Development of Electronic Resources on the Formation of Personal Qualities of Schoolchildren

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Abstract: The new technology era is shifting the traditional ways of seeking knowledge and plays a new role in disseminating and sharing knowledge. E-learning systems have been introduced with the emergence of and developments in information technology (IT). However, most e-learning systems focus on allowing students to access and use official educational content, with less attention being paid to involve e-resources linked to curricula to support the educational process and the learners. The main objective of this research is to empower users in an e-learning environment with an Information Communication Technology (ICT) web-based system in order to play a bigger role in seeking and sharing e-resources for a better understanding of the curricula.

The article focuses on the problem of teaching students in e-learning. The results of a survey helped us identify the main difficulties facing students when they begin their studies. We also describe a methodology of teaching using e-learning as web-based instruction. The use of e-learning in the educational process improves the quality of practical training and provides a better understanding of the course.

This study proposes a web-based system that integrates elements of e-resources within an e-learning environment by using e-classes of 7th, 8th, and 9th grades enrolled at Secondary School as a testbed. The system deals with a set of learning cycles that support the aims of e-learning. The first cycle is the student; the second cycle is the teacher. In this study, quantitative and qualitative approaches have been used to evaluate, investigate, and compare the system's impact. The results of this study revealed that there is a significant difference between the students according to grade. Therefore, students at Secondary School would benefit from a system that exposes them to e-resources linked directly to the curriculum to achieve and navigate knowledge understanding.

Keywords: Personal qualities, extracurricular activities, informatisation, education, electronic, resources.

INTRODUCTION

The education field is undergoing a massive change in the knowledge society. Information technology (IT) in knowledge society allows for newer learning scenarios where technology plays a major role in sharing and disseminating knowledge. As asserted by Ally, e-learning occurs when students use the web to go through teaching, complete the learning activities, and achieve learning results and objectives [1].

For example, an e-learning system enables learners to access and use formal educational content, but less attention is paid to involve e-resources linked to curricula to support the educational process and the learners. However, in developing countries, learners' exposure to e-resources is very limited. Recently, there is wide recognition of the importance of incorporating e-resources in the framework of e-learning environments. Although this incorporation may add an extra load on learners and schools, newly emerged information technology (IT) would largely ease this issue [2].

In accordance with the priorities of the development of society and the requirements for the results of appropriate educational work, the individual's education is the most important social order facing the modern school [3].

Extracurricular work with schoolchildren, which in modern conditions is carried out using various means of informatisation of education, has significant potential in terms of the formation of personal qualities. Outside of the lessons and the main educational activity, conditions and incentives arise for wider and more diverse methods of communication with students, their independent and creative work, which can positively

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affect the formation of those personal qualities, the development of which in ordinary lessons is objectively difficult [4].

The use of electronic resources, which could initially be developed for different spheres of human activity, contributes to the formation of students' ideas about an expanded set of concepts, improvement of intellectual and creative abilities, the ability to independently master new knowledge, interact with different information sources, and communicate with other people [5].

Informatisation can affect the development of almost all types of cognitive motives, including interest in knowledge, the content, and progress of educational and extracurricular activities [6].

A significant contribution to solving the problem of using various means of informatisation in different types of educational activities was made by Kazakhstani scientists, as well as scientists from countries near and far abroad: B.S. Akhmetov, K.M. Berkimbaev, E.Y. Bidaibekov, O.I. Agapova, O.A. Krivosheev, S. Peypert, G. Kleiman, B. Hunter and others. Moreover, many publications describe the possibilities of using electronic resources in various fields of schoolchildren's extracurricular creativity [7].

Under the conditions described, it is important to conduct studies aimed at solving several problems.

First, it is important to continue studying the applicability of certain types of extracurricular activities, their substantive and technological content to increase motivation and the development of other personal qualities of students [8].

Secondly, it is necessary to study the impact of extracurricular activities, in which students not only use various means of informatisation but also participate in the development of new electronic resources to solve the problem of developing the required personality qualities of students [9].

METHODOLOGY

This study adopted a descriptive survey design. Structure questionnaire tagged "Development of electronic resources on the formation of personal qualities of schoolchildren" was used to collect information from the children respondents. The questionnaire was of two parts-part A, required the children respondents to supply their bio-data, while section B comprised of open and closed-ended questions. Four teachers (two from each school) were also interviewed.

Population and Sample

This study's population was comprised of primary and secondary school children drawn from two schools (one primary school and one secondary school). A total of 81 questionnaires were administered to the pupils, and only 71 were returned.

A pedagogical study was conducted on the basis of the formation of the control (40 people) and experimental (41 people) groups of grades from two Kazakhstan schools. A series of extracurricular activities were implemented in the experimental group, in the framework of which schoolchildren developed electronic resources using selected means of informatisation.

Research Setting

The study of the impact of such extracurricular developments on the development of personality traits was carried out throughout the 2018-2019 academic year based on an analysis of the course and results of extracurricular activities with 106 fifth-grade students of Gymnasium School No. 1 named after A. Bokeikhanov and School-Gymnasium No. 49 named after Y. Altynsarin of the Education Department of the Akimat of the city of Taraz, Zhambyl region of the Republic of Kazakhstan.

Administration Procedure

All the children respondents were administered the questionnaire in their various schools. The questionnaire was distributed with the help of the teachers of the participants. The pupils were assured that there were no positive or negative answers. They were also meant to know that their responses were to be treated as confidential.

Statistical Data

From each school, two-fifths of the classes took part in the experiment, each of which became part of the control or experimental group. As a result, there were 52 students in the control group (24 and 28 people from each school, respectively), and 54 students in the experimental group (29 and 25 people from each school, respectively), which is comparable in number and allows an objective study. To process the results of the experimental part of the study, methods of mathematical statistics were used.

Data Analysis

Data collected for this study were analysed using frequency distribution and simple percentages.

RESULTS

Students in the control group participated in the traditional circle and other extracurricular activities for both schools, but this activity was not related to the development of electronic resources. The fifth graders who made up the experimental group participated in individual and collective cross-cutting projects to design electronic resources using the above approaches, tools, and technologies.

The preliminary and final diagnosis of this personal quality of fifth graders is presented in Table **1**. Prior to the described extracurricular activities with the experimental group, 10 people in the experimental and 14 people in the control group showed a high level of school motivation, which amounted to 18.5% and 26, respectively 9%.

To prove that the groups are at the same level, the Chi-square statistic was applied. The calculated value of this parameter turned out to be less than critical (the critical value of $\chi 2$ is 5.991 at $v = 2$), which allows us to consider both groups to be the same in terms of educational motivation at the time the study began.

The same questionnaire was offered to students of both groups at the end of the school year (Table **1**). The calculation of the Chi-square criterion (6.28) showed that both groups are significantly different, and the level of educational motivation in the experimental group is significantly higher.

A similar survey was conducted in relation to the level of independence as another significant personality quality of fifth graders. The basis of the corresponding questionnaire was taken the parameters of educational independence of schoolchildren included in the

corresponding assessment methodology developed by N.V. Kalinina [9].

The questions in this questionnaire aimed to ascertain performance in the framework of the main and independent educational work, such as the independence of personality traits such as activity, organisation, and responsibility [10].

The questionnaire was developed on the basis that the independent activity of schoolchildren, in many respects, is ensured by the presence of a sufficient level of cognitive motivation and activity. Moreover, such an activity from the perspective of the student is presented as a form of cognitive activity, and from the perspective of the teacher, it is considered as a method of training, as a means of involving students in cognition, and as a way of this activity.

This type of comparative diagnosis results at the preliminary and final stages are presented in Table **2**.

As in the previous case, both groups of fifth-graders were not significantly distinguishable at the start of the study and had a similar level of independence ($\chi 2$ value was 0.53, which is below the critical value). By the end of the school year, the groups differed significantly ($\chi 2$ value was 6.52).

At the same time, the share of students with a high level of independence in the control group remained unchanged but significantly increased in the experimental group. This allows us to conclude that the positive impact of extracurricular development of electronic resources by students on the development of their independence.

A corresponding comparison of both groups of school children was carried out according to other parameters characterising the development of different significant personal qualities in them, which could be influenced by the proposed methodological and technological innovations. The format of the article

Table 1: Diagnostics of the Level of Educational Motivation of Students in Fifth Grades (Preliminary/Final Diagnosis)

Learning Motivation Level	Experimental group (40 people)		Control group (41 people)	
	people	**%**	**people**	**%**
Low	20 / 10	37.0 / 18.5	18 / 22	34.6 / 42.3
Average	20 / 20	44.4 / 37.0	20 / 21	38,5 / 42.3
Tall	10 / 24	18.5 / 44.4	14 / 8	26.9 / 15.4
Criterion χ^2				0.54 / 6.28

Table 2:   Diagnostics of the Level of Independence of Students in Fifth Grades (Preliminary / Final Diagnosis)

Independence level	Experimental group (40 people)		Control group (41 people)	
	People	**%**	**People**	**%**
Low	16 / 8	29.6 / 14.8	18 / 16	34.6 / 30.8
Average	20 / 20	44.4 / 40.7	18 / 30	53.9 / 57.7
Tall	14 / 24	25.9 / 44.4	6 / 6	11.5 / 11.5
Criterion χ^2				**0.53 / 6.52**

does not allow us to describe the methods and calculations used in detail.

The results of the diagnosis of seven personal qualities of fifth-graders at both stages are shown in Table **3**. To more accurately determine the degree of influence of new forms of extracurricular work, when evaluating the results of a survey of schoolchildren of the experimental group, an eight-point scale was used instead of a three-point scale. At the same time, the level of 7-8 points that are significant for the study unambiguously corresponded to a high level on the scale with which the processing of the results of the questionnaire of the control group was carried out.

The data in the table indicate that in the number of students with a high level of each personal quality, both groups were not significantly distinguishable at the beginning of the school year. At the same time, the level of personal qualities in students of the experimental group was higher than that of students in the control group.

DISCUSSION

At the beginning of the school year and upon its completion, an analysis of several personal qualities of schoolchildren was carried out, the change of which

could be possible in the conditions of using the proposed approach [10].

In particular, comparative diagnostics of the development of educational motivation, considered a significant personal quality of students, was carried out. The questionnaire for this part of the study was taken by the components of the motivational questionnaire N.G. Lukyanova [11].

Pupils were asked whether they like studying at school, whether to cancel or reduce homework, how often the student tells parents about the school, how many friends he has, whether he likes classmates and a teacher, as well as several other questions. The developed questionnaire was used for individual examination of children. The maximum scores for fifth-graders' answers to questionnaire questions were set for a positive attitude towards school and their preference for educational and extracurricular activities [12].

Fewer scores rated neutral responses. No points were given in the case of negative responses of students. Depending on the number of points, when one student answers the questionnaire, one of three levels of development of this personal quality was determined [13].

Table 3:   Diagnostics of Personal Qualities of Fifth-Grade Students (Preliminary/Final Diagnosis, Person)

Group	Experimental group (40 people)				Control group (41 people)		
Levels of formation/types of personal qualities	**1-2**	**3-4**	**5-6**	**7-8**	**Low**	**Wed**	**Height**
The ability to determine the personal goal of knowledge	24/ 12	16/ 12	20/ 20	2/ 20	20/ 20	20/ 21	6/ 10
The ability to find and select the required information, including using informatisation tools	20/ 12	20/ 16	10/ 12	4/ 14	23/ 18	20/ 21	4/ 8
Ability to structure knowledge	24/ 14	24/ 16	4/ 12	2/ 12	21/ 20	20/ 21	0/ 4
The ability to formulate tasks based on the correlation of known and unknown	24/ 12	20/ 16	8/ 16	4/ 10	20/ 21	20/ 21	2/ 4

The high level is characterised by the presence of high cognitive motives in the fifth-grader, the desire to most successfully complete all types of educational and extracurricular activities. As a rule, such children clearly follow the recommendations of teachers, responsibly and conscientiously treat assignments [14].

The average level corresponds to the students' positive attitude towards the school, but it attracts them more to extracurricular activities. Such students feel quite successful at school but tend to attend school to communicate with friends and teachers [15].

The low level characterises the motivation of schoolchildren who are reluctant to attend school, engaged in foreign affairs or games in the classroom and after-school activities. As a rule, they experience difficulties in the framework of educational and extracurricular activities. Such students rarely tell parents about the school [16].

The first part of extracurricular meetings and independent work of schoolchildren was devoted to acquaintance with this toolkit, studying the possibilities of such designers and collections. At the first stage, students constructed educational fragments of electronic resources. Pupils were given the right to choose the most suitable designer, as well as the form and type of collective or individual work [17].

The second part of extracurricular work was related to the direct construction of electronic resources by schoolchildren. Fifth graders were recommended assignments for developing electronic tests, puzzles, puzzles, quiz tools, surveys, and questionnaires. Students were given the right to choose the thematic

link of the created means of informatisation of education themselves. In this regard, their nature's described extracurricular activities cannot be attributed to the educational process in one or more specific disciplines [18].

Examples of recommended assignments for fifth graders are developing an interactive resource on the topic "Natural Zones of Kazakhstan" or creating a demonstration resource on the topic "Sound-and-mimetic words in the Kazakh language." In carrying out such tasks, students chose the electronic resource Learning Apps, a system for developing PowerPoint presentations, and fragments of resources from the BilimLand collection. Figure **1** shows an example of the simplest interactive electronic test "Define the Flag", developed by a fifth grader to teach elementary school students the difference between signs and symbols [19].

Fifth graders carried out the design of electronic resources as part of a combination of individual independent and collective group work.

Teachers played the role of consultants, answering questions from schoolchildren and directing such extracurricular activities. Created electronic resources were collected and systematised in a school-wide collection for subsequent use in the main educational process [20].

When performing the described extracurricular projects, the attention of students was drawn to:

- The significance of a person of educational and creative activities;

Figure 1: Interactive test for teaching younger students, developed by a fifth grader as part of an extracurricular project.

- Respect for other students who are experiencing difficulties, but try to overcome them;

- The need for striving for originality and novelty;

- Priority of non-standard ideas and approaches;

- Multivariance of ways to accomplish the task;

- The possibility of the existence of different, including opposing, points of view;

- The need for a respectful and tolerant attitude to another point of view;

- The advantages of inventing innovative approaches to solving traditional problems;

- The importance of having the opportunity to choose and the ability to be responsible for your choice;

- The value of each person and positive communication with each other [21].

Despite the fact that in the framework of extracurricular work, its effectiveness is not always evaluated, when performing the described projects for all fifth graders, their individual achievements were revealed - a portrait of the student was compiled according to the characteristics: analysing, thinking, responsible, confident, independent, honest, with self-management skills [22].

CONCLUSION

During the school year, the fifth graders of two schools were offered a series of extracurricular activities that, by their nature, were related to circle activities. Creative extracurricular work of schoolchildren was devoted to the use of various computer designers to develop their own electronic resources. Students independently and collectively selected the appropriate technologies and the necessary content, creating resources as a cross-cutting creative project. The topics for the development of electronic resources were not rigidly fixed. Still, most of the resources were educational in nature. They were considered by teachers and schoolchildren as a means for informing the main educational activities carried out in the lessons in various disciplines.

The formation and development of personal qualities occur under the influence of a large number of factors. At the same time, the results of the study with a high degree of probability indicate that the informatisation of extracurricular activities with schoolchildren, in general, and their development of electronic resources in the framework of such activities, in particular, have a positive effect on the formation and development of many personality qualities, in including increased cognitive motivation, independence inactivity, the ability to find and organise information, set goals and plan work to achieve them, communicate and collaborate with by other people.

It is advisable to use the proposed approaches and the experimental results obtained not only within the framework of constructing an integrated system of educating students, methodological and technological improvement of extracurricular activities at school but also for the comprehensive integration of all types of educational and extracurricular activities of students aimed at obtaining a high-quality education that meets modern social orders. The use of information technology to solve such problems can play a significant role.

ACKNOWLEDGEMENT

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