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**THE WEBQUEST TECHNIQUE – HOW TO EXPLOIT NEW
TECHNOLOGIES IN TRAINING TEACHERS**

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Abstract

The information technology affects the way we learn and live. Through the new technologies the range of means of access to information can be enriched. By preferring experiential learning, the current generation of students explores the potential of different training environments, and use learning methods that rely on technology. The expectations of the society and of the educated have changed quite a lot in recent years and the digital environment favors the formation of new skills in students. We believe that the educational software that is available in cyberspace provides means for a genuine education in accordance with the requirements of the information society. Having a formative character and applied valences, exploiting new technologies and coming towards the needs and interests of students, the WebQuest technique is increasingly used in the Romanian education. The research sample includes a number of 119 subjects (students – undergraduate and master – and preschool teachers). We have decided to record and interpret qualitatively the responses of the subjects included in the research and also issue some suggestions and proposals for the future use of this technique.

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Keywords: WebQuest; Internet; teacher training; constructivism; constructionism.

1. Introduction

The impact of information technology in modern society is obvious. Distinguishing itself by its interactive character, the computer influences the pedagogical relationship. By introducing the computer in the classroom it makes changes to the teachers' pedagogical practices, providing an authentic environment for a constructivist learning. Meant to introduce constructivism and technology in schools, D. Kaufman recommended promoting the link between technology and constructivism in education programs for teachers (Kaufman, 2004). On the other hand, creative learning refers to the opportunity for



students to develop innovative thinking skills (Cachia, et al., 2010), it aims to ease in communication, in choosing alternatives and it requires flexibility in approaching situations and solving the training tasks. The widespread availability of technology (phones, tablets, computers, etc.) provides quick access to information. It is worthy of note the positive impact the WebQuest technique has, which involves accessing online resources and the constructive use of information for solving a given problem. WebQuests are considered ways of escalation to higher levels of learning because it promotes problem solving, providing links to websites, focusing on key elements that facilitate construction. Providing a context/scenario in which students can work and find solutions, it is the base of innovative learning. We believe that this technique is a modern one that capitalizes the new information and communication technologies and meets the needs and expectations of the current generation of students.

2. Theoretical Background

2.1. The Computer in Constructivist Training

A postmodern paradigm in education, constructivism is oriented towards the subjective dimension of knowing reality, towards developing personality in an authentic social context, aiming at restoring the role of proper mental activity. In school practice, the constructivist perspective of learning suggests a number of different teaching techniques and tools which encourage students to build and rebuild, which activate and turn to the natural background of the human being. The close connection between the computer and constructivism is not accidental. Through computers, students build knowledge so as to reflect understanding and show their concept of information. Moreover, the Internet itself provides unprecedented access to information and authentic contexts which can be easily incorporated into course material and activities (Mc Clintock, 1999). At the same time, the on-line environment makes it possible for students to visit and review various course materials and activities in different ways and sometimes motivated by their own choice (Spiro, & Jeng, 1990). Blogs are an example of ICT that can enrich constructivist learning in an interactive structure that encourages reflection and dialogue between pupils. Constructivist learning emphasizes the importance of sharing knowledge openly. Like blogs, e-portfolios can promote constructivist learning as a tool that stimulates the ability to share knowledge and the capacity for self-reflection in collaboration with other students (Zhong, et al., 2010).

Identifying the goals of a significant educational reform (independent learning, individualized learning, interactive learning, interdisciplinary learning and intuitive learning), D. Barr says that the resources available through technology now include electronic database with present information and independent research tools. These databases contain hyperlinks that enable interactive exploration and learning, where the investigation, feed-back and collaboration play important roles (Barr, 1990). The computer gives a serious response to the teaching methodology, promoting active and self-directed learning. It becomes a tool that supports students in acquiring the required skills. H. Wenglinsky showed that the main reason why teachers do not introduce technology in the educational process is the lack of experience. The computer can be used in word processing, art projects, in creating charts, tables, graphs, in completing school projects, in communication through email and chat groups (Wenglinsky, 2006). We believe that all young people need a computer culture, which we see as a core competence that ensure lifelong learning. Personalizing education by NTI can be successfully achieved today, given that most

children develop from an early age a network structured logic. If the WebQuest technique combines as a more recent way of training, with the traditional methods used in education and others that are specifically constructivist, the Internet can be an important educational support, exploited rationally and efficiently. In the early 1990s, two great changes began to revolutionize the economy and daily life throughout the world, including Europe. On one hand, a globalized economy as economies everywhere became increasingly independent and, on the other hand, the technological revolution, including the internet and the new information and communication technologies (Fontaigne, 2007).

2.2. WebQuest Technique

The WebQuest technique is an invitation to investigation, a technique of using the Internet in education, a tool that valorizes the advantages of learning online. Relying on constructivist principles and using methods specific to the Internet, this technique was developed and implemented in 1995 in the US by Bernie Dodge and Tom March, teachers at San Diego State University. In a very short time the WebQuest model has been adopted by many schools. As its creator says, “a WebQuest is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the internet, optionally supplemented with videoconferencing. There are at least two levels of WebQuests that should be distinguished from one another” (Dodge, 1995). In science education, WebQuest is a problem situation, a student mini-research for the implementation of which he needs additional information placed on the Internet on known addresses, created in order to avoid its overloading. Most information or any information that students can explore come from the World Wide Web, and cooperation is one of the principles of this technique. A WebQuest simulation offers a simple training design for the learners, by reference to the following steps or components: introduction, task, process, information resources, evaluation, conclusion.

Integrating technology in teaching and making use of the formative possibilities the constructivist methods and tools have (such as, for example, the WebQuest technique) we can achieve the paradigm shift in education. It states that “students today have grown with computer games, and constant exposure to the Internet and other digital media has shaped the way they receive information and learn.

3. Methodology

Objectives of the investigation: The clarification of the problem in specialized literature (O1); The registration of the students’ and teachers’ opinions about the role of the WebQuest technique and computer use in training activities (O2); The evaluation of the recorded responses (O3); Drawing some conclusions and suggestions for the future use of this modern training technique (O4).

Type of research: observational, constative

Duration of research: an academic semester (October 1, 2015 – May 31, 2016)

The group of subjects: 1. Students from *the Faculty of Sciences* – year I, bachelor (Department of Mathematics, Department of Informatics, Department of Physics, Department of Chemistry), *the Faculty of Agriculture and Horticulture* and *the Faculty of Economics and Business Administration*, year I, Master; 2. Teachers participating in the Lifelong Learning Programme (“Proconstruct”) organized by the Department of Teacher Training from the University of Craiova, in March 2016.

The research included students enrolled in the program for initial teacher education (undergraduate – 68 and master – 27) and preschool teachers (24):

Investigation tools:

The questionnaire is the research tool that we used. We applied a set of nine questions on the importance the learners give to the *WebQuest* technique and the impact of its use in training. Through the survey, we identified the opinions of the students and based on their interpretation, we issued the findings of the micro-research and we formulated some proposals and suggestions with a methodical character. The questionnaire items include two main dimensions: accessing technology and optimization of teaching through the WebQuest technique.

4. Results

Being an observational study, we were interested in the attitude of the subjects towards accessing technology and its use in teaching. We focused on computer functions in relation to teaching and learning and on using WebQuest as a technique of constructivist training. For a better centralization of the answers obtained for the questions, we turned to tables and graphs for the items 1, 2, 3 and 6.

For question no. 1 (“Do you know the characteristics of the WebQuest technique?”) we recorded the following answers:

Table 1. Absolute and relative frequencies obtained for Item 1

Answers	Students – undergraduate		Students – Master		Preschool teachers – Lifelong learning programme	
YES	27	39.71%	18	66.67%	19	79.17%
NO	41	60.29%	9	33.33%	5	20.83%
Total	68	100%	27	100%	24	100%

For item 2 only the subjects who stated that they know what WebQuest technique responded – a total of 64 (53.78%). The answers to the question “What time of your own training did you use this technique for the first time?” fall in the following graphic:

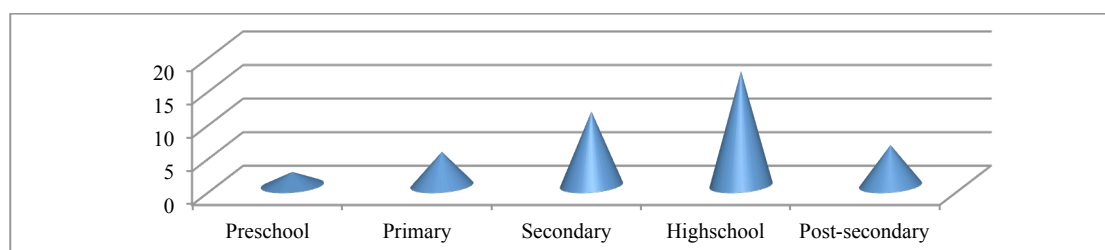


Fig. 1. Distribution of answers for item 2

For item 3, 64 respondents answered (53.78%). When asked “How much does WebQuest exploit the formative, constructivist character of education?” we registered the following results:

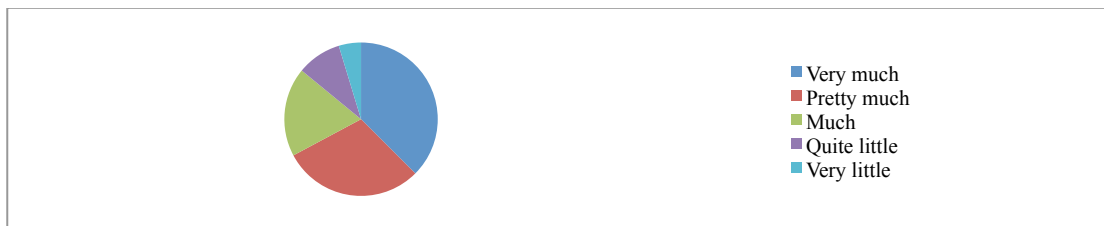


Fig. 2. Distribution of answers for item 2

Among the most frequent answers to the question “*What are the advantages of using the WebQuest technique in training?*” (Item 4) there are: developing knowledge interests (31.25%), efficient organization of learning time (21.88%), stimulation of online learning (18.76%).

Among the most frequent responses to the question “*What are the two main obstacles, deficiencies that prevent an effective use of this technique?*” (Item 5) include: time consuming (54.69%), difficulty to select, process and organize information (35.94%).

Item 6 asks subjects to roughly appreciate how often they resort to new informational technologies for teaching (“*On average, how many times a week do you use in formal education a specific component of NTI?*”), and the results are as follows:

Table 2. Absolute and relative frequencies obtained for item 6

Answers	Students – undergraduate		Students – Master		Preschool teachers – Lifelong learning programme	
	Count	Percentage	Count	Percentage	Count	Percentage
Daily	54	79.41%	12	44.44%	3	12.50%
Few times	8	11.77%	7	25.93%	9	37.50%
No more than once	6	8.82%	8	29.63%	12	50.00%
Total	68	100%	27	100%	24	100%

For item 7 the subjects responded for more than 50% positively to this question: “*Do you use the computer in solving teaching tasks?*” Thus, the first year undergraduate students responded affirmatively in proportion of 92.65%, the first year Master students in proportion of 66.67% and pre-school teachers in the proportion of 54.17%.

Item 8 emphasizes the training tasks involving computer use. When asked “*What objectives do you specifically reach using the computer during school activities?*”, The subjects included in our research gave the following answers:

1. Students: identifying information about a specific topic (35.79%), working with colleagues in joint projects (20%), the analysis of planning and/or teaching projects, evaluation papers, etc. (18.95%), other answers (25.26%);

2. Educators: Personal information in the field (37.50%), creating informative media for teaching activities (29.17%), purchasing patterns, ideas for achieving teaching materials (20.83%), other answers (12.50%).

For item 9 the subjects were asked to choose (by encircling) the version they dominantly use in teaching. Their choices are expressed in percentages as follows: individual learning (57.15%) – learning

through collaboration/ cooperation (42.85%); classic strategies (20.19%) – modern strategies (79.81%); transmission-reception (38.66%) – experiential learning (61.34%).

5. Discussions

The answers to the question regarding the specific of the WebQuest technique show that this technique is less known to students compared to teachers in preschool. Of the 95 students interviewed, only 45 (47.37%) of them said they know what it means and what the WebQuest technique refers to, while the total of 24 teachers, 19 (79.17%) of them know the specifics of the technique in question. First year Master Students have a higher percentage of positive answers (66.67%), compared with first year undergraduate students (39.71%). From the 119 subjects who completed the questionnaire, only 64 (58.78%) of them have responded positively to the first question and, accordingly, responded to item 2, item 3, item 4 and item 5. We learn that a small number of subjects used the WebQuest technique in the first stages of their compulsory training, a higher percentage being recorded in high school education (26.56%) and higher education (35.94%). The number of subjects who believe that the WebQuest technique develop the formative dimension and constructivist aspect of education is significantly higher (67.19%) compared to that of the subjects who say that the technique capitalizes little or very little these valences (14.06%), the remaining percentage being distributed relative to the central value of the scale.

There are many positive aspects of using the WebQuest technique, and most of the answers to the question “*What are the advantages of using the WebQuest technique in training?*” send to: the development of knowledge interests, effective organization of the learning time and stimulating online learning. We have not identified any answer able to directly outline the use of this technique in order to apply the constructivist principles or access patterns of a constructivist nature. There are also limits for using this technique, the most frequent answers to the question “*What are the two main obstacles, shortcomings that prevent an efficient use of this technique?*” are: time waste and difficulty to select, process and organize information. We believe that this technique must be combined with others, depending on the purpose of training, the age of the students, the technical feasibility and technological features available for each school. In terms of the frequency of seeking information technologies in formal activities, it places the first year undergraduate students in the first place, in part due to their specialization (the participating students are from the Faculty of Sciences: Informatics, Mathematics, Physics and Chemistry). All three categories of subjects achieved high percentages regarding computer use in projecting, organization, implementation, evaluation of their teaching tasks, which highlights the important role that it plays in training. As for the accomplishment of some objectives specific to teaching, over 50% of the students (BA and MA) say that they appeal to the computer to identify information about a particular topic and to conduct joint projects. More than 50% of the teachers use the computer in order to find information in their personal domain and to achieve informative support for their educational activities. As paths of present action which reflect a certain educational practice, the responses to item 9 points out that individual learning is preferred instead of collaborative learning (which means it does not take full account of the principles of constructivist learning or that they have not yet been implemented in Romanian schools). There can be observed a preference for modern strategies, interest in new information technologies, which opens a horizon exceeding expectations and could be a good reason to make better use of the WebQuest technique.

6. Conclusions

We consider that the WebQuest technique is one of the most effective ways to exploit new technologies in teacher training. Accustomed from their initial training to use this technique, future teachers will easily use it and they will realize a change of emphasis in educational practice. Teachers should encourage students to ask questions and stimulate their search for answers (“Good question!”, “Very interesting question!”, “Your question shows that you think about certain things!”, “Many students seem to be confused. Your question came just in time”, “I have not thought about this question”, “I had not taken into account this problem”). If students assign the difficulty of the learning tasks to their own shortcomings (ie. lack of skills), then the teacher should turn their attention to difficulties, outside obstacles: “Pay attention to choosing a more difficult part of the problem”, “This is a new type of problem, and we have not talked about it yet, so do not expect to know how to solve it”, “Do not expect your mind to work very quickly. It takes more time”, “There is no problem, many of us choose this approach” (Hartman, & Glasgow, 2002). Preparing future teachers should include updated programs and modern strategies, the WebQuest technique being one of those able to stimulate experiential learning, project-based learning, discovery learning and problem solving.

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