Abstract: Students learn best when they construct the knowledge. Webquest has the potential to activate students by enhancing their critical thinking and problem solving skills. This paper focuses on Webquest in teaching Environmental Education (EE) in Vietnam, where Information and Communication Technology (ICT) and EE integration in education have been priorities in educational policy recently. The paper begins with an introduction on different learning theories, Webquest and its added value to teaching and learning. In findings, it goes further on the perception on Webquest in education and one example of Webquest in Environmental Education. In conclusion, some implications of using Webquest are also provided.

Introduction

According to cognitivism, learning is considered not just mere stimulus-response association only but an active cognitive process. Jean Piaget (1896-1980), one of the prominent cognitive theorists, emphasizes two functions of cognitive learning, organization and adaptation (Kristinsdóttir, 2001). Organization refers to the fact that the new knowledge must be integrated in the existing knowledge. Adaptation- assimilation or accommodation occurs when the new knowledge does not fit. Piaget suggests an educational content that is familiar enough to assimilate but challenging enough to create the motivation for cognitive activity (Kristinsdóttir, 2001). He advises that the teacher should be aware of the child’s stage of cognitive development and his psychology when he/she thinks of designing learning activities. In addition, the teacher should create an active learning environment that facilitates the child to construct the knowledge. Another influential learning theory category is constructivism. Constructivists believe that students learn best when they construct their knowledge (Kristinsdóttir, 2001). Jerome Bruner (1915-present), a representative of constructivism with the approach “Discovering Learning”, argues that “Practice in discovering for oneself teaches one to acquire information in a way that makes that information more readily viable in problem solving” (Bruner, 1961, p.26). Bruner also suggests the “spiral curriculum” (Good & Brophy, 1986, p. 207). In this curriculum, the student is able to broaden and deepen his/her knowledge about the existing concepts and then he/she is motivated to receive more new knowledge. On the other hand, in the classroom, the teacher will become a facilitator to guide students to explore and discover knowledge.

Webquest has the potential to create such an active environment. Developed by Bernie Dodge and Tom March in 1995, it is defined as “an inquiry-oriented lesson format in which much of all the information that learners work with comes from the web” (Bernie Dodge, 2007, para.3). It can be seen as a method in which each student completes a practical task, using information from provided web links. Besides, students are able to present and peer-evaluate their products after completing tasks. Webquest increases student motivation because it provides a challenging task which requires students not merely collect information but also transform information (Tom March, 2002). Allowing students to take different roles, Webquest creates an opportunity for different students at different levels to present their own understanding and perspective. Making a Webquest is not difficult. However, it is not easy to make a good Webquest. The potential of Webquest is in the task and resources that the teacher provides in Webquest.

Research Questions and Methodology

This paper aims to address the following questions:
1. How is Webquest perceived in teaching practice?
2. What possibilities does Webquest provide in teaching Environmental Education?

The questionnaires are delivered to 71 teachers, who received input training on Webquest in August, 2009. The data is collected and analyzed. An example of Webquest on climate change is shared in the workshop “Sharing experience and making action plan to adapt to Climate Change” organized by International Fellowship Program Alumni- Ford Foundation, Thua Thien Hue Province, Vietnam in September, 2009.

Findings

Context

In 2001, the Prime Minister of Vietnam made a decision of approval on the project “Integrating environmental issues in the general education”. Teachers are requested to take advantage of environmental contents in curriculum of different subjects to “equip students with knowledge of ecology, environmental preservation skills and attitudes towards surrounding environment” (Government, 2001, p.1). In reality, this integration is not at all easy. Vietnamese teachers are faced with a huge workload, time constraints and lack of environmental materials. Therefore, it is necessary to seek an option that both provides scaffolding support for students with sufficient materials and reduces teacher’s workloads.

Regarding integration of different Information Communication Technology (ICT) tools in education in Vietnam, since the Master Plan For Information Technology in Education for the period 2001-2005 by Vietnamese Ministry of Education and Training (MOET), the integration of ICT has been considered “a priority task in the socio-economic development strategy” (Government, 2000, p.3). In education, the MOET requires all teaching institutions to apply ICT in teaching and learning to change the pedagogy from traditional teacher-centered to more student-centered. ICT is regarded an effective tool to improve the quality of education. The MOET emphasizes teachers “to reasonably use ICT in every subject, avoid ICT abuse” (MOET, 2008, p.3). Especially, the school year 2008 was launched “The year of ICT”. In the school year 2009-2010, MOET launches the e-lesson competition with the slogan “Every teacher builds at least one electronic lecture” (MOET, 2009, p.6).

That MOET takes EE and ICT priorities creates much pressure on teachers. One the one hand, they have to fulfill their duties as a subject teacher. On the other hand, they have to integrate EE and ICT in their subject while they are not well enough equipped with sufficient ICT tools, EE materials and pedagogy.

Recently, Viettel Company- one leading communication company in Vietnam has provided schools, state offices, and departments of education and training (DOETs) with bandwitch Internet and electronic communication ports. Teachers and students have more opportunities to access to resources in the Internet. In 2008, The Flemish Association for Development Cooperation and Technical Assistance (VVOB) implemented the baseline study to 900 lecturers in five provinces on using ICT for teaching practice. The result shows that number of teachers accessing to online information for teaching is considerable. However, integrating ICT software into subjects is limited. (VVOB, 2008)

![Figure 1: Percentage of teachers access to online resources and integrating ICT software into subjects.](image-url)

Perception on Webquest in Teaching Practice
In line with the ICT guidelines of the MOET Vietnam, in the education program of the Flemish Association for Development Cooperation and Technical Assistance (VVOB), different ICT training workshops are organized for teaching lecturers in five teacher training institutes in Thai Nguyen, Quang Ninh, Quang Nam, Quang Ngai and Nghe An provinces of Vietnam. The objective of the workshops is to provide lecturers with knowledge, skills and methodology of using ICT in teaching practice. In the workshop ICT for Active Teaching and Learning and ICT for Specific Subjects, Webquest, along with other ICT tools is introduced to the lectures of different groups of social and positive subjects.

<table>
<thead>
<tr>
<th>Focus Group 1 (FG1)</th>
<th>Education, Pedagogy, Social Sciences</th>
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<tbody>
<tr>
<td>Focus Group 2 (FG2)</td>
<td>Biology, History, Geography and Environmental Education</td>
</tr>
<tr>
<td>Focus Group 3 (FG3)</td>
<td>Literature, Languages, Fine Arts and Music</td>
</tr>
</tbody>
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**Figure 2:** Focus groups of social and positive sciences introduced Webquest.

After the workshop, the questionnaire is delivered to 71 teaching lecturers to assess the usefulness of different ICT tools in teaching practice. 94.3% of the lecturers perceived Webquest useful and very useful. The lecturers indicate Webquest can be seen as a project-based task or contract-based task (FG1, FG4). One teacher indicates that Webquest is very helpful in introducing the new knowledge. It helps students deepen the knowledge, raising the problems and providing authentic solutions easily (FG3). It is also a good tool for student self study. Webquest could be effectively used in different subjects such as Geography, Literature, Fine Arts, Languages, and History. In Literature, it helps students collect relevant information on the Internet to synthesize the knowledge on writers or works. In English, from the Webquest, students are provided with some situations, working in groups and searching information on the Internet to debate. Using Webquest in Fine Arts can help teachers save time in teaching. One specific characteristic of Webquest is to provide the evaluation sheet in advance. In this way, the students can orientate their tasks. Webquest can motivate the active working styles, critical thinking of the students and enhance student’s creativity (FG4). It helps collect ideas for the lesson and activate students.

Although most of the teachers perceived Webquest helpful, five months after the workshop, none of them have made any Webquest. The reason is that because Webquest has just been introduced to Vietnam, teachers do not have enough Webquest examples in Vietnamese as references. Therefore, they show their needs to have more Webquest examples in Vietnamese, so that they could better understand how to design a good Webquest. In later workshops on Webquest, an example of Webquest on Climate Change was introduced.

**Example of Webquest on Climate Change**

In the *introduction* part, students observe a picture on climate change and give comments.

![Figure 3: Picture on Climate Change](http://cmsdata.iucn.org/img/w_climate_change_drawings_intu_boedhihartono_5149.jpg)
In the task part, each group of five is going to take on different roles to analyze cause and effect of climate change and solutions to it. By the end of the lesson, students will be able to collect and identify different information on climate change in the World Wide Web; write a message on climate change for their own community; and design their own action plan to tackle the climate change.

In the process part, each group is assigned a different role. Group 1 takes the role of researchers. These students will collect information on climate change concepts and cause of climate change and write a paper on this issue in a local newspaper. Group 2 takes the role of farmers: they are going to take a look at a video clip on global warming (http://www.youtube.com/watch?v=21EXRbb6vdE) and deliver a presentation on how climate change affects farming work and daily life. Group 3 are acting as students: they will measure their CO$_2$ footprint (http://www.carbonfootprint.com/index.html) and design a poster of different ways to mitigate and adapt to climate change. In the evaluation part, students are able to look at the page http://rubistar.4teachers.org/index.php?screen=ShowRubric&rubric_id=1845597& for the Webquest’s rubric. In the conclusion part, teachers congratulate the students and assess whether the objectives of the lesson are achieved.

Discussion

The Webquest on Climate Change was shared among Climate Change specialists of different organizations and educators of MOET and of DOETs. Most of them agree it is an appropriate possibility to teach ICT-integrated EE lessons. One teacher said that the picture in the introduction of the Webquest on Climate Change increased student motivation. The other saw the task of measuring CO$_2$ help students become more aware of climate change. However, some of them were concerned about the possibility of using Webquest in remote areas where teachers and students have little access to Internet. In fact, Webquest is not necessary designed on computers, it can be made on paper. Furthermore, students do not need to access to online resource if the school can provide an offline rich resource.

Conclusion

ICT could be an effective tool to partly solve the difficulties in integrating environmental education in curriculum which are workload, time constraints and lack of materials. With Webquest, teachers spend less time in classroom while students have more opportunities to explore knowledge and self-direct their study. Information in websites is a rich resource for students to deeply understand environmental issues. With Webquest, different levels in Bloom’s taxonomy are attained: students not only know, but also comprehend information; in addition, they are able to analyze and synthesize information to create a product and self-evaluate their product. One main concern is how to design the task and evaluation indicators for this task. It depends much on teacher pedagogy.

References


MOET. (2008). Directive No 58 on enhancement of teaching, training and applying information

