

# Development of Self-Regulation Skills in the Study of a New Discipline “ICT and Media Literacy”

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## ABSTRACT

The informatization of society has also created the problem of information disorientation of the individual. Easy access to information creates a refusal to be independent in the development of new knowledge, provokes the use of unverified, sometimes poor quality material [1,2]. One of the possibilities of solving this problem is to form the information culture of the individual, in the ability to independently, critically approach the selection of information, transforming it into knowledge that is relevant in the activity. One of the ways to form the professional media competence of the future teacher is to involve the student in the course of training in the discipline "ICT and medialiteracy" in the implementation of the project of his own information educational environment - a personal site that will help the future teacher to organize productive work in the information educational space. The purpose of this article is to study the practical implementation of the methodology of learning cognitive skills of self-regulation in the study of the discipline "ICT and media literacy."

**Keywords:** *self-regulation, learning, future teacher's, media literacy*

## 1. INTRODUCTION

Self-regulation has a significant impact on the educational activities and personal achievements of students. This opinion is shared by most specialists to day [3-5]. Researchers of self-regulation of learning and thinking processes mainly come from two theoretical approaches. It is a model of self-regulation of B. Zimmerman, based on social cognitive theory and the theory of solving problems of A. Schoenfeld.

Schoenfeld's problem-solving theory focuses on metacognitive and cognitive skills as components of self-regulation that contribute to competent problem solving and performance of educational tasks, namely:

- task targeting (e.g. task formulation);
- planning the decision process, defining the approach to the completing the task;
- monitoring the implementation of the tasks;
- result estimation;
- reflection on the process of solving a problem or learning.

Analysis of modern research in the field of digitalization of education shows that the stage of digitalization is going on after computerization of education [6].

The stage of infrastructure formation and improvement has already been successfully completed in our country, so digitalization of modern education, first of all, should be carried out through motivation and preparation of teachers for its effective use. Computers entered schools have been catalysts for innovative processes in education and have been widely used for teaching, learning, data access,

management and communication interaction between schools [7].

The evaluation of educational outcomes is almost always linked to educational activities based on the application of infocommunication technologies, and the methodology of education using and is becoming increasingly common [8,9].

Today, a new challenge for the traditional education system is the need to lay the foundations for digital literacy at all levels of education, which requires the professional development of teachers and teachers. Issues of digital literacy in the general education system are solved on the basis of a review of the experience of decision-making on this issue in different countries, including on the development of integration of infocommunications into educational programs, in the information educational environment of networking between schools and school management through the use of infocommunications [10].

Data of a positive relationship between self-regulation efficiency and learning achievement has encouraged scientists to design educational environments that improve students' self-regulation skills.

There are several definitions of the term «educational environment». In the implementation of the disciplines that form the ability to search, critical analysis and synthesis of information, to apply a systematic approach to solving tasks the most appropriate formulation is used in quality management of higher and secondary professional education. The educational environment is presented as a

set of information, technical, methodological and infrastructural tools that form the conditions for all types of educational activities.

In the conditions of a pedagogical University, it is especially important to develop the future teacher's cognitive abilities, critical perception of information, the ability to work effectively and safely in the information space, as well as to form skills for timely and professional use of media-educational environment design techniques for implementing the tasks of innovative educational policy (educational environment of a teacher) [11].

Practically all the basic vocational training programs for teachers developed under the new Federal state educational standards and implemented in the state budget educational institution of higher education «Stavropol state pedagogical Institute», the basic part includes the discipline «ICT and media literacy» [12].

Media literacy includes the following components:

- aesthetic and creative skills: the ability to see, hear, create and interpret media content. Students can develop these skills by creating media content on their own;
- interactive skills: the ability to communicate through media and try on different media roles. Interactive skills indicate a willingness to express their opinions and attitudes;
- skills of the critical analysis. It is an ability to interpret and understand the meaning of different media content. A student can interpret and evaluate media forms and content using various analytical tools. These skills develop better through the study of diverse media content and genres;
- skills of safety. It is the ability to find a way out of difficult situations and avoid them. The most important skills of safe behavior in virtual space are the protection of private space and the ability to avoid malicious contacts and content.

## 2. METHOD

The purpose of the discipline is to develop the ability and readiness of students to use information and communication technologies as tools (means) for solving problems of educational, cognitive and future professional activities. The main task of a teacher who implements this discipline is to teach them to independently form an information space for educational, cognitive and future professional activities; to acquire and use, with the help of information technologies, new knowledge and skills.

The methodology of teaching this new discipline is closely linked to the problem-solving theory of A. Schoenfeld and involves:

- the wording of the problem;
- choosing a way to solve the problem;
- necessary actions on the computer;
- interpretation of the result and formulation of the response;
- checking and evaluating the solution.

For successful implementation of the methodology, it is necessary to develop an innovative educational

environment for the purpose of learning cognitive skills of self-regulation in the study of the new discipline «ICT and media literacy». The students' cognitive self-regulation skills should be shown when creating a project for their own website. The personal website should be filled with interactive materials developed during the implementation of practical tasks.

According to the requirements of educational standards and modern life, every subject teacher with an information culture needs to track online sources of educational information, compile collections of links to them, and share this with students and colleagues. The features of the World Wide Web hypertext should be taken into account:

- a collective work (a lot of authors);
- individual reading thanks to a personal selection of hyperlinks;
- blurring of author and reader functions;
- non-linearity (lack of continuity);
- unlimited (fuzzy borders);
- the lack of the main entrance;
- multimedia.

Due to the rapid development of the Internet, hypertext is also undergoing changes. In addition to the usual informational web pages, web applications or services began to appear.

In order to improve the quality of the selection and choice of information while developing the skills to create interactive materials on their personal website, it is important for students to be able to classify information by field of ownership: – training material;

- scientific material;
- personal opinion;
- material from a commercial organization;
- religion;
- art;
- political resource.

Only educational and scientific materials can be considered as educational resources of the Internet from this list. The important tasks of the teacher are the organization of independent search and research work of the students and the formation of the ability to apply their knowledge in practice.

Thus, in order to fully understand the aims and objectives of studying the discipline, students (future teachers) need to form a correct understanding of the structure and content of the electronic personal educational environment of the teacher, as well as to instill skills: search for electronic sources of information; use of electronic catalogues of libraries; folding scientific information (analytical and synthetic processing); registration of bibliographic references to documentary and electronic sources of information. A student as a future teacher should clearly understand that the network stores both educational resources and resources that have no value for the educational process.

At these two stages, a set of eight heuristic techniques was introduced and used by the students, for example: to depict the condition of the task (in the form of a mental map), to separate the material data from the irrelevant, to find and

select only the necessary information according to a given condition, and then structure it. This type of task requires knowledge of the operating principles of different search engines, whose algorithm structures vary considerably and are not disclosed for commercial reasons. It is important to note that the selection of pages by keywords and the understanding of the content of the found web pages by search engine robots are very far from perfect, as a result of which the students often receives unreliable, insignificant or deliberately false information.

An approximate typology of the World Wide Web information hypertext pages can be drawn up, based on technical features:

- the actual websites;
- websites whose content is created by users themselves using the browser (wiki engines).
- search engine;
- blogs;
- social media networks.

Unfortunately, students very often indicate as a source of information «the Internet», completely not understanding that this answer speaks of their complete incompetence with regard to information sources. Therefore, it is important, in addition to developing students' skills in selecting information on the Internet, to explain to them what is the validity of sources, primary sources and interpretations, scientific knowledge and personal opinion, bias and objectivity, etc. Mastering this problem-solving strategy implies: developing awareness (learning about the stages of the competent problem-solving process), developing self-regulation (acquiring the ability to monitor and evaluate one's own actions in the process) and the development of heuristic strategies (master heuristic strategies).

It is important to target students clearly on the use of educational resources of the Internet and on educational social networks and media services. At this stage, students need to develop an understanding of the importance of information sources, their reliability and objectivity.

### 3. NUMERICAL MODELING

The educational environment of the new discipline was designed in close cooperation with the students themselves (students of the SSPI) who participated in the experiment and were pre-prepared for the introduction of the new educational environment.

To evaluate the results, the developers of the educational environment used the experimental plan «pretest – posttest – test for preservation»; the experimental group consisted of four groups of different areas of training EGSD 44.00.00 Education and pedagogical Sciences (n = 86), the control group consisted of seven comparable groups (n = 146). A wide variety of tools were used: tests for solving tasks that describes a life plot and a standardized test for academic performance in the discipline «ICT and media literacy», questionnaires of participants to find out their

opinions, conversations with teachers and students, and video recording of some classes.

In order to form and support students' attitude to learning as a constructive, self-regulating, situational, collaborative process, the following basic principles were used in the development of the educational environment, embodying the main characteristics of productive learning:

- using a variety of complex, realistic, open-ended tasks that are suitable for applying self-regulation and heuristic skills;
- creating a learning community using various activating and interactive learning methods: group work, general discussion in the audience (chat), and individual tasks;
- creating an innovative culture of behavior in the audience by introducing new social norms in terms of teaching and learning to solve problems, for example: encouraging students to speak and reflect on their decisions and their efforts to self-regulate activities; discussing what is considered a good task, a good answer, a good solution scheme; reviewing the role of the teacher and the learner in the educational community.

The main results of the first two stages can be summarized as follows. The experimental intervention had a stable positive impact on the skills of solving applied problems in the experimental group of students (there were significant differences in the results of the final tests compared to the control group). For students with high levels of ability, the positive effect was stronger, but for students with low levels of ability, intervention was noticeable. The results of the tests revealed a significant effect of transferring the formed skills to other sections of the discipline (creating presentations, video graphics, etc.). The number of cases of spontaneous use of heuristic skills and self-regulation skills (orientation, planning, monitoring, evaluation) by students of the experimental group has grown steadily and significantly.

### 4. CONCLUSION

In conclusion, it should be noted that a meta-analysis based on research conducted at the SSPI, which assessed the impact of self-regulated learning on the achievement of students by creating their own interactive learning web sites, showed an average effect of 0.69. The effect of self-regulated learning was more pronounced if «scientists-researchers» were engaged instead of regular training sessions. The main conclusion made on the basis of meta-analysis: self-regulated learning can be effectively cultivated when studying the discipline «ICT and media literacy».

The research shows that innovative educational environments, in which students are taught self-regulation skills for solving applied problems using interactive educational methods in a new educational culture, can significantly contribute to the development of students' competencies. The basic principles of such training correspond to the characteristics of effective educational

environments derived from a recent meta-analysis of pedagogical experiments:

- to teach complex cognitive, metacognitive, and motivational strategies using a variety of teaching methods;
- to pay close attention to the feasibility and benefits of these strategies;
- to create opportunities for the practical application of strategies and provide feedback on their application;

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– to form an innovative culture in the group that encourages self-regulated learning and, above all, reflection.

The proposed methodology is extremely effective in promoting students' information literacy, as they learn to activate high-order cognitive skills that are key on information and media literacy.

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