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## Web Quest as a Tool for Increasing Students' Motivation and Critical Thinking Development

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### Abstract

The highlights of this article are the problems of critical thinking development while teaching English to the students of technical studies. The main concern is the involvement of the students in the process of working under such project tasks as web quests. Specifically, student's participation in the studying of professional foreign language (ESP) is described. Particular attention is paid to the role of a web quest in increasing the students' motivation and stimulating their cognitive activity in professional foreign language (ESP) learning. The article also deals with the problem of critical thinking evaluation in the process of implementation of project activities, the basic conclusions on this issue are formulated and the parameters of evaluation system are presented.

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*Keywords:* Web-quest; critical thinking; cognitive skills; cognitive activity; scaffolding.

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### 1. Introduction

Educational scope today is greatly influenced by the technological innovations and the widespread Internet technologies. Thus, modern teachers are forced to use the educational environment that integrates such technologies as on-line lectures, webinars and other educational activities based on the use of Internet technologies.

We believe that the formation of professional foreign language competence in students of technical universities may be considered in two aspects, namely from the technological and the optimization points of view.

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## **2. The two aspects of the formation of professional foreign language competence**

The technological aspect is aimed at identifying by a teacher all the tools, that is, methods and techniques that help students to obtain the best result in the acquisition of knowledge, skills and abilities, especially in the sphere of professional communication.

The optimization aspect is aimed at more efficient and consistent application of existing technologies depending on the specifics of the teaching and learning activities of each particular higher education institution. This is particularly topical for high schools with multi-level training system.

This article is going to consider the technological aspect of the foreign language learning and the most appropriate educational technology, such as interdisciplinary projects based on web quests for the formation of professional foreign language competence in students of technical universities, increase their motivation to learn foreign languages and enhance critical thinking.

Using Web quests combines and implements the best practices of education in one integrated activity. One of the major problems in the formation of foreign language communicative competence in the professional sphere is the development of students' cognitive skills, which contribute to the formation of mature thinking. Such mature thinking gives students the ability to receive, select, analyze, simulate information and make strategic decisions about their learning.

Dodge (1997) in his work 'Some Thoughts on Web Quests', describes the principles of using web quests and presents this teaching technology as a platform for the development of cognitive skills at higher levels.

March (1997) extended the functions of cognitive component of Web Quest, including such aspects as the principles of constructivism in teaching, authentic problems using, which requires non-standard solutions, stimulates students' cognition interest and raises their motivation for knowledge acquisition and team-work, which, in turn, raises deep awareness of the information received. According to March, Web Quest project work helps students to establish a deeper subjects links, feel themselves part of the educational space, and make a conscious effort to organize and optimize cognitive activity. This article is going to dwell on each of these aspects in more detail.

## **3. Elements of critical thinking development**

The first element in the development of critical thinking is scaffolding, a concept borrowed from the educational philosophy of constructivism.

The key idea scaffolding is that knowledge cannot be imparted into students in the finished form. The educational process can only create for students the supportive environment for a successful self-construction and self-expansion of knowledge. Thus, scaffolding is a guidance process of students' cognitive activity from what they already know to acquiring of new knowledge and skills. Scaffolding allows students to carry out tasks which are, as a rule, slightly above their abilities and could be successfully performed with the recommendations from the teacher's side. The appropriate guidance from a teacher allows students to balance on the verge of their personal development (Murphy, 1997). March (1997) believes that the use of a web quest-based model as an aspect of cognitive psychology is based on the following principle: if we want students, for whom this kind of cognitive activity is a new one, to complete a task on a high, even on a professional level, we need to analyze the existing experience in this area, and then bring the novices through all the stages of project development.

Thus, a teacher should state a general problem for all students, and then step by step they are resolving this problem by sequentially performing a number of specific feasible tasks. At the same time, a teacher should provide the necessary assistance and help to focus students' attention on the key aspects of a project. This contributes to the achievement of the ultimate goals of the project and the development of the right mode of thinking. The teacher plays the role of an organizer and a coordinator in the students' self-teaching and self-learning processes as well as in their communicative and creative activities. The teacher also provides a continuous support of the mentioned above activities during the project, that is putting leading and elaborative questions, providing links to the Internet resources, hyperlinks and hypertexts, which contributes to the development of skills and abilities necessary for successful implementation of the project, such as presentation skills (the ability to present the results of their research in the oral form), use of the specific terminology, etc.

Having analyzed the above facts, it can be concluded that scaffolding is the foundation of the web quest project work.

The next criterion for the formation of critical thinking is students' motivation and authenticity of the set up

problem. Motivated students exert more effort to search the right solution. Their attention span is boosting which contributes to information filtering and focusing only on the material necessary for finding the right solution while excluding details irrelevant to the research. In this case, it is the authentic problem requiring non-standard solution that takes the whole process of the work on the web quest out of the classroom making students set up hypothesis, analyze, synthesize, evaluate and present their findings in real time.

The third criterion for developing of students' critical thinking is cooperative learning that plays a key role in arranging the work on the web quest. The web quest structure itself implies substantial contribution of each participant as one of the aims of web quests is investigation of complicated and sometimes controversial issues not all aspects of which can be studied by a participant alone. Such conditions of research work encourage students to do independent mental work when each participant investigates a separate aspect of one problem. However, it does not mean that the students see only the fragments of the whole picture. On the contrary, at the final stage they process the information in cooperation analyzing, synthesizing, comparing and discussing received data coming to the end with creation of a product.

Another important aspect of critical thinking development with the help of web quest is the creation of interdisciplinary links that enables students to determine logical subject links and transfer their knowledge from one context into another. To achieve this effect the teacher provides hyperlinks to sources of different or even opposite contexts. Therefore, students have to establish associative bonds, for example, between paintings of Picasso and city graffiti or between a war in a certain country and teenagers violence.

Having analyzed the information presented above we came to the conclusion that the interdisciplinary project incorporating web quest as technological basis reveals characteristics of metacognitive teaching strategy. According to Grigoryeva (2010), metacognitive processes can be characterized as involuntary or conscious efforts of different degree of generality on organization and optimization of cognitive activity. In other words, these are methods of our cognitive process and exactly thinking. The work frame of web quest makes students focus on their own cognitive functions and way of thinking, which in its turn leads to reflection on how students gain knowledge, what facilitates and what slows the process down. They start analyzing how to learn something new in a more successful way. They correlate their knowledge and experience with new teaching situations.

#### 4. Evaluation

One of the key points of the final stage in the web quest work is evaluation of participants' outcome. Evaluation criteria selection is determined by the type of the presented product that can be a presentation, a leaflet, a web page, an article in a students' magazine. However, we can single out criteria common to evaluation of the project apart from the outcome type:

- Information consistency
- Clarity of presentation
- Grammatical and spelling correctness
- Solution completeness
- Creativity
- Language variety

However, the criteria mentioned above cannot be used for evaluation of the level of critical thinking development. Therefore, we consider it necessary to include parameters for evaluation of cognitive activity and metacognitive processes into the web quest rubric. We think parameters introduced by Facione and Facione (2009) can be used for evaluation. According to the authors, the following factors belong to the indicators of high critical thinking level:

- A student can clearly interpret facts, data, terms, questions asked, and diagrams, can extract information from graphical data
- A student easily perceive serious arguments, identifies notions "for" and "against"
- A student thoroughly analyzes and estimates main points of view on the issue

- A student makes distinctive and valid conclusion referring to objective data and evidence independently and open-mindedly

Correspondingly, the level of critical thinking development depends on the student coordinated and coherent performance of the above-mentioned actions. If there are some difficulties with any of the factors, we may speak about average or low level of critical thinking development.

## 5. Conclusion

To sum up, we can make a conclusion that principles of using web quest as a technological basis in interdisciplinary projects for development of professional foreign language competence in students of technical universities rest on constructivism theory in teaching. Setting of an authentic problem appealing personally to participants corresponds to Dewey's ideas of teaching concentrating on social and pragmatic aspects. It is an authentic problem requiring non-standard solution along with scaffolding provide background for critical thinking development.

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