

TECHNOLOGIES INTEGRATED LEARNING IN THE PRIMARY SCHOOL

Some Aspects of Forming Reflection and Assessment Skills to Young Pupils

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Abstract: The information society we are living in is looking for new ways to help the new generation in the process of forming skills and knowledge about the use of new technologies. One of the main accents is on the abilities of forming skills for reflection, critical thinking, evaluation and self-evaluation. To form and create successful personalities who will manage to develop their talent and to implement their abilities in complex way, a systematic and purposeful education has to be proposed. Earlier the education process starts, more real the desired results will be obtained. The paper considers the constructivism's ideas of reforming the learning process. A model of technologies integrated learning in the Primary school that was approbated in the pedagogical practice is described. A way of forming skills for reflection and assessment – skills so important for one to have really successful realization in life – is proposed.

1 INTRODUCTION

The informational revolution leads to changes in all sectors of the social life. Society's changes necessitate one person's changes – the way of thinking, the quality and the content of knowledge, the behavior. The process of permanent expansion of new, powerful and modern technologies requires people to have skills to work with them. The development of the informational technologies and their implementation reveals new opportunities for the educational system. In the same time, this development brings before the educational system new challenges.

For a person to be successful in future, should start his/her education at early age. But, how one would do this? Which one is the new educational paradigm that will guarantee competitive personalities?

The paper makes an attempt to show some possibilities of forming skills of reflection, evaluation and self-evaluation during technologies integrated learning in the Primary school, based on some constructivism ideas. Some practical experience is presented.

2 THEORETICAL ANALYSYS

During the last few years psychologists, pedagogues and teachers turn their attention to the ideas of the constructivism and put them in the center as a new educational paradigm.

The constructivism has a long story. It is related to names of Lev Vigotski, Jean Piaget and John Dewey to numerous varieties of the pedagogical theory. The constructivism studies the learning theories (how the person assimilates knowledge and skills) and the characteristics of the knowledge itself (epistemology).

D. Jonassen defends the idea that the education should be realized in an environment that resembles different aspects of real society. Within traditional model of learning the students obtain separated portions of knowledge that they can't use as unity. He suggests the accent to be put on the construction instead on reproduction of knowledge; students to be involved in authentic, real problems and activities, i.e. content instead of abstract learning; the educational environment to be based on real situations; the self-reflection and the rationalization of the experience should be stimulated; the joint efforts during knowledge construction to be

supported instead of basing it on competitive rivalry among students (Jonassen, 1997).

The student is an active subject during the learning process. He/She learns by action. The student is put in the center; it is assumed that he/she is a creator, an acting subject that gains knowledge through his/her personal experience. In this way the knowledge acquires value and motivates the person to form skills that will help him/her to manage in real-life situations. The learning process, based on the constructivism's model helps in forming a lot of qualities and skills of the students like tolerance, critical thinking and self-evaluation and so on. That's why the problem of first significance, according the constructivism theory is the development of critical thinking (Cluster, 2001).

The critical thing is a skill to one to make a decision to what to believe and to what – to not believe (Norris, 1985).

The aim of critical thinking is the achievement of understanding, evaluation of view points and solving problems. Since all three things involve the asking of questions, we can say that critical thinking is the questioning or inquiry we engage in when we seek to understand, evaluate, or resolve (Maiorana, 1992).

The **critical thinking** develops mental processes, connected to the perception and the processing of information and forms valuable standpoints. "Habits of thinking" that contribute more exact and precise perception and rationalization of knowledge are formed though critical thinking. The critical thinking assumes reflection skills.

The term reflection is used in order to describe the processes of thinking. The reflection is an action. By it people go through the experience, think over it, and estimate it.

The main points of reflection are described in four classical theoretical accents. According Dewey the reflection is thinking about "myself" as an individual and about "my function" as an individual. The reflection is seeking of strong and weak features of a person (Dewey, 1933). For Kolb learning is described as process of learning by doing. According the Kolb's cycle the model of learning suggests that a participant has a Concrete Experience, followed by Reflective Observation, then the formation of Abstract Conceptualizations before finally conducting Active Experimentation to test out the newly developed principles (Kolb, 1984). Schon distinguishes between 'reflection-in-action' and 'reflection-on-action' (Schon, 1983). Habermas studies the use of reflection as one of the process that human being adopt in the generation of particular forms of knowledge. He describes the

process of construction of new knowledge, and new theories (Habermas, 1971).

Generalizing describer theories Moon states that the reflection "is a mental process with purpose and/or outcome that is applied to relatively complicated or unstructured ideas for which there is not an obvious solution" (Moon, 1999).

The following kinds of reflection are differentiated:

- Intellectual reflection – thinking about thinking;
- Personal reflection – self-knowledge of a subject;
- Dialogic reflection – self-knowledge by and through dialogue with others;
- Praxeological reflection – self-knowledge through one's actions and creations.

The intellectual reflection is divided to intellectual reflection in learning (learning reflection) and intellectual reflection in science.

Strong criteria about the stage of the critical thinking in young pupils are not formulated. Concerning mental development the following criteria are used: skills to operate with abstract terms; logical thinking; working mentally.

The formation of critical thinking and reflection skills are precondition for forming skills for evaluation and self-evaluation. The estimation in the Primary school is based on personality-oriented approach. The self-control also has its place and role in the Primary school.

3 MODEL FOR TECHNOLOGY INTEGRATED LEARNING IN THE PRIMARY SCHOOL

Following theoretical formulations and principles, we have developed and approbated a model for technology integrated learning in Primary school.

The experimental work was launched in 2005. The approbation successfully passed during the school years 2006-2007 and 2007-2008. Two schools from Bourgas – the fourth largest city in Bulgaria, were involved. Eight teachers and 225 students – 50 students from first grade, 75 from second grade, 55 from third grade and 45 students from fourth grade – worked on different educational projects.

The work within the Model is based on school projects that cover topics of the curriculum and provide activities requiring the use of information technologies. Team work and interdisciplinary

approach are used. The assessment is a crucial element of the model. The assessment is carried out on the basis of criteria and indexes. The developed system provides: Estimation that the teacher gives to each team and to each student individually; Estimation that the student gives him/herself; Estimation that a student gives to his/her teammates.

Theoretical basis for the development of the project is the project-based learning. The modification of project-based learning for the Primary school is indicated with the term project-oriented learning. From first to fourth grade step by step the transition from situational to project-oriented education is realized.

Main focus of the work on the project is the use of information technologies by the students. An important accent in the Model is the development of skills of children to present their work. Students work on teams into the computer lab. They usually have two assignments – one on computer and one accompanying task that do not require work on the computer (Papancheva, 2006).

4 FORMATION OF REFLEXIVE AND CRITICAL THINKING SKILLS, AND SKILLS OF EVALUATION AND SELF-ASSESSMENT

The formation of reflexive skills, critical thinking, skills of assessment and self-assessment in the proposed methodology is based on theoretical analysis considered shortly here. All these skills should be considered as a unity even so they have their specificity as well. Encouraging acts of reflection of small pupils goes along with the overall learning activity. The formation of reflexive skills is aimed at the four mentioned types.

In the first grade the students are given the opportunity to record their opinions about three randomly selected children from the class. The requirement for writing only positive qualities and skills is being set to the children. So far students have studied and played together, but have not been provoked to peer at their classmates. The work on this task supports the formation of skills of critical attitude of the thought.

This line continues in the second grade, when on the basis of the already formed skills students created a skill to look at themselves. In front of the students is placed a task to present them as they describe qualities and skills of their character that

they consider to be their strengths. This assignment provokes students to look at themselves and seek their positive qualities to represent them in the best manner.

In the third and fourth grade the formation of reflexive skills are directed to the school and praxeological reflection through appropriate learning tasks. Students face a problem that they have to resolve. They are confronted with a deficit of knowledge and here it is particularly important the manifestation of reflection.

The formation of critical thinking is a long and complicated process. Its purposeful conduct in the proposed methodology is implemented in three parallel lines.

In the first manifestation of critical thinking the students are proposed a large quantity of information on the topic. They are acquainted with it and on the base of their experience derive the most important and essential on the topic, the things that they need to complete the set task.

The second line, used to work for the formation of critical thinking skills is the ability to formulate a question on certain criteria, using the received information. In first grade students work on a project "Carnival of professions". In this point they meet with parents who tell them about their jobs. On the base of what students have heard and based on their personal experience, they have to ask different questions to the parents. The question must be adequate to the situation and to request information not given by the parents till that moment.

In second grade the requirements in front of the students are increased. They work on the project "Spring Carnival", and do surveys of different themes and objects related to spring (birds, animals, trees, flowers). They are presented some information on the topic. They in turn are required to obtain additional information on the topic. Their task is to formulate an interesting and curious question for the object. Students prepare an electronic quiz with interesting questions, which present in front of their parents.

During the next grades the work on the second line continues, and in the fourth grade students prepare and conduct a discussion related to the issues of energy. The thematic gradation is expanding the range of vision of the students – from the world around them to substantial problems, common for the people. The leading of a discussion requires a good basic training in the subject in order to formulate specific and precise questions and adequate answers, reasoned defense of their own position, etc.

The third line for the formation of critical thinking occurs in relation to the used applications for the realization of the set tasks. After the theoretical treatment of the problem, students must realize and accomplish it in practice. The selection of an appropriate computer programs and technological tools implies good technology culture. Of particular importance here is the manifestation of learning reflection.

The formation of skills of assessment and self-assessment does not take place in isolation but is in direct connection with the work on the formation of reflexive and critical thinking skills.

Cards for evaluation and self-assessment are introduced and their complexity increases with the age of the students.

In first grade students are required to assess the behavior of their classmates, using a picture of a smiling or frowning face. They are offered two levels of evaluation – good and bad.

In second grade an upgrading in two aspects is carried on. There are three stages to evaluate the behavior of a teammate – bad, good, excellent. Images of men are used again, but they have a characteristic color (by analogy with the traffic light). At the beginning of the period the evaluation of one's own behavior (self-assessment) during the academic activities is introduced. In the middle of the period a big step in terms of personality, self-reflection and self-assessment is made. The students are required to assess their work using the already known scheme. In the third and fourth grade the evaluation cards are considerably more complicate.

5 CONCLUSIONS

Technology integrated learning must not be considered as something isolated or as an end in itself. It should support the process of learning by offering new digital working environment to students. The realization of the constructivism's ideas in pedagogical practice in the Primary school and the integration of the technologies in the learning process is very difficult task, as the main researches are on theoretical base only.

Based on formulated theoretical postulates and on the changes in the educational paradigm one can describe the following conclusions about how quality and innovative learning to be realized:

- The accent should be shifted from the cognitive to the motivational, emotional area with balance between;

- A special learning environment should be created. This environment should offer conditions for student to achieve more complex knowledge and to develop their cognitive potential;
- The assessment process must not be an isolated process, but integrated into the learning process, based on different theoretical approaches;
- The reflection should be a key factor of the learning process;

The learning process in the Primary school should be placed in a way to stimulate and to develop the reflexive skills to young pupils. In this way student could form abilities for self-evaluation of their possibilities, evaluation of the information available, and this will help them in their realization in live.

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