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Title	Designing web-based constructivist learning activities for geography and social studies
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Source	<i>Teachers Network Conference : The classroom of the 21<sup>st</sup> Century – A paradigm shift, Singapore, 29-30 May 2002</i>

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# **DESIGNING WEB-BASED CONSTRUCTIVIST LEARNING ACTIVITIES FOR GEOGRAPHY AND SOCIAL STUDIES**

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## **SYNOPSIS**

This paper will focus on pedagogical considerations and practical issues of designing web-based constructivist learning activities for Geography and Social Studies topics. Specifically, WebQuest designs will be used to create authentic constructivist learning activities. The strategies discussed are most suitable for Upper Secondary Geography students.

## **BACKGROUND**

There will be as many as over 490 million Internet users or 79.4 per 1,000 people worldwide by the end of 2002 and over 765 million users or 118 per 1,000 people by the end of 2005 (Computer Industry Almanac Inc., 1999, <http://www.c-i-a.com/199911iu.htm>). There is “growing demand for a 21<sup>st</sup> century that is independent of time and space, oriented toward goals and outcomes, centred on the student/learner, geared to active, hands-on learning and able to accommodate differences in skills and language” (Aaggarwal and Bento, 2000: 4). Indeed, the “scenario painted for our Singapore classrooms of tomorrow is a very exciting one, and one that is intimately connected with technology. There is no escaping the web of information technology” (Cheah, 1997: 140). Indeed, educators and researchers are quickly examining how IT and the use of the web may enhance learning (eg. Fabry, 1998, Lynch, 1998, Rada et al., 1996 and Scott, 1996).

Learning arises from a constructive process of reflection on the material provided and interacting with it (Farnham-Diggory, 1990). We know that “[k]nowledge is not merely a collection of facts” or even a recollection of facts. “[a]lthough we may be able to memorise isolated undigested facts for a short while at least, meaningful learning demands that we internalise the information: we break it down, digest it and locate it in our pre-existing, highly complex web of interconnected knowledge and ideas, building fresh links and restructuring old ones.” (Megarry, 1989:50) Von Glasersfeld (1995) argues that: “From the constructivist perspective, learning is not a stimulus-response phenomenon. It requires self-regulation and the building of

conceptual structures through reflection and abstraction” (p.14). Constructivist learning activities enable the learner to construct his or her own understanding. But just how do we go about creating meaningful constructivist learning activities on the web?

## **DESCRIPTION OF STRATEGY**

Over the past two years, I have been collaborating with teachers from a few secondary schools in designing WebQuests for Secondary Geography and Social Studies as constructivist learning activities. Although the theoretical considerations and guidelines to creating useful WebQuests have been widely reported in the literature (Dodge, 1997; Dodge 1999; March 1998; March 1999), there is a general lack of confidence among the teachers I have worked with to actually undertake the design process.

WebQuest was developed by Bernie Dodge at San Diego State University and widely promoted by Bernie Dodge and Tom March through the Internet. A WebQuest is actually an inquiry lesson plan that requires students to process, apply and present information which they obtain from the Internet or other ancillary data sources. This idea has immense potential for application in Geography and Social Studies lessons as students may develop a deeper understanding of the issues under investigation through acquiring and processing information gathered. This deeper understanding may result in higher-order thinking skills such as problem-solving and critical analysis. Basically, a WebQuest provides access to online resources while scaffolding the learning process to encourage higher order thinking. In a sense, WebQuest brings together the most effective instructional practices into one integrated learning activity (Dodge, 1997).

Although the number of teachers trained in using WebQuest as an ICT instructional strategy is increasing through the efforts of pre-service and in-services training provided by both the National Institute of Education and the Ministry of Education, teachers are only at best acquainted with the strategy rather than having first-hand experience at creating a WebQuest. Apprehension is understandable, if not expected, given that these teachers have never really designed a WebQuest from scratch. The most daunting aspect about the entire design process is in inventing an authentic, engaging and doable task.

## **PROCESSES**

“The task is the single most important part of a WebQuest” Dodge (2002). According to Dodge (2002), a well designed task is doable and engaging, and elicits thinking in learners that goes beyond rote comprehension. There must be as many ways to task your learner as there are as you can think of. Since 1995, Dodge has been working with teachers in using the WebQuest model and from their feedback and responses, a taxonomy of some common task formats have emerged. It provides a guide for designing WebQuest tasks that should enhance our ability to design them well. It is likely that the task in a given WebQuest will combine elements of two or more of these task categories. They are:

1. Retelling task – simple as it seems, if the task requires looking for simple, sure answers to pre-determined questions, then the activity is clearly not a WebQuest even if the answers are found on the Web but are just worksheets with URLs. A retelling task requires that student digest the information and show what they have understood from the information collected.
2. Compilation task – takes information from a number of sources and put it into a common format
3. Mystery task – sometimes a good way to stir students' interest if it is designed as a puzzle or detective story.
4. Journalistic task – involves gathering facts and organizing them into a journalistic account. Accuracy and not creativity is important in assessing this type of task.
5. Design task – requires the learners to create a product or plan of action that accomplishes a pre-determined goal that works within specified constraints
6. Creative Product task – these tasks result in the production of something within a given format (e.g. drawing, play, poster, board game or song) but they are much more open-ended than design tasks. The assessment criteria for these tasks usually emphasize creativity and self-expression.
7. Consensus Building task – as the name implies, the task requires that differing viewpoints are voiced, considered, and accommodated where possible resulting in some consensus.
8. Persuasion task – requires students to develop a convincing case based on the information they have collected.
9. Self-Knowledge task – requires students to find out more about themselves. For example, the task can be to find out if they are living an environmentally friendly way of life.
10. Analytical task – requires learners to examine the similarities and difference of one or more items and to determine the implications for those similarities and differences.
11. Judgment task – usually requires the learner to consider, rank and then make an informed decision among a limited number of choices presented to them.
12. Scientific task – requires students to make hypotheses based on an understanding of background information provided by on- or off-line sources; or test the hypotheses by gathering data from pre-selected sources; or determining whether the hypotheses were supported and describing the results and their implications in the standard form of a scientific report.

(Adapted from Dodge, 2002)

Although the list above does seem somewhat exhaustive, it is not simply choosing from the categories above and then using them as they are. The task has to be designed based on authentic context and the curriculum. A common problem in designing the task is the lack of experience. Indeed, for a first timer, examples of tasks will be useful. A short list of URLs of local WebQuest pages that initial task designers can look at for reference is found in Appendix 1. A close examination of these examples will reveal the type of tasks as outlined above and make the design process easier. Local examples are also more relevant to our context than foreign examples.

However, mere inspection and reading of these examples is insufficient to make a person an expert. The task designer has to practise designing tasks and the author would like to encourage this by providing two simple exercises that can help teachers gain some confidence in designing WebQuest tasks. These can be found in Appendix 2.

Exercise 1 from Annex 2 requires the teachers to design an engaging task that allows students to learn about Singapore's public housing situation. Tasks such as essays and reports are not engaging and often considered boring. Tasks such as writing a song, a piece of poetry or an abstract painting are interesting but often do not allow the student to present sufficient information for the teacher to assess the amount and level of learning attained. It is this dilemma that makes task design a challenge. I will not claim to be an expert at this but I would, for example design a task such a drawing a concept map or making a poster for an exhibition. These tasks allow students to present sufficient material for assessment and are not boring like essays and reports. Having designed such a task only half the battle won. The task must be phrased to include real life examples to make it authentic and meaningful. For example a poster task that requires the student to outline the history of housing development in Singapore will not be very much more interesting than an essay of the same title.

## **REFLECTIONS**

The classroom of the 21<sup>st</sup> century has been envisioned to be a busy hub of learning activity – teachers now play the active role of facilitators and highly-motivated students participate collaboratively in the learning process. Some believe that ICT will lend a helping hand to achieve this vision. Others advocate a multitude of classroom strategies that could be equally effective in realizing this vision. My personally feelings, though, are mixed.

Although the teachers I have worked with on the WebQuest projects and the participants of the workshop at the Teachers Network 2002 Conference have shown great enthusiasm, I have reservations about the actual implementation of this strategy. Teachers of today have to handle a range of administrative duties, go for developmental and upgrading courses, facilitate co-curricular activities, and last but certainly not the least, teach. Apart from having to design the task of a web-based constructivist activity such as a WebQuest, the teacher has to research on relevant sources of information, create evaluation rubric and plan the schedule for implementing this activity. Perhaps it would be less than reasonable to assume that the teacher can use this strategy without having to re-prioritize his/her other equally important duties.

If I may quote one of the teachers I have worked with, he feels that he would gladly use the WebQuest only because I have designed it. "If I have to do it by myself, I don't think I will have the time to try it." Indeed, the process of designing a meaningful web-based constructivist activity is not a simple one. But it need not be difficult either. I am not trying to discourage any teacher who is keen to experiment. However, the wheel need not be reinvented. For example, the teachers I have collaborated with to produce the WebQuests minimized the potential problems of designing the activity by drawing on the expertise of a resource person, in this case me. Once a first step has been taken, teachers can then share their own creations with other like-minded teachers. The collection of WebQuests will soon grow and the teachers will have a viable pool of resources to draw upon. This is perhaps a promising option. This does not mean

that the teacher need not learn new strategies such as the one described in this paper. For the teacher to pool his/her resources with other teachers, he/she must certainly have something to offer in return. It is through learning and sharing that a pool of useful and meaningful resources will be collected.

WebQuests, when thoughtfully and carefully designed, provide extremely useful scaffolding for constructivist web-based learning activities. The “scenario painted for our Singapore classrooms of tomorrow is a very exciting one, and one that is intimately connected with technology. There is no escaping the web of information technology” (Cheah, 1997: 140). There is a greater need for designing useful and meaningful web-based learning activities given this situation. This paper has only provided a guide as to how task design can be undertaken, but the actual task of designing it still lies in the hands of the teachers.

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## Appendix 1

### Examples of Local WebQuests

1. An Internet WebQuest on Public Housing in Singapore,  
<http://www.arts.nie.edu.sg/hsse/changch/etl101/wq/housingwq.htm>
2. An Internet WebQuest on Ties that Bind: Switzerland,  
<http://www.chs.edu.sg/~nancy/swiss/>
3. Investigating Water in Singapore,  
<http://www.arts.nie.edu.sg/hsse/changch/etl101/water/index.htm>
4. Joining Malaysia: A Newspaper,  
<http://www.arts.nie.edu.sg/his/dtan/Doreen%20tan/jane%20ngoh%20yingli/index.htm>
5. Separation <http://www.arts.nie.edu.sg/his/dtan/Doreen%20tan/wai%20leong/index.htm>
6. WebQuest on Energy Resources,  
<http://www.arts.nie.edu.sg/hsse/changch/etl101/wq/energy.htm>
7. WebQuest on the Wet Rice Green Revolution,  
<http://www.arts.nie.edu.sg/hsse/changch/greenrev/intro.htm>



### Example of Tasks

#### *Exercise 1:*

If you were asked to design an interesting task to let students learn about Singapore's housing situation, what would you design?

Would you want them to write an essay, do a play, make a poster or create a CD-ROM? What would your task be like?

What are the advantages and disadvantages of each task?

#### *Exercise 2:*

Choose one type of WebQuest task and one topic and design a suitable task for the topic chosen.

#### Type of task:

- Journalistic task
- Consensus Building task
- Judgment task

#### Topic:

- Geography: Singapore's High Tech Farms (Sec 3 Geog)
- Social Studies: Health Care in Singapore (Sec 4/5 SS)