3 points – cognitive);

- indicators of social health: relationships with teachers, friends, family (according to such estimates: 0 points – autism, 1 point – bad, 2 points – neutral, 3 points – good); psychological status (0 points – not recognized in, 1 point – outsider, 2 points – elected, 3 – leader);

- indicators of spiritual health: interests (0 points – no, 1 point – unstable interests, 2 points – to dance, sports, 3 points – to music, literature, art); orientation (0 points – no, 1 point – immature (depend on the environment), 2 points – self-knowledge and self-improvement, 3 points – creative activity); beliefs (0 points – no, 1 point – consumer, 2 points – productive and hedonistic, 3 points – prometheus and creative); values (0 points – no, 1 point – tangible, 2 points – has a positive ideal, 3 points – spiritual).

Thus, the theoretical distribution of the result in scores can be from 0 to 48. Based on the distribution of the trait on the interval scale, we determine the level of individual health of a schoolboy in accordance with the scores obtained: indicators from 0 to 12 points – low, from 13 to 24 points – medium, from 25 to 35 points – sufficient, from 36 to 48 points – high.

To study other components of the learner's health culture, which are represented by indicators of the main spheres of the personality, we used the technique «Determining the level of personality learner's health culture». The questionnaire included 11 questions (indicators) that characterize the main spheres of the personality: motivational, cognitive, affective, value, behavioral. The text of the questionnaire, the key to the questions we have given in the literature (Melnyk, 2012). The level of the schoolboy's health culture is defined as the arithmetic dependence on the sum of the scores of the indicators that they contain.

Consider the structure of the technique from the point of view of obtaining information on the state of development indicators of the sphere of the schoolboy's personality.

Question 1, 2 of the questionnaire concerns the motivational sphere of the individual, their indicators are motivation and motivation (training). Question 3, 4 concerns the cognitive sphere of the personality, the indicators of which are the awareness and depth of knowledge on the preservation and promotion of health. Question 5 concerns the affective sphere of the individual, where the indicators are the emotional state in school, at home, with friends. Question 6, 7 are additional and do not concern the value spheres of the individual, which are investigated, so we did not pay attention to their data during mathematical processing. Question 8, 9 concerns the value sphere of the individual, the indicators of which are belief in the value of life and health, interests in the achievements of culture. Question 10, 11 concerns the behavioral sphere of the personality, its indicators: skills and habits of life and hygiene, self-regulation of behavior. Each of these indicators was scored from 0 to 3,

according to the key. The theoretical distribution of the result in points can be from 0 to 33. Based on the distribution of characteristics on the interval scale, we determine the level of development of the schoolboy's main spheres of personality in accordance with the scores received: indicators from 0 to 8 points – low, from 9 to 16 points – medium, from 17 to 24 points – sufficient, from 25 to 33 points – high.

To determine the academic achievements of the learners in the preservation and promotion of health, we used the technique «Test multilevel assignments under the «Health Culture» course program».

The test consisted of 12 questions (indicators), which allowed objectively determining the level of academic achievements of learners in the preservation and strengthening of health. The content of test tasks, the key to them, as well as the features of mathematical data processing are given in the literature (Melnyk, 2012). The level of academic achievements of the learner in the preservation and strengthening of health is defined as the arithmetic dependence on the sum of scores of indicators. To study the levels and the possibility of mathematical processing of these data, we determine their characteristics with respect to scores of indicators.

Indicators from 0 to 3 points indicate a low level, the learner does not have cultural and recreational knowledge, skills, or their negative deviance is observed. Indicators from 3,5 to 6 points indicate a medium level, the learner has learned basic cultural and recreational knowledge, but not all of them are realized, his skills are characterized by situational interest in activities. Indicators from 6,5 to 9 points indicate a sufficient level, the learner has a conscious and deep cultural and recreational knowledge, formed individual skills. Indicators from 9,5 to 19,5 points indicate a high level, the learner has a conscious, deep and systematic cultural and recreational knowledge and skills.

It should be noted that the above scoring of the indicators allows deeper in comparison with the traditional methods of schoolboys' assessment to analyze the academic achievements of learners, since it has a wide range of grades (from 0 to 19,5 points), takes into account the psychological characteristics of the learner (the learner independently chooses the level of complexity of tasks, go from the tasks of one level of complexity to the second, etc.). However, the final assessment of the schoolboys had to be carried out according to the traditional twelve-point system, which was carried out this way. The resulting total score (based on test results) was translated into a similar score on a 12-point scale.

If the sum of the points scored is a fractional number, it is rounded to the nearest whole; if the sum exceeds 12 points, an score of 12. A score of the points scored determines the level of academic achievement of learners. The characteristics of the assessment levels are adequate to the above levels, which characterize the indicators in scores.

The following actions are related to the definition of the criteria levels. The levels were established on the basis of the scores of the indicators included in them. Defined them like this. The total score of the components of individual health varies from 0 to 12; spheres of the person – in the range from 0 to 6, the exception is the affective sphere, where the boundaries are from 0 to 9; academic achievements of learners in the preservation and strengthening of health – ranging from 0 to 19,5 («raw scores» for test different levels of tasks) and in the range from 1 to 12 (score of the final grade).

It should be noted that the main indicators for monitoring were 39, each of them had its own level indicators, and the total number of all indicators was 130. The scores obtained in all indicators were summed up separately for each criterion and for each to the learner. These total points were transferred to levels, which allowed establishing an individual level of formation of each component of the criteria system of health culture of personality, the level of their development in general for the learner, as well as the level in the classroom and school.

The choice of the level intervals was based on the normal distribution of the trait in the interval scale, as well as due to the developmental features of these components in school-age children. For indicators of the components of individual health: 0-3 – low, 4-6 – medium, 7-9 – sufficient, 10-12 – high. For indicators of the motivational, cognitive, value, behavioral spheres of personality: 0-1 – low, 2-3 – medium, 4-5 – sufficient, 6 – high. For indicators of the affective sphere of personality: 0-2 – low, 3-5 – medium, 6-7 – sufficient, 8-9 – high. For indicators of assessing the academic achievements of learners (to preserve and promote health): 1-3 – low, 4-6 – medium, 7-9 – sufficient, 10-12 – high.

The applied diagnostic techniques allow investigating the indicators of the formation health culture of school-age children, which were assessed by points. These scores were summarized for each of the components of the criteria system. According to the given interval scale the level of their development was determined: low, medium, sufficient, high.

It should be noted that during the study of schoolchildren, we used other techniques for diagnosing the mental state; sociometric techniques, questionnaires, etc. We investigated the correlation between these techniques and the complex proposed by us, compared and analyzed the obtained data.

In addition, we applied a group of methods of mathematical statistics to substantiate the validity and reliability of the developed methods, in particular: Pearson's criterion – allowed revealing the differences in the distribution of the criteria of the health culture of the learners' personality in the experimental and control groups; Spearman's method – helped to identify a correlation between these criteria; factor-criterial model for assessing the levels of the formation of a schoolchild's health culture (Melnyk, 2012) – allowed establishing both the levels of development of each of the criteria, as well as the level of the learner's health culture as a whole on

the basis of an integrated assessment, as well as mathematical formulas for processing the results of expert evaluation of technology implementation efficiency and other methods of mathematical statistics for quantitative and qualitative analysis of the results.

Results

On the basis of mathematical processing of the obtained data we determined the level of development of each criterion in the design of the criteria system and indicators of the learner's health culture (Melnyk, 2012): both for an individual child and for the whole class. The general results of the study are given in Table 1.

Table 1. Summary table of the study results of the criteria system of health culture of junior schoolchildren

Criteria system	Level	Experimental and control groups, 288 learners (%)									
		E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	K ₁	K ₂	K ₃	K ₄
Components of individual health	H	34,8	38,5	46,9	56,7	29,6	43,8	18,5	18,5	25,0	25,0
	S	60,9	53,8	50,0	40,0	63,0	50,0	59,3	63,0	53,1	53,1
	M	4,3	7,7	3,1	3,3	7,4	6,2	22,2	18,5	18,8	21,9
	L	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,1	0,0
The main spheres of personality	H	52,2	53,8	62,5	66,7	44,4	43,8	33,3	37	37,5	40,7
	S	39,1	38,5	34,4	33,3	44,4	53,1	48,2	48,2	50,0	53,1
	M	8,7	7,7	3,1	0,0	7,5	3,1	14,8	11,1	9,4	6,2
	L	0,0	0,0	0,0	0,0	3,7	0,0	3,7	3,7	3,1	0,0
Academic achievements of learners in health	H	26,0	26,9	40,6	66,7	7,4	9,4	0,0	3,7	6,2	6,2
	S	34,8	34,6	31,3	13,3	22,2	28,1	18,5	14,8	15,6	18,7
	M	30,5	30,8	25,0	20,0	40,8	40,6	44,5	48,2	43,8	43,8
	L	8,7	7,7	3,1	0,0	29,6	21,9	37,0	33,3	34,4	31,3
Class		2	2	3	4	2	3	2	2	3	4
Strategy of technology		I				II		Traditional programs			

The obtained data indicate that during the time of the pilot study, changes are observed in all the specified criteria and indicators. These changes occur not only in the experimental, but also in the control sample. Analysis of the obtained data indicates that these changes are most pronounced in the four experimental groups (E1-E4). In these groups, the developed technology was fully implemented (strategy I), less pronounced – in two groups (E5-E6), where it was partially introduced (strategy II), and insignificantly expressed – in control groups (K1-K4), to which active factors of influence were not applied.

In the experimental work we tried to investigate both the level of the formation of the health culture of schoolchildren, and the effectiveness of the impact of the implemented technology on the development of the personality of the learner, and also to determine the effective means and conditions that must be provided to improve the level of the formation health culture of schoolchildren.

The study of the effectiveness of technology introduction showed the difference between the results in various strategies for its implementation (see Table 1): the efficiency is more pronounced in those experimental groups where the technology was implemented in its two components – organizational-managerial and pedagogical (strategy I), less pronounced – in groups where it was implemented without one of the components: pedagogical technology (strategy II).

Verification of the reliability of experimental results was carried out in two years. It gives grounds to assert that the schoolchildren (who participated in the implementation of technology) responsibly relate to individual health, have no psychological and social problems, are interested in cultural achievements, not indifferent to self-knowledge, in practice they use the knowledge gained to preserve and strengthen health. We also observed that the schoolchildren easily remembered and if necessary reproduced information on the program material of the author's course «Health Culture» (Melnyk, 2002) (a meaningful component of pedagogical technology) even after several years.

In our opinion, this is due to the fact that it is interesting and important for their livelihood, both now and in the future. The preservation of this information in the long-term memory of the individual ensures the possibility of its repeated reproduction without loss, and the systematization of information contributes to its strengthening.

Discussion

An analysis of the independent evaluation of the results of the implementation of the socio-pedagogical system for the formation health culture of schoolchildren, carried out by experts-pedagogues (64 people), indicates the relevance of the research problem. They point to the positive impact of implementing such components of the content of technology as a scheme-algorithm «Managing of health culture in school» (Melnyk, 2012), the advisability of introducing the course «Health Culture» (Melnyk, 2002), the rationality of the author's model of educational work on the formation health culture of learners (Melnyk, 2012),

the convenience of planning a complex-purpose program «Forming of health culture in school» (Melnyk, 2012) and using of diagnostic techniques (Melnyk, 2012).

According to experts-pedagogues, the components and stages of the technology are acceptable for implementation in the socio-pedagogical activity of school.

An important result of this work is the development of monitoring of formation health culture of schoolchildren in the educational system. The author has developed and verified a set of diagnostic techniques for studying the development of the health culture of schoolchildren. It is based on a system of components, criteria and indicators of personality's health culture. Monitoring made it possible to determine the level of development of each criterion in the design of the criteria system for the personality's health culture, as well as the level of development of the health culture of the class and the school as a whole.

To summarize, we note that the adequacy, validity and reliability of the research results obtained are provided by the methodological and theoretical justification of the initial assumptions, the use of a set of complementary methods adequate to the purpose and objectives of the study, and experimental testing of the hypothesis; representativeness of diagnostic procedures and selection of respondents and a group of experts who carried out an independent evaluation of the study; statistically significant changes, the unity of quantitative and qualitative analysis of experimental data, the possibility of reproducing the experiment, the positive consequences of its application.

In the course of the survey, using a questionnaire, a preliminary study of parents' thoughts as they assess the health of their children was conducted. The questionnaire covered 100 parents whose children entered the school.

The state of health of their children by parents was assessed according to the criteria: the child is physically and mentally healthy; the child is not healthy; not determined.

The next step in the study was the distribution of these schoolchildren to the health team based on the results of the medical examination. The survey was carried out by medical workers of the district polyclinic in Kharkiv. Data obtained after medical examination of schoolchildren, allowed differentiating them from the group for health: I – healthy; II – with some health problems; III – are on the dispensary account.

Data obtained after the parents' questionnaire on the assessment of the health of their children, and the data obtained after the medical examination of the students, made it possible to make a comparative analysis of the state of schoolchildren health assessment. Assessing the health of children by health care providers differs from the assessment of the health status of children by parents and proves bias in the eyes of parents. Thus, 75% of parents, according to the results of the survey, consider their children physically and mentally healthy, 21% – can not give an assessment of the health of their child, 4% – consider their children unhealthy. The results of the medical examination indicate other data, only 26% of these schoolchildren are healthy, 74% of children have health problems (55% of children – II group of health, 19% – the third group of health).

Conclusions

The received results allow recommending the developed socio-pedagogical system of formation health culture of schoolchildren and monitoring for definition of level health culture of children in educational institution.

In the research we implemented all the main elements of monitoring: the problem was identified and analyzed; the socio-pedagogical system for the formation health culture of the learner's personality is grounded, and the corresponding technology was introduced that envisaged the creation and implementation of the means that ensured the improvement of the problem situation and contributed to the creation of positive trends in the development of the health culture of schoolchildren.

The research does not exhaust all aspects of the problem of the formation health culture. Further researches we associate with the study of the phenomenon of health culture in such scientific fields: philosophy, sociology, psychology, pedagogy, medicine. In our opinion, the research of the formation health culture of personality in different sociocultural conditions and at different age stages, as well as the study of the cross-cultural features of this process and the possibilities for social management of it, is promising.

Conflict of interest

The author declares that there is no conflict of interest.

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