

INTEGRISANJE IKT U NASTAVNOM PROCESU

Integration of IKT in the teaching process

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Резиме - Изучавање и интегрисање ИКТ у наставном процесу представља прихватање новог начина рада, што у суштини значи један од низу дидактичко-методичких елемената који промовише савремена, квалитетна школ, насочено ка унапређењу рада у наставном процесу.

Евидентно је да са изучавањем и применом графичких програма (PAINT), ученици добијају вече могућности као: да им учење буде интересантно, блиско, креативно; да промовише и стимулира интелектуалних, креативних, естетских, творечких вештина и способности код ученика; да се ученици потичу и охрабрују за даље коришћење информатичке писмености за личну корист, корист заједнице и нације.

Главни циљ овог труда је да укаже на потреби од коришћења и интегрисања графичких програма као нови начин реализације наставних садржаја из предмета од 1-4 разреда у елементарној школи. Исто така претстављамо Вам резултате са истраживања око наставног искуства и практичног функционисања ИКТ-а и коришћење графичког програма PAINT у предметима: упознавање околине, природа у учионици.

Кључне речи: KVALITETNA SKOLA/IKT/GRAFICKI PROGRAM PAINT

Abstract - Learning and the integration of IKT in the teaching process presents accepting the new way of working that is one of the chain of didactic and methodical elements which promote the modern, quality school and it is directed towards improving the work of teaching process.

It is obvious that with learning and use of graphic programs (PAINT) the students are given many opportunities : learning is interesting, close, inventive, they acquire and stimulate the intellectual, creative, aesthetic, creative skills and abilities on the students; to instigate and encourage the students for further usage of the information literacy for their own interest and the interest for the community and the nation.

The purpose of this article is to point out the need of use and integration of the graphic programs like a new way of implementation of the teaching components in the subjects from the first to the fourth grade in the elementary schools. We also present the result from the research for the teaching experience and the practical function of IKT and the use of the graphic program (PAINT) in the subjects: introduction of the environment, nature in the classroom.

Key words: QUALITY SCHOOL/ IKT/ GRAPHIC PROGRAM (PAINT)

The traditional school is characterized by many weaknesses, insufficient flexible and coherent establishment to the needs in the time we live in. Its present transformation results in the model of modern, qualitative school where the traditional and modern education values are integrated.

Today the main task of each educational community is to stimulate and promote individual, socio-emotional and intellectual abilities and values of the young people in compliance with their predispositions and adult characteristics according the modern psycho-structural and humanist

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theories for studying and to enable readiness for life and work in democratic multicultural and informatics society.

The process of changes in the education that has already started is pointed towards the improving the quality of the teaching process - the didactic and methodical elements as integrated essential part of the quality school. This complex and complementary process is product of planned, continuous and permanent process focused on the high standards in the education and according the development of ICT on global level. In the teaching experience there is not simple and ideal model of quality, on the contrary there are many forms, methods, actions which complement and express effectiveness in the working of the teachers and students. Care and duty is to all participants who on direct or indirect way are involved in the teaching process to take part in the development, success and improvement of the teaching process.

The concept Informatics Technology (ICT) is closely connected with the concepts: Informatics, Technology, Art and Computer studies. When the Computer studies are studied the methods, the principles and the concepts of the machines which process the information are actually learnt.

The modern technology used in the education enables communication, usage, creating, processing and storage of the data and their further application. Today the concept ICT is most frequently used and represents (Information Communication Technology).

Especially today when in R. Macedonia a campaign is present "Computer for each child" introduced by our Government and each school is equipped with appropriate technology for application of ICT and the teachers are in situation to fulfill the tuition with these technology. This is the reason why they should have appropriate knowledge and should have successful results in the teaching process. For the application of ICT many of them have appropriate education, but is that knowledge enough for successful application of ICT? This problem is equally included in the elementary and secondary schools and the results given by the questioned teachers points that out.

Why to study and use the graphic program (PAINT) in primary school?

It is obvious that with the studying and the application of the graphic programs (Paint) the students are given many opportunities:

- The studying is given a chance to be interesting, close, creative.
- The students are qualified for using the graphic information in the function of the subjects.
- An interest and desire is developed with the students for approaching of new realizations and applying different sources for studying.
- Creative, esthetic skills and abilities are kindled.
- The students are helped to develop positive picture of themselves and self-assurance.
- They are motivated to detect their interests and to nurture them.
- They are kindled to develop graph-motive power.
- They develop and gain self-criticism and criticism toward their own results and the results of the others.

On the compulsory classes with the students from first to third grade the application programs can be worked out (the following subjects Mother tongue, Mathematics, Introduction of the environment, Nature, Art and Music) according the prearranged, planned topics, contents, aims and tasks as a new work approach and resolving the placed tasks in separate subjects. While on the projects activities (with the students from the higher grades) the gained knowledge is used and projects are prepared, introducing the techniques, skills and the procedures for realization the project task from different fields which require work with different types of data and different structures of their presenting and connecting in final content (task with text, picture, graph, diagram, multimedia presentations, formula, function, chart, symbol and so on).

The graphic editors are often used in realization of these teaching programs. The Graphic editors are programs which help in creating graphic pictures. **Paint** is simple graphic editor which is integral part of the standard package of the operating system **Windows XP**. This editor can help on creating wide pallet of drawings or pictures, from simple to perfect.

From day to day drawing with the computers becomes more frequently used owing to the fact that the newer generation of computers consist of drawing programs. Drawing is present with the young who make their first steps in the computer using as well as with the adults who accomplish considerable graphic realizations. Many types of programs are used from the most simply but with opportunities designed for younger, to improved enough with considerable opportunities for professional drawing by adult users.

The didactic and methodical aspects of the graphic information

- By using the computer as modern tool for realization of the teaching contents in the elementary school, the youngest students are enabled to gain basic knowledge from the field of the informatics.
- Clarity and transparency in the working are enabled and a standard for assessment of the results is created.
- Imaginative, creative and critical view-point is promoted.
- The need of professional, permanent improvement of the teaching staff is required.
- The most included forms of work are: individual form, working in small groups, pair work.
- The use of different teaching methods in the work (method of overlooking, graphic method, method of presentation, demonstration, simulations)
- A choice of suitable strategy is made on monitoring and evaluating of students' achievements (diagnostic, formative, summarily estimating).
- The graphic information finds integrated use in contents of the teaching subjects which are adapted to the age characteristics.
- The working environment is open, dynamic, attractive, reach with opportunities, ideas where positive thinking and experiences are promoted, approachable, interesting, visual approach on the material, contents and realization of the goals are enabled to the young children.

Goals and tasks

The students to gain basic knowledge for the new technologies and communications (information literacy)

- To be qualified for performing operational and technical activities when using the computer's graphic (resolving problem situations).
- With the new approach of the content presentation, improving of the work in separate subjects is enabled.
- To get acquainted with the opportunities and the tools of the drawing program (computer using).
- To be qualified for creating and arranging drawings (creative abilities).
- To develop skills, knowledge, understandings (patience, accuracy, responsibility, meticulousness, logic creativity).
- To present creating procedures and arranging the drawings (exploratory and individual work).

Necessary teaching means

- Computer using
- Using information science work room
- Using prepared application program **Paint**
- Using educational software **Tool kid**

In that context in this work we will present facts gathered from the exploring which was realized with the teachers in elementary schools.

The purpose of this exploring was to check the teachers' opinions and ideas about the present conditions in the teaching practice - the abilities, the means of using and adoption of ICT application from the aspect of improvement of the quality of the educational process.

Subject of research

Emphasizing the necessity and the indispensability of application and use of ICT in the teaching process, the subject of this research is the integrated application of information and communication technology in the teaching subjects and its importance as modern way of work oriented towards improvement of the quality of the teaching process.

Purpose of research

Purpose of research is to get data for teachers' ideas and opinions and for the possibility of the use and integration of the Graphic application in the teaching subjects from first to fourth grade.

Task of research

1. To examine teachers' ideas and opinions for their competences on the field of ICT which are essential and important for the teaching process.
2. To examine teachers' ideas and opinions for their previous training realization from ICT area.
3. To examine teachers' ideas and opinions for the conditions in the school and the possibilities of ICT application in the established teaching practice.
4. To examine teachers' ideas and opinions for the importance of the didactic and methodical elements from the ICT application in the teaching process.
5. To examine teachers' ideas and opinions for the importance of the Graphic application PAINT used in the teaching process.
6. To examine teachers' ideas and opinions for the possibilities of integrated use of the Graphic application PAINT in the teaching subjects from first to fourth grade.

Hypothesis

Common/General hypothesis

We assume that the integrated use of the Graphic application PAINT in the teaching subjects from first to fourth grade in the elementary schools has an important impact on the improvement of the quality of the teaching process.

Subsidiary/Individual hypothesis

1. We assume that teachers' permanent professional specialization in ICT using is necessary.
2. We assume that the teachers have negative opinions and attitude for the previous training realization for ICT application in the teaching process.
3. We assume that the conditions in the elementary school do not satisfy the needs for ICT application in the teaching process.
4. We assume that the teachers have positive attitude towards the didactic and methodical elements in ICT in the teaching process.
5. We assume that the use of the Graphic application PAINT has significant part in the improvement of the quality of the teaching process.
6. We assume that the Graphic application PAINT is used in the following subjects from first to fourth grade: Mother tongue, Mathematics, Introduction of the environment, Nature, Art and Music.

Methods, techniques and instruments of research

Perceptive-explicative method will be used. From the research techniques inquiry will be used. Inquiry with the instrument inquiry list composed of 17 questions by open and closed type.

Population and exemplar

Population and exemplar

It is a random sample, made of units of population which are free use to the explorer. It has 105 respondents from Berovo, Bitola, Veles, Vinica, Delcevo, Kocani, Sv. Nikole, Radovis, Strumica, Stip, villages Crnoliste, Dragobrast, Vasilevo, Umlena, Skolarci, Dobrusevo.

Processing data

Processing data is done with the following methods: using %, Hi-square test, test, qualitative-INTERIM analysis.

Analysis and interpretation of results

Interpretation of results in this research will be presented in order by groups of questions as they were shown in the inquiry list.

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The inquiry took place during 2009, 105 teachers from elementary schools in many municipalities from R. Macedonia were ranged. The results from the examined population of teachers follow.

With the first questions we have got general data for the teachers in elementary schools the number, sex, work experience, grade where they have implemented the teaching programs.

Examinees	Sex	
	M	F
105	6	97

Table 1

As we can see from table number 1 we can come to a conclusion that there are more females included in the teaching process in the elementary schools. From the tested 74% (78 tested) work in urban environment while 26% (27 tested) implement tuition in rural environment. From the first grade are included 15% (16 tested), in the second grade 48% (51 tested), third grade 17% (18 tested) and from the fourth grade 16% (17 tested) implement tuition.

How long is your work experience with students in elementary schools?

Choice	f	%
1-5 year	3	2.85
5-10	8	7.62
10-20	63	60
20-30	25	23.80
30-35	6	5.71
Total	105	100

Table 2

The table results show that 60% from the teachers are with 10-20 years work experience. That says to us that in the elementary schools we have teachers who have good work experience and they are in years when they may learn and to take new abilities for using ICT in the educational process.

The received data from the questions (8,9,10,11) which refer to the need of permanent and professional improvement of the teachers in the elementary schools and their negative attitude towards the previous trainings in the teaching process for realization of ICT applications are in favor of the erected hypothesis. Namely 95% (100 tested) answered that took part in projects for improvement of the ICT application in the tuition, while only 5% (5 tested) did not take part. On

the question “ **Is the previous training enough for successful implementation of this tutoring in the accomplishment of the teaching contents in specific subjects?**” 11% answered positive, 89% answered negative. On the question “**How often do you use the ICT applications for accomplishments of the teaching contents in the compulsory subjects?**” According the results most of the tested chose the answer c) not enough, namely 83% (87tested); while for the answer b) enough there were 14% (15 tested). For the answer d) generally just 2% (2 tested) ; and for the answer a) a lot only 1% (1 tested).

The analysis of the data and the qualitative analysis of the teachers’ opinions show that only with organizing formal seminars, workshops and putting them across from the teachers who are chosen without particular professionalism and previous forms of training as the mentioned projects “ Modernization of the education “, “ e-school “, “Tool kid ” - component from the project e-school are not enough for successful integration of ICT in the teaching process as one important precondition for improving the quality of the teaching process.

On the questions number 6 and 7 opinion was asked from the tested about the technological support in the classroom environment in the elementary schools for use of ICT applications.

Question 6. Taking into consideration the campaign Computer for every child of the Government of R. Macedonia. “ **Does your school possess the necessary computer equipment ?**”

Choice	F	%
Yes	19	18
No	86	82
Total	105	100

Table 3

Question 7. Spacious and technical condition in the schools for application of ICT are as fallow:

Choice	F	%
One classroom with computers	93	88.57
Computers in each classroom	/	/
Internet connected classroom	5	4.76
Internet in each classroom	/	/
No computers	7	6.67
Total	105	100

Table 4

Data from the tables show that 82% from the tested think that the elementary schools do not possess the necessary equipment even though the current campaign of the Government, while 88.57% think that the current material and technical support for work is not enough for the use of ICT application in the elementary schools.

In addition of the analysis on the inquiry list the received lists follow for the importance and the characteristics of the didactic and methodical elements which allow the application of ICT in the teaching process in the lower grades in elementary school.

Didactic and methodical elements	1		2		3	
1. The students gain basic informatics literacy	5	5.2 %	23	23.9 5%	68	70.8 33%
2. ITC using develops and stimulates the intellectual, social, emotional abilities on the students	3	3.2 %	82	86.3	10	10.5

3. Preparing the students for life and work in 21 st century	2	2%	12	12%	86	86%
4. Improving the students' motivation for studying	2	2%	78	78%	20	20%
5. Developing aesthetic, creative skills and abilities with the students	1	1.1 %	74	78.7 %	19	20.2 %
6. Improving of the teaching process	1	1.1 %	18	19.6 %	83	9.3 %
7. Gives better opportunities for integration and correlation of the teaching contents	5	5.3 %	34	36.2 %	54	57.5 %
8. Changing the teacher' role, increasing his demands in the teaching process	4	4.1 %	29	29.6 %	65	65.3 %
9. Communication and learning foreign languages	4	4.6 %	11	12.6 %	72	82.8 %
10. Approaching the high standards of UNESCO	4	3.9 %	28	27.5 %	70	68.6 %
11. Supplementing the existing organizational teaching components	14	13.6 %	35	34%	54	52.4 %
12. Allows more quality planning of the teaching class	11	11.7 %	65	69.1 5	18	19.1 %

13. New, modern approach of the work	6	6%	29	29%	65	65%
14. Application of ICT in the teaching process makes the students alienated, isolated and uncommunicative	2	2.4 %	69	82.1 %	13	15.5 %

Table number 5. Answers from the teachers from elementary schools

According to the answers of the tested we concluded that the following exponents as 3,6,9,10 have approximately same points and they are ranked as very important characteristics which are enabled by ICT. The identification of these exponents should present basic paradigm in the use and application of ICT in the teaching process. From the received data is concluded that the inquired teachers consider that according to its significant all the characteristics are approximately essential, basic for the teaching process which initiates, suggests the necessity from the use and application of ICT in the tuition.

The analysis of the following group of questions refers to the abilities and application of the graphic information in the tuition in the elementary schools.

Choice	F	%
Yes	30	28.57%
No	75	71.43%
Total	105	100

Table number 6. Teachers' opinions for the use of the graphic program PAINT in implementation of the teaching contents

The data from the table No 6 show that 71.43% (75 tested) still do not use graphic application in the implementation of the teaching contents in separate teaching subjects, while there is small per cent of teachers who use the graphic application in the implementation of the teaching contents 28.57% (30 tested). According to the opinion of the tested the graphic information finds integrated application in the following subjects from 1st to 4th grade: The child and the surroundings, Nature, Art, Mathematics, Mother tongue, Music. As tuition topics they mention: "I am part of the nature"; "traffic"; "I explore the nature"; "language"; "media culture"; "shapes in the space"; "design and visual communication"...

However the tested realize and emphasize the necessity of the application, use and integration of ICT in the teaching process as modern way of work, pointed towards the improvement of the quality of the teaching process. The previous analysis on the last questions give sufficient base for conclusion that the opinions, views, suggestions of the tested are that with the use of the graphic application bigger effectiveness in the tuition is enabled and with the students using, application and improvement of new knowledge, the students are introduced in informatics literacy, students' motivation in higher degree, ability for individual learning, skills for practical work are developed, new, interesting, creative way of learning will introduce and develop skills and abilities and also habits are gained. The tested consider that the application of ICT in the tuition makes the students alienated, isolated and uncommunicative.

On the last question oriented for suggestions and aims all the teachers suggest that for integration of ICT in the teaching process technological support is essential more computer classrooms, preparing special applicative programs and educational software, effective seminars, workshops with expertise and challenge in the lectures, application of the ideas from the seminars in the classroom, lowering the high level classes, defined models of permanent improvement of the teachers, more flexible teaching programs, manuals for teachers with practical examples.

Conclusions

From the elaboration and the analysis of the received data through inquiry of the teachers' opinions and judgments, qualitative analysis on the pedagogical documentation, participial observation, participation in the teaching practice the following conclusions can be drawn:

1. The application, use of ICT in the teaching process in the elementary schools presents necessity the students from the earliest ages to gain quality and functional knowledge, on the field of information technology which will provide base for further use, application, improvement of new knowledge, skills, abilities and the students will be enabled to continue their education readiness for accepting the challenges of the new millennium.
2. The started process of changes in the education is pointed towards bigger effectiveness and quality in the educational process. The effectiveness presents process of continued development, application And use of ICT which presents new, modern approach of effectiveness in teacher - student work.
3. Analyses of the teachers' role and function in our schools points out that today the teachers are put in front of more complex tasks and problems which brings to excelling the previous way of work and accepting new didactic and methodical approach. The previous years by introducing new, modern models of work the teachers are asked to use permanent professional education in each area. The teachers from the elementary schools think that they have necessity from permanent education from the area of ICT for their preparation and training for teaching realization of ICT application. They emphasize the need of organizing the effective seminars, workshops, putting the ideas across from the seminars in the classroom, from the teachers with high expertise. They need manuals made from educational centers, they need empiric experience in the classroom by information in topics and teaching contents, they need complete approach in the computer classroom and lowering the high level of classes.
4. The integration of the graphic information in the teaching contents demands implementation of current didactic and methodical solutions in program's basis.

Emphasizing the need of working on all opportunities for organized work with graphic information on program's basis is pointed towards defining the contents, aims, tasks, topics, choice of learning experience, experience in organization of all operative stages of learning appraisal. The teachers from elementary schools think that they have necessity of technical support, current material and technical condition for work are not enough stimulating to work with ICT application.

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