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SCHOOL OF THE FUTURE: VIEW OF THE “DIGITAL NATIVES”
OF THE PRESENT

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Abstract

The purpose of the study was to identify ideas of adolescents of 14-15 years old /age about the likelihood of school transformations in the future. It was suggested that these ideas would be based more on knowledge and personal experience of interacting with new technologies than on fiction images. The theoretical part of the study provides a brief analysis of the works of literature, cinema and animation, which present the image of the school in the past, present and future. In a few works containing the image of the school of the future, it contains the main features of a traditional school. To test this assumption, the author developed a methodology containing 8 categories characterizing the traditional school and 6 probable options for changes for each of the categories; the survey participant should evaluate the likelihood of a specific change in the future. Adolescents of 14-15 years old /age of an average Russian city showed that the image of school in its substantive and organizational foundations is little changed: most of them do not support the idea of no lessons, homework, marks, discipline and communication with classmates and teachers, but admit their technological change. Most assessments of future school changes are based on the experience of schoolchildren or their ideas about the use of new technologies in education and everyday life. The options for changing the school in the future in the understanding of participants are diverse, they can be described as quite realistic.

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1. Introduction

The modern young generation has the opportunity to absorb the images of the past era and be not only witnesses, but also participants of current transformations in school education.

At the current stage of digitalization (Krylova et al., 2019), the school is tasked with teaching students using electronic technologies and equipment: personal computers with training programs consisting of electronic textbooks, simulators, laboratory workshops and a testing system; systems that teach using multimedia technologies. The developers suggest that all this will allow a student determining the rate and pace of classes consistent with his abilities, which will serve the benefit (Ally, 2019). However, the question is still acute that a practical model is needed that describes the main elements of a school that uses digital technologies and analyzes their working methods. Such a model is IDI school – an innovative digital school model (Ilomäki & Lakkala, 2019). Domestic practice of introducing digital technologies into school education began in 2016. Modern Moscow schoolchildren know how the Moscow Electronic School (MES) works (Chetverikova, 2019). At present, this experience is being extended to other regions of the country.

Studying how children learn, understand and imagine the future is an important area for time learning research (McCormack & Hoerl, 2020). It is considered important to maintain a positive outlook and orientation of children in the future, the ability to distribute time intervals while planning their activities (Phan et al., 2020). Young people determine their future in terms of the presence or absence of current social problems, and the extreme positive or negative image of the future reduces their locus of control (Kaboli & Tapio, 2018). Imagination of oneself in the future is closely related to a sense of connection with his future “I”: the sharper this feeling, the richer the idea of oneself in the future (McCuea et al., 2019).

With regard to research on the image of a future school it was shown that students have a generally positive emotional orientation, but the negative orientation of this image is growing towards senior school age; the orientation towards the internal technical development of the school is expressed; its image is less significant for high school students than for respondents of other age groups. The age dynamics of the school image shifts from the focus of the relationship between children to the external attributes of school life and the teacher’s image. These results suggest that the importance of a teacher as a source of knowledge and, to some extent, the “master of destinies” by placing marks becomes higher, as well as the environment of schools providing or not providing educational facilities, and interpersonal relationships fall into the background due to the age characteristics of high school students, for which the stage of personal, in particular professional self-determination, becomes the leading life task (Rodionova, 2010).

The basis for shaping the image of the school of the future is personal experience and those images that are available through video products and books about school.

Table 01 presents the most famous works of literature, cinema and animation, which contain images of a general academic school.

Table 1. Titles of works containing various school images

Soviet school	Russian school	School of the future
<u>Cartoons:</u>	<u>Books:</u>	<u>Cartoons:</u>
In the country of unlearned lessons	Geographer ruined a globe	Alice knows what to do!
On the back desk	through drinking	Alice's birthday
Fail again	Survival school	
Comma and dot adventures	School jungle	<u>Books:</u>
Prodelkin at school		Girl from the earth
Back to front		
	<u>Movies:</u>	<u>Movies:</u>
<u>Books:</u>	14+	Moscow Cassiopeia
Vitya Maleev at school and at home	Everyone will die, and I will stay	Just horror! (presented episode with USE prototype)
My class	Geographer ruined a globe	
One hundred years ahead	through drinking	
	Salmagundi	
<u>Movies:</u>	Class	
Guest from the future	Ghost	
We will live until Monday	Save Pushkin	
Salmagundi	Seniors	
Schedule for the day after tomorrow	School No. 1	
Draw game	School waltz	
Morning without marks	We did not study this	
School	Good boy	

Clearly, the Soviet period left more works about the school for children, however, the few works of the modern period also reflect the features of the school of the present. Unfortunately, it was not possible to find enough domestic works describing the school of the future.

The main features of the image of the school of the past include respectful attitude to a teacher, high cognitive activity of most students, collectivism and collective competition, conflicts related to homework and tasks, mutual assistance, remedial work, joint activities, collective distributive activities, pranks and mischief, school friends and enemies, first love, exerting effort for the common good not only within a class, but also in the country, optimism and faith in the future.

The image of the school of the post-Soviet period reflects the main features of modern society: nihilism, consumer attitudes towards people, often a demonstration of vices and unworthy behavior, lack of collective mobilization for creative work, degradation and loss of meaning. However, it should be noted that the common image of the school of the past is the manifestation of childhood traits of behavior: relations between schoolchildren and teachers, desires to have fun, “pranks”, joy due to pleasant everyday school incidents, curiosity, desire to take risks. Often the loneliness of children is also shown, however, it is completely different than in the Soviet years.

The image of the school of the future is almost absent (we did not take into account Western dystopias, where the school is like a prison, and not an educational institution). However, in those works where this image is presented, it is largely similar in its organization to a traditional school.

2. Problem Statement

In addition to the images of the school of the past, present and future in the works of art, modern schoolchildren have the opportunity to get acquainted with technological innovations, which in the near future will be used in education, and some technologies are already used. These innovations are exhibited in Technoparks or shown in schools at trial lessons. Below is the announcement on the All-Russian Educational Action “Figure Lesson”, where children can get acquainted with personal assistants, learn the technologies of their work, as well as take direct practical part and “teach chat bots to answer questions”.

In technology parks, schoolchildren are given the opportunity to participate in research and experiments, and the development of a different reality.

3. Research Questions

Options for images that would form the basis of ideas about the school of the future among modern schoolchildren are diverse. In our study, we assume to learn:

- How different is the school’s image of the future among modern schoolchildren compared to a modern school.
- How much ideas about the school of the future are comparable to its possible transformations, i.e. how realistic they are.

4. Purpose of the Study

The purpose of this study is to identify the ideas of schoolchildren about the likelihood of certain transformations of the school in the future. We assumed that these ideas would be more based on knowledge and personal experience of interacting with new technologies than on fantastic subjects from the works of art.

It should be noted that the study of ideas about the school of the future is not only its knowledge, but also an opportunity to understand those whose ideas will be studied, since in the future, based on the data obtained.

5. Research Methods

5.1. Study Design

For ideas about the school of the future, a survey method was used using the developed School of the Future methodology, which involves quantitative and qualitative analysis of data. The methodology is based on the principle of landmark survey, which will facilitate the process of extracting the desired representations from memory and structuring them.

In total, 32 pupils of grade 9 were interviewed in the winter of 2020. The study was approved by the school administration and was carried out as part of the work of a school psychological service.

The study is phenomenological; generalized images-representations of memory and imagination that a person experiences without direct contact with objects, phenomena and situations as physical stimuli were revealed (Gostev, 2007).

5.2. Research Tools

The purpose of the piloting survey was to identify the ideas of adolescents of 14-15 years old /age about the reality of school change in the future. Schoolchildren were asked how likely the proposed statements were regarding the main components of a traditional school in the future. The technique represented a closed form of survey with graded response options; carried out frontally in a computer class using a google form. The proposed statements serve as incentives to activate ideas about the possible digital reality in school, which are known to students, rather than reflecting current and potential technological opportunities.

The School of the Future technique includes the assessment scale containing 3 gradations: “absolutely impossible”, “unlikely” and “very likely”. The oral instruction specified that the wording “absolutely impossible” assumes the belief that this cannot be, “unlikely” indicates doubts about the possibility of implementation, and “very likely” indicates the belief that this is possible.

6 statements were evaluated regarding 8 categories related to the traditional school life of students: teacher, class, lessons, textbooks, homework, discipline, marks, communication. The respondent had to choose one of the proposed probability options for each of the statements. Please find the results in the Table 2.

Table 2. Example of a survey form for the category “Teacher” of the School of the Future

A teacher in the school of the future will be...	Absolutely impossible	Unlikely	Very likely
a robot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the same as now	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a virtual assistant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
replaced by parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
not needed, everybody will study himself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
replaced with a study program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certain statements were developed for each category, but all of them, regardless of their belonging to a certain category, correspond to one of the probabilities of their implementation: “will not be needed”, “will remain unchanged”, “partially already there”, “will be soon”, “will not be soon”, “almost impossible”.

The initial processing of results involves counting the number of answers for each of the statements according to the degree of their probability, then the percent is calculated for each of the categories or within one statement. The answers were scored as follows: 1 – “absolutely impossible”, 2 – “unlikely”, 3 – “very likely”. The next stage of processing is the calculation of the arithmetic mean by the probability of implementing all statements for each category and/or for each statement separately. Finally, it follows the distribution of statements by generalized probabilities depending on the objective situation with the digitalization at school.

5.3. Study Procedure

The survey was coordinated with the school administration and included in the schedule of its psychological department. The teenagers who expressed a desire to participate in the survey, and whose parents agreed to their testing, were arbitrarily divided into two groups. In advance, according to a certain instruction, they created ciphers for their data, with the help of which anonymity was preserved, and the ability to report the results individually. In a computer classroom, the respondents were given instructions to complete the questionnaire orally and in writing; they had the opportunity to ask clarifying questions. The survey time was limited by the duration of a lesson. The survey participants imagined the true objectives of the study, they were informed of the time of obtaining both group and individual results. The debriefing procedure was not carried out, since the survey did not concern any aspects of a personality or its relations but served a clarification of a fragment of a worldview transferred to the future.

5.4. Study sample

The study was carried out in one of the secondary schools of the city of Belgorod. Belgorod is a large, actively developing city of the Black Earth Region of Russia, participating in the digitalization of the economy. The city has a regional IT park, a company for the production of intelligent cameras with artificial intelligence and digital vision. Information and communication technologies are actively used in educational institutions; schoolchildren are introduced to digital technologies.

The respondents were sampled on the basis of subjective criteria – typicality and accessibility: 32 teenagers aged 14–15, who wanted to take part in the study to expand ideas about themselves and about the community of adolescents as an age social group, took part in the study. This sample is typical for the city of the European part of Russia, comparable in number and development with Belgorod.

6. Findings

The purpose of this study is to identify and describe the ideas of adolescents of 14-15 years old /age about the likelihood of certain transformations of the school in the future. We believe that these ideas will be based more on knowledge and personal experience of interaction with technical innovations than on fantastic subjects from the works of art. Therefore, in this study we intended to find out how different the image of the school of the future is to modern students compared to the modern school and how these ideas about the school of the future are comparable to its possible transformations, i.e. how realistic they are.

6.1. Results of choosing the likelihood of future school transformations

The table below shows the results of the choice of future transformation in school education. A total of 144 scores were obtained, the most indicative results are given in Table 3.

Table 3. Extreme scores on the likelihood of statements on school transformation in the future by categories in (%)

Statements by categories	Is not going to happen	Doubt	Will be
Parents will be instead of a teacher	75	25	0
Rooms will not be needed	75	25	0
Students will be wearing VR glasses	72	16	12
Communication will not be needed	72	25	3
Discipline will not be needed	62	34	4
Homework will not be needed	60	31	9
Marks will not be needed	59	25	16
Class will not be needed	56	25	19
Books and copy-books will be in pads or computers	3	16	81
Classes will be held using an interactive program	15	16	69
Books and copy-books will be in local network or in the Internet	6	25	69
Classes will be held using gadgets	9	22	69
Rooms will be equipped with pads, Wi-Fi, etc.	6	28	66
Homework can be done with gadgets	12	25	63
Communication will be virtual, in the Internet	16	22	62
Homework will be given upon request	25	56	19
Students will put marks themselves	34	56	10
Marks will be put by classmates	37	54	9

After calculating the percentage indicators, the maximum of them were identified and arranged in terms of the likelihood of implementation in the future by categories characterizing a mainstream school:

- most students are confident that in the future it will be possible to conduct lessons using gadgets or an interactive program in a class that is equipped with pads and the Internet through a Wi-Fi network, they will study textbooks, manuals and copy-books posted online on pads or computers and will do homework using gadgets;
- many students believe that communication with others will be virtual and via the Internet or local network;
- absolutely everyone is convinced that teachers will never replace parents;
- many students are confident that the school class will not cease to be necessary and will not be able to replace virtual reality glasses;
- most students believe that it will not be so that lessons, homework, marks and discipline will not be needed;
- vast majority believe that it will not happen in such a way that communication will be necessary;
- most students question whether they will evaluate themselves and mark themselves, or whether their classmates will do it;
- they also have great doubts about their homework given to some students upon request.

6.2. Classification of statements according to objective possibility of their implementation

Next, Figure 1 shows the average indicators of all statements distributed according to their objective possibility of implementation: the results are summarized by all categories according to the methodology in general.

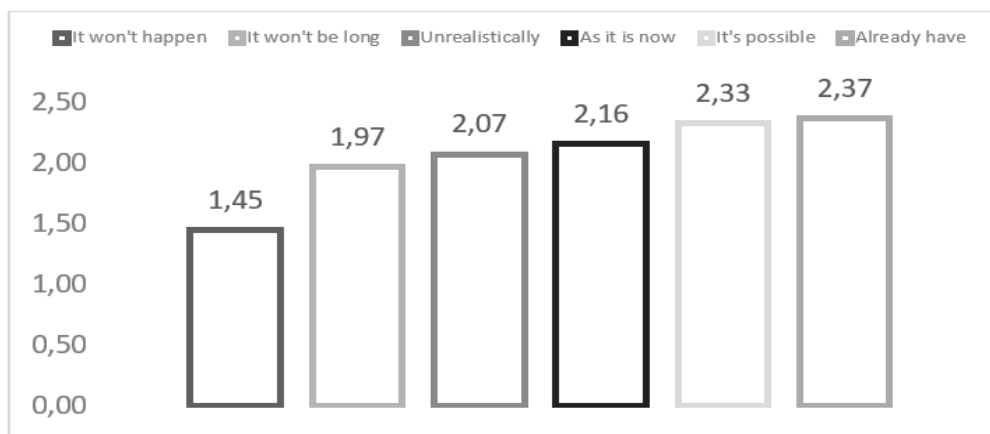


Figure 1. Average indicators of school transformation statements distributed according to their objective possibility of implementation

This histogram shows that statements that received more answers about the likelihood of their implementation in the future are related to the experience of schoolchildren or are potentially feasible in their minds.

The statements scored as unrealistic are related to the denial of their need in the future.

The statements that can be attributed to those that will not happen soon and unrealistic, as well as those that indicate that in the future the categories assessed will remain unchanged were scored differently.

7. Conclusion

In modern information and cultural space there are ideas, representations and images of a school that exists for more than two hundred years and a school that should replace it. The ideas of the radical transformation of the modern school in recent years have been close to implementation.

The image of the school in its substantive and organizational foundations is little changed: most adolescents of 14-15 years old /age do not support the idea of lack of lessons, homework, marks, discipline and communication with classmates and teachers, but admit their technological change. Most assessments of future school changes are based on the experience of schoolchildren or their ideas about the use of new technologies in education and in everyday life.

The results of the study showed that the choice of ideas of adolescents of 14-15 years old /age about possible options for changing the school in the future is diverse, there is no absolute preference in assessing the probability of implementing the proposed statements. Their ideas can be described as quite realistic.

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