V International Forum on Teacher Education

Educational Websites in the Work of Russian Elementary School Teachers

Elvira G. Sabirova[*](a), Venera G. Zakirova (b)

(a), (b) Kazan Federal University, 420008, Kazan (Russia), 18 Kremlyovskaya street

Abstract

The fast development of communicational and informational technologies has led to the increase of active young internet users and over the last 3 years their number has more than doubled. Nowadays, comprehensive mass and general education activities are organized through teaching in the context of educational digitalization, with the purpose of providing equal opportunities for all learners. General education and communication through internet require relevant preparation in elementary school.

The purpose of this study is twofold: firstly, to identify the characteristics of using educational websites in professional activity of elementary school teacher in the Russian Federation and secondly, to develop methodological recommendations on effective usage of educational websites.

Research was carried out in the city of Kazan (Tatarstan, Russia). In this research we used query-diagnostic methods (surveys, interviews) that help to reveal particularities of applying educational web sites in teaching process of elementary school children in Russian Federation. Materials and results of research could be interesting for elementary school teachers, parents of schoolchildren and school administration.

Keywords: educational web sites, teaching of elementary school children, informational and educational environment of elementary school.

---

[*] Corresponding author. E-mail: sabirovaelli@mail.ru

Introduction

The Russian Federal law "On education" says that it is needed to use distance education technologies and electronic training in educational process. How should these technologies be introduced into modern schools? What materials and technical support are needed? How should teacher organize teaching process so that electronic training and distance technologies could become its logical component. Modern teacher tries to answer exactly these questions in Russian schools. Everyone looks for its solution. Quality of education depends on quality of teaching.

Person of teacher always have been main element in process of teaching children. Specifically in teaching is the field of teacher's responsibility in front of people, society and the state. In general, further welfare of learners and society life quality depends on their education level. Modern informational age even more intensifies the task of bringing up skillful and mobile human who is able to keep up after rapid development of civilization.

Purpose and objectives of the study

The main purpose of this research was to study educational web sites in order to identify ways how they can be effectively used by elementary school teachers. Our research objectives were as follows:

1) Revealing possibilities of educational web sites for teaching elementary school children;

2) observing elementary school teachers in order to understand usage manner of educational web sites in teaching children.

The need of pedagogical science and practice in special researches in this field is justified by numerous attempts of various authors to accentuate their vision in solving this problem.

Literature review

In the article "Digital society in context of person development" (Agapova, 2016) it is pointed out that pedagogical profession reforms and rules at the same time. In order to rule person's development process it is needed to be competent. Notion of pedagogues' professional competence is represented in one's unity with theoretical and practical readiness in integral structure of person and is characterized by one's proficiency. Basic constituents of pedagogues' informational and communicational technologies (ICT): 1) Operating with various electronic carriers of information and peripheral devices; 2) Operating in office programs: text processors, electronic tables and multimedia presentations and other software; 3) Operating in Internet with e-mail, searching for information, working with educational internet resources, running one's own web pages and sites; 4) Using multimedia equipment at lessons and ICT instruments at extracurricular time; 5) Operating informational system of educational institution and running informational site; 6) Mastering methods of developing informational competence in learners and forms of distance education; 7) knowledge and skills to work with educational programs in one's subject field.

Analysis, that has been done about elaboration and usage of software intended for education, shows that very often they have "mixed" methodic intention. In this relation it is expedient to elaborate software tool for educational purpose that would provide in realizing the complex of methodic tasks (Robert, 2010).

Learners, that use multimedia, have to master appropriate technologies. People, that are acquainted with technologies, have sufficient skills in solving program-apparatus problems and they do not need additional assistance in case of equipment malfunction. So, in order to teach using multimedia, teachers and learners have to freely operate with informational technologies (Papert, 1989).

Methodology

In this research there has been used query-diagnostic method (questionnaire), that help to reveal possibilities of educational web sites for teaching elementary school children. Also there have been observed elementary school teachers in order to understand in what manner there are used educational web sites in teaching children.

Research has been carried out in Kazan city of Russian Federation Tatarstan Republic. In this research, there participated teachers of schools and gymnasiums. Age of teachers 23-55 years. Whole number of teachers who participated in research is 63 people. All elementary school teachers have various qualification categories (without category, first category, highest category).

The problem has been studied in three stages:

1st stage –studying educational web sites, that elementary school teachers use in teaching process (revealing educational web sites on query base of teachers).

2nd stage -observing teachers, attending at lessons, monitoring lesson plans to find the moment when teacher applies educational web site.

3rd -stage analysis of materials and observing teachers.

Results

There has been made a table of some educational sites, that are used by elementary school teachers.

1. Name of the site;
2. Peculiarity of educational web site;
3. Interface comfortability for children;
4. Kind of skills formed by children.
5. Educational services of the site.

	Name of the site	Peculiarity of educational web site	Interface comfortability for children	Kind of skills formed by children	Educational services of the web site
	Sesamestreet.org	Peculiarity of this site is that it is based animated series "Sesame street".	Site is comfortable for using children and all types of activities are on main page.	Development of creativity, mathematical skills. Interactive form.	All games and applications are for free.
	Coolmath4kids.com	Site is intended only for mathematics, also it has continuity for senior grades	Site is very comfortable when used by children	Development of various mathematical skills	All resources are for free

F unbrain.com	Besides game there are scientific literature for children	Comfortable. There are division into classes 0-8.	Sites intended on development of mathematical skills, reading and literacy	All resources are free	
D isneyjunior.disney.com	Games that are based on Disney studios animation	Site is comfortable for children, characters game play distribution	Development of imagination, memory training, development of motor skills, coordination.	All resources are free	
ht tp://education.yandex.ru	Yandex Uchebnik helps teacher choose tasks that are actual for learners in education process (Yandex Text Book).	In Yandex uchebnik there are made lessons as for whole class, so for single learner. Site helps to make individual learning trajectories inside class.	Work out of subject learning activities in mathematics and the Russian language.	Free online service with tasks on the Russian language and mathematics for teachers of elementary schools and also for learners.	

Here is shown lesson example project based on the projects of elementary school teachers which have been observed:

Project of mathematics' lesson.

Theme: "Order of actions in expressions".

Class: 2.

Lesson type: Lesson of opening new knowledge.

Lesson book: Mathematics 2nd class, 2nd part (Peterson, 2018) "Learning to learn" course, lesson 8.

Purpose: Making conditions to form skills in applying rules of action order in numerical expressions with brackets.

Planned results:

1) To form envision about action order in expressions;

2) To teach usage of brackets for marking action order;

3) To teach usage of action algorithms in practice;

4) To train calculation skill;

5) To teach solution of textual tasks using new knowledge.

Formation of universal learning activities:

Personal:

a) What significance and meaning has ability to learn for me;

b) Why I should know the order of actions in expressions with brackets.

Regulative:

a) Teaching to define purpose of activity at lesson with help of teacher (at stage of setting project to find way out of difficulty);

b) Teaching to find out and formulate problem in collaboration with teacher (at stage of revealing place and cause of difficulty);

c) Teaching to plan learning activity at lesson (at stage of finding way out of difficulty)

d) Teaching to move independently in accordance to given plan (at stage of finding way out of difficulty);

e) Teaching to evaluate obtained result (reflection).

Cognitive:

a) Teaching to get new knowledge, to get needed information in lesson book (at stage of opening new information);

b) Teaching to process obtained information (at stage of preliminary memorizing with pronouncing in external speech),

- to know the rule about action order in expressions with brackets;

- consciously follow algorithm of actions in expressions with brackets.

Communicative:

a) To form speech skills, teach to express argumentations using mathematical terms and notions, formulate questions and answers when fulfilling task, explain stages of solving task;

b) To listen and understand speech of other learners;

c) To participate in conversation at lesson (communicative universal learning activities are formed during lesson).

Main structural elements of lesson with opening new knowledge on activity method (Peterson, 2007):

1. New knowledge: order of actions in expressions with brackets and without brackets.

2. Trial action: to make expression in accordance to given algorithm of actions.

3. Fixation of difficulty: "For a while I cannot say that I correctly made expression according to algorithm".

4. Fixation of difficulty cause: "I do not know pattern in accordance to which I can explain my actions".

5. Purpose of learners activity: "To find out how select actions that have to be done first".

6. Fixation of new knowledge: action order in expressions with and without brackets.

Equipment: Computer, interactive board.

At previous lesson children got home task from the online resource Yandex.Uchebnik (Yandex Text Book, chapter "Actions with numbers. Compound expressions without brackets"). These tasks are intended on fixation of studied theme and improvement of calculation skills. Children can check correctness of solution immediately after calculation (pictures 01-02).
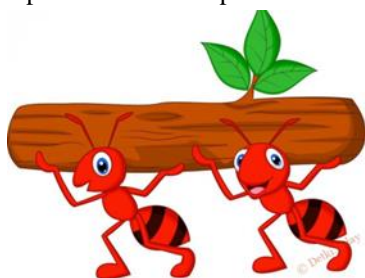
Picture 01

Picture 02

Course of the lesson.
1. Motivation to learning activity.
-Before we start our lesson, please answer the question: what animal is the strongest in the world?
-You will be surprised, but one of the strongest creatures is ant.
Open on the screen picture of ants (picture 03).

Picture 03

Ants are the strongest creatures, because they can carry weight that is much more than their own weight. And our ants brought big twigs that will help you to see content of lesson.
Open on the screen picture of twigs (picture 04).

Picture 04

-Read what is written on twigs (expressions, action order, brackets).

-What was the theme of the previous lesson?

-Today you will continue to work with expressions.

-Since what will we start our lesson? (Since repeating needed knowledge).

2. Actualization of knowledge and fixation of individual difficulty in trial action.

Actualization can be started since fulfilling task (task taken from Yandex.Uchebnik, "Actions with numbers. Compound expressions without brackets"). Tasks are completed independently, checking is done frontally (picture 05).
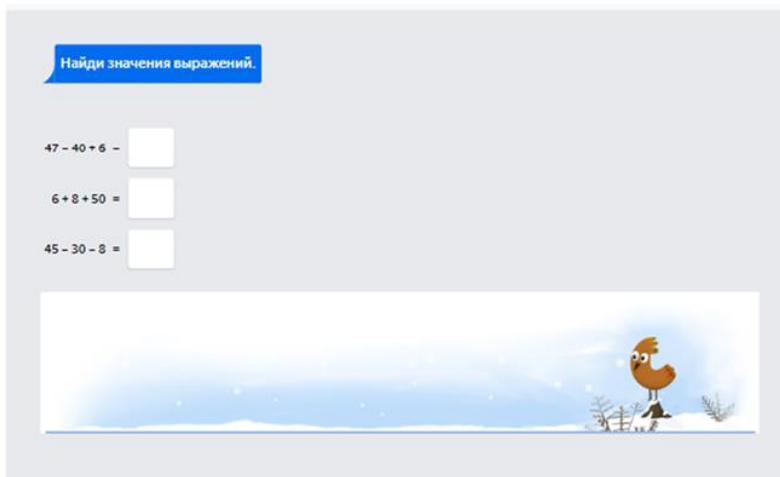
Picture 05

-Now look at the screen. Make calculations in accordance with the following algorithm:

1. From number 8 subtract number 3.

2. To the difference add number 4.

-What result have you got?

Task for trial action.

Teacher opens on the screen algorithm of actions.

Make calculations in accordance with the following algorithm.

1) To number 3 add number 4.

2) From number 8 subtract obtained sum.

Learners fulfil task self-dependently.

-What have you noticed?

-Why have we got 2 different results?

In this case difficulty is fixated in the following way:

- Class, you have correctly found the result but the expression was not made correctly.

3. Finding out place and reason of difficulty.

-What is the difficulty? (In set of actions that have to be done first, if actions are not according to order).

-Why appeared this difficulty? (We do not know yet how to point out actions that have to be done first).

4. Making the project to lead out of difficulty.

-What purpose will you have at lesson? (To find out how to select actions that have to be done first).

-So that to solve our difficulty we will look up in lesson book page 22.

If there is changed order of actions, then in the algorithm, the result would change or not. For example, in the morning when one prepares to go to school there can be switched gymnastics and bed making, but there cannot be changed putting on cloths and going to school.

Let's compare expressions:

8-3+4 and 8-3+4

It has been found out that both expressions are completely the same but they have different results. It means that order of actions cannot be changed.

So that, to avoid mistakes there are used brackets. Now these expressions will be different:

(8-3)+4 and 8-(3+4).

First, there are always done actions in brackets, and then there are done other actions in accordance with order.

If expression does not have brackets, then actions have to be done in order from the left to the right: 8-3+4=(8-3)+4

5. Realization of constructed project.

-How is the first action done? (The first action is done in brackets).
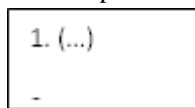
-Set the brackets into expression №2:

8-(3+4)=1

-Could you overcome difficulty? (Yes.).

-Let's make pattern. How will you find result of expression if it has brackets? (First we fulfil action in brackets).

-And then? (Actions that go in order from left to right).

Teacher places on the board reference signal (picture 06).

Picture 06

-What can you do now? (Write down expressions where actions are not done in direct order, and also to find results of such expressions.).
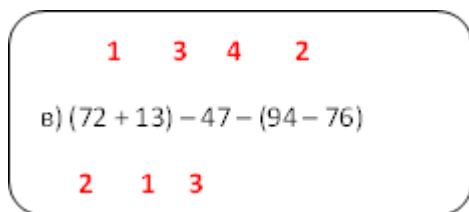
-What is the next step at lesson? (To learn to use new knowledge).

6. Preliminary fixation with pronouncing in external speech.

At this stage there can be done tasks from lesson book:

a) №3 (a, b, g, d), page 22 (with pronouncing).

b) №3 (v, e), page 22 learners work in pairs. Learner can check results looking up into the pattern (picture 07).

$$\begin{array}{cccc} 1 & 3 & 4 & 2 \\ \text{в) } (72+13) - 47 - (94-76) \\ 2 & 1 & 3 \end{array}$$

Picture 07

-Who did mistake?

-In what is mistake?

-Correct your mistake.

-What is the next step at lesson? (Let's check, can we do these tasks independently).

7. Self-dependent work with self-check according to pattern.

For independent work, offer to solve the problem №4, page 23 (lesson book), (board is solved on the board with commentaries).

Solving of task:

№4

a) 3+(8-2)=9

b) 9-3-5=1

v) 4+(7+2)-5=8

g) (6+1)-(5-3)=5

8. Including repletion into knowledge system.

At this stage there can be fulfilled task from Yandex.Uchebnik, "Actions with numbers. Compound expressions with numbers" (pictures 08-09).

Найди значение выражения 100 – (56 + 19 – 28).

1. Расставь порядок действий.

100 – (56 + 19 – 28)

2. Запиши ответ к каждому действию.

1) ; 2) ; 3)

3. Запиши полученное значение выражения.

Ответ:

Picture 08

For self-check:

Picture 09

-Who of you did mistake?

-In what is the mistake? (Wrong way of action order).

-Correct the mistake.

-Make conclusion.

№7, page 10 (Task is fulfilled on the board with commentaries)

Solving of task №7:

39+15+(15+12)=81

Result: in three bouquets are 81 flowers.

9. Reflection of learning activity at lesson.

-What purpose do you have at lesson? (To open the way of selecting first actions).

-Have achieved our purpose? (Yes).

-Now I suggest you to evaluate your work at lesson. Place in front of you "stairs of success". Show where do you stay by the end of lesson. If you have fulfilled self-dependent work without mistakes, you do not have questions, than place yourself on the top position. If you have done self-dependent work, but you have questions, place yourself on the middle position. If you have done mistakes in self-dependent work, and you have questions, place yourself on the low position.

3-Self-dependent work is fulfilled without mistakes and there are no questions asked.

2-Self-dependent work is fulfilled, but there are some questions.

1-Self-dependent work is fulfilled with mistakes and there are some questions.

10. Home task.

Yandex.uchebnik, partition: "Actions with numbers. Compound expressions with brackets". These tasks are intended on fixation of studied theme. Children can check correctness of solution right after finishing the task (pictures 10-11):
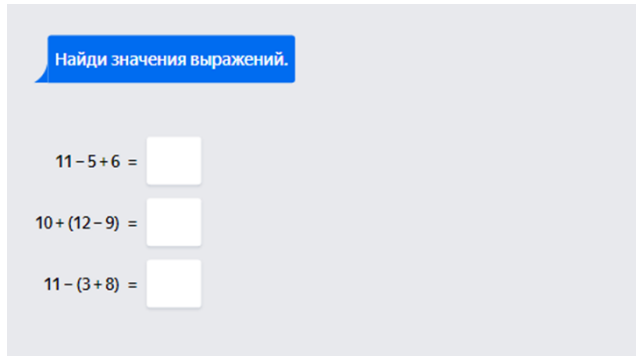
Picture 10

Picture 11

Observing the work of elementary school teachers, there has been found out that they used service of Yandex.uchebnik half a year in 2018-2019. They noted the following advantages: -optimal number of illustrations to tasks; -option of choosing lessons and specific tasks in every lesson that help teacher to fill the lesson according to learners level; -automatic check of fulfilled lessons (considerably saves teacher's time); -possibility to know the time spent on tasks and mistakes of every learner in every fulfilled task; -automatic analysis of success in fulfillment of every task by class helps to see blank spaces in every specific theme and take the ways of further work.

Discussions

"There are undertaken various technological efforts in order leave enlightenment oriented on little human, efforts that prints similar little people for the sake of "Common educational space". Since that there is thirst for reforms, but what is to reform and how to reform that is the question" (Bespalko, 2002).

Chernobay (2012) notes that there are changed approaches to education but the core itself stays the same. Modern technologies simply duplicate classical education model not changing the content of school curriculum. Unfortunately all efforts in education are focused on how to deliver knowledge to children but not what knowledge to deliver.

As it is considered by Michael Lazarev, the founder of the online school InternetUrok.ru, there has to change the role of school teacher. "Teacher is no more the only source of information and even no more trustworthy –any information can be found in smartphone that is in hands of every school child. Learners understand that pedagogue cannot know more than Internet in one's subject field. So, teacher has

to become some kind of a guide in the vast space of information and help children to separate important from unimportant, truth from fiction and lie, which is very serious in modern world".

Many experts note that majority of teachers are not ready to leave classic education. Parents also have great role in education. "Parents are obligatory part of educational process. Analysis is the highest level of reasoning that is not offered to human as gift, but it is ability in effective deconstruction of entire issue into constituent parts and into logical links, it is ability to gradual summarizing that is formed in systemic conditions. Role of parents in this process is invaluable", – experts say.

Conclusion

One of the considerable particularities in modern stage of society development is the informatization that entered into many fields of human activity. System of general education has as its purpose to bring up school graduates able to active life in conditions of informational society.

Using educational web sites for teaching elementary school children there can be solved the following tasks of education process:
- provide individual delivery teaching information;
- use modern types of controlling after quality of studied knowledge;
- lead cognitive learning activity of children.

However, those listed problems are not solved completely, because there are not applied all potentialities of educational web sites as means of teaching.

Here is shown, in what way elementary school teachers use educational web sites. There are revealed potentialities in educational web sites usage:
- development of creative activity and abilities of learners in teaching process;
- adaptation of teaching process to individual characteristics of learners;
- multifunctional application (usage in various forms of teaching process);
- saving time of teacher from exhausting work operations that do not demand creative actions;
- individualization of learning in conditions of teaching process in class;
- organization of thorough control over teaching process;
- providing possibility of independent learning.

During research there has been revealed that usage of educational web sites open new potentialities for teacher, and help easily adjust to new educational standards. Modern teacher has to keep up with time, understand and take interests of learners, be interesting and new in professional work.

Acknowledgements

References

Agapova, L. A. (2016). Development of informational competence in pedagogue. *Proceedings for the International scientific and practical conference*. Ufa, Aeterna.

Bespalko, V. P. (2002). *Education and teaching with computers (pedagogics of the third millennium)*. Voronezh, MODEK.

Chernobay, E. V. (2012). *Technology of lesson preparation in modern informational and educational environment*. Moscow, Prosvechenie.

Papert, S. (1989). *Children, Computers, and Powerful Ideas*. Moscow. Pedagogics.

Peterson, L. G. (2018). *Lesson planning book: Mathematics for 2nd grade, "Learning to learn" course*. Moscow, Binom, Knowledge Laboratory.

Yandex Text Book. (n.d.). Yandex.Uchebnik, Retrieved from https://education.yandex.ru/lab/classes/14454/courses/33262/

Peterson, L. G. (2007). *Active method technology as realization means of modern educational purposes*. Moscow, ACADEMIA.

Robert, I. V. (2010). *Modern informational technologies in Education: didactic problems, perspectives of usage*. Moscow, IIO RAO.