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On-line Resource Centre for Teaching Environment and Resource Management of China

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Abstract

This project aimed to establish a teaching resource centre for environment and resource studies for China studies. The teaching resources include historical and up-to-date statistical information, literature, multimedia materials such as digital photographs and movies, as well as remotely sensed data and digital maps, which help students to understand the spatial diversity of China's natural environment and the geographical issues in resource and environment management in economic development. It was also the aim of the project to make all collected teaching materials available on the Internet for easy access.

Key words

On-line resource centre, geography, natural resources in China

Introduction

With the rapid economic reforms in China, it is now widely realised that the carrying capacity of land in the populated region has reached its limit. The human impact on the environment has become so large that much of the national population has to live with daily threats of pollution, an over-crowded urban environment, and rapidly vanishing farmland that will ultimately lead to shortages of food.

Environment and resource management has long been a focus of China studies, especially in the field of natural resource utilisation and environment protection. Given the recent move for China to join WTO and the highly promoted "Western China Development" strategy pushed by the Chinese central government, the potential impact on the natural resources and environment could be enormous, if appropriate precautions and proper management practices are not implemented.

To address the environment and resource problems in China, the existing course

GEOG 3850 Resource Management of China provides an overview of the environment and natural resource issues. The course, offered to both geography majors and China studies students, has been recognised as one of the major electives focusing on specific aspects in China. Recently the course has passed through a major revision exercise with substantial change in its lecture topics and laboratory exercises. In addition, in order to give students first-hand experience of the environment and resource issues, a field trip in Mainland China have been added to the course syllabus.

Given the rapidly changing natural environment and urban areas, access to up-to-date environment and resource information has become an urgent need for students who wish to understand current affairs related to China's environment and natural resources. Although a large collection of such environment and resource data, including statistics and multimedia information such as photos, movies and animations, is already available from various sources either privately or publicly, substantial effort is needed to incorporate such data into the teaching programme and allow easy access by students. There is also a need for a multimedia information resource for course field excursions.

The benefits of the on-line resource centre to teaching include:

1. The rich, up-to-date data can be easily accessed by students at any time, on campus or at home.
2. The multimedia information will stimulate interest in self-learning.
3. The virtual environment for the field excursion will encourage students to prepare their field observation and to conduct post-excursion reviews.

Aims and Objectives

The objectives of the proposed project are:

1. To collect current and historical data on the environment and resources of China with the emphasis on environmental change.
2. To establish an on-line resource centre for students to access up-to-date information on the environment and resources in China.
3. To create multimedia teaching materials and presentations to enhance classroom teaching and self-learning in the course *Resource Management of China.*

Methodology

The methodology of the project included three major components:

1. Collection of data and teaching materials,
2. Design and programming on-line resource centre software and database, and
3. Assessment and evaluation of the effectiveness of the on-line resource centre.

Collection of Data and Teaching Materials

A substantial collection of environmental and resource data is available from various sources including the Chinese Academy of Sciences, universities and government departments. The data collection tasks, however, are quite demanding on labour and time, and require substantial knowledge of data availability and accessibility among different types of sources. Collaboration has been sought from Beijing Normal University. Material was acquired, verified and formatted into appropriated form to be incorporated into the on-line information resource centre.

Design and Programming On-line Resource Centre Software and Database

The on-line resource centre software and database have been developed based on the Internet server installed in the Department of Geography. The software development tasks include design of the web site structure, development of multimedia user interfaces and search engine, development of on-line databases including satellite images, digital airphotos, geographical photographs, digital maps, field excursion guidebooks and reports, and statistics for environment and natural resources.

Assessment and Evaluation of the Effectiveness of the On-line Resource Centre

The web-based resource centre has been introduced to the classroom teaching and laboratory classes for the course *GEOG 3850 Resource Management of China.* The resource centre is now the regular source for students to download useful information for their course work and reference for their honours projects.

Results/Findings

The project has developed an on-line resource information centre to present real-world cases to students who study environmental and natural resource issues in China. Through this approach, students not only learn the principle and methodology for analysing environmental and resource problems in China, but also have some first-hand experience on the actual facts found in China. Thus, their learning in classroom has direct contact with real-world cases. This has stimulated the study interest for students on the China study course and also allowed more flexible and practical methods in teaching because of the readiness of the large collection of multimedia teaching materials. Moreover, since some of the key teaching materials such as textbooks are quite difficult to get and frequent updating of the teaching materials is required, the on-line resource centre can largely remedy the shortage of available teaching materials in the normal printed form.

The web-based resource centre is now accessible at http://geog.hkbu.edu.hk/geores, and sample displays of the web-pages are shown in Figures 1 and 2.
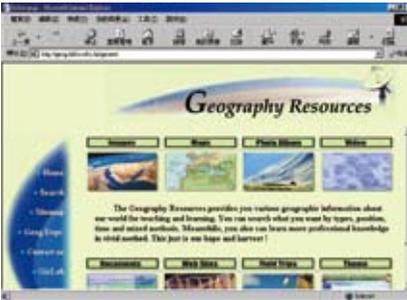
Figure 1. The home page of the on-line resource centre.
http://geog.hkbu.edu.hk/geores
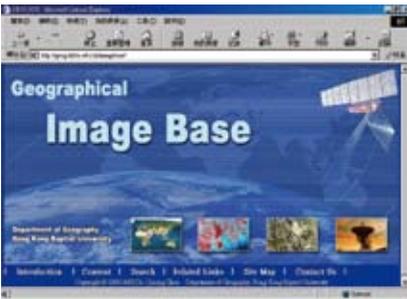

Figure 2. The database of satellite images.
http://geog.hkbu.edu.hk/imagebase

The implementation of the project has been monitored through student feedback and response in their learning during the course work. A link was also established to allow inter-University sharing of web materials with the experiment of access control for all students logging in from computers located in The Chinese University of Hong Kong (CUHK). Group discussions and interviews were conducted to gain suggestions from students on the improvement of the web development. A

presentation was also made at CUHK to share the idea and problems.

Due to copyright concerns, the web-site is not accessible from computers outside the HKBU and CUHK campus.

Enhancement on Teaching and Learning

The web-based resource centre provides a basis for students to find rich information about natural resources of China and related materials such as national standards on land use classification and digital codes, different digital maps, photographs, videos, presentations, government documents and satellite images. This encourages students to undertake independent studies by finding their own reference materials and conducting their own interpretations of these materials. A large portion of the course *Resource Management in China* has been allocated for students' research reports, which have benefited greatly from the on-line resource centre putting much useful information at students' finger-tips.

A survey has been conducted using a specially designed questionnaire. The students enrolled in the course *GEOG 3850 Resource Management in China* participated in the survey and 26 answering sheets were returned from the 32 students enrolled in the course in 2004. A summary of the survey results is shown in Appendix 1.

By analyzing the returned answering sheets, the following findings can be made:

1. The on-line resource centre had been used to some extent though not being an essential part of the coursework. This is illustrated by question 1 where 74% responses indicated that they have quite often or occasionally used the website.

2. The contents of the website to some extent satisfy students' need, but new and updated information is continuously needed. (Q2: 62% answer on "quite often" or "occasional" in finding the materials requested. Q3: 96% used it for course work of *GEOG3850,* and 38% for personal interest. Q4: 100% answer on "quite useful" or "somewhat useful".)

3. All students thought the on-line materials useful for their course work (Q5: "It gives me materials that I need for completing course work": 100%).

4. The on-line resource centre is appreciated by students mainly by its provision of reference materials (62%), digital photos (46%) and friendly user interface (46%).

5. The major problems of the current system are insufficient materials (42%), explanations (31%) and out-of-date materials and missing links (31%). This clearly indicates the need for continuing support for the Internet resource centre.

6. Most suggestions to improving the on-line resource centre include "putting more up-to-date materials" (62%), "Including more Internet links to useful sites" (62%), "Adding more categories of materials" (58%), and "Making upload area so that we can share materials" (42%).

Limitations/Difficulties

The web-based resource centre has been successfully installed on the Geography Department's web server and currently serves students' coursework and honours projects well. However, keep information updated and enhancing service to the users remain as major challenges for the future. Another difficulty is to handle large volume of data, particularly the satellite images, which are increasing rapidly with new images available. The current database has already reached the capacity of the internet server. Further expansion will require upgraded hardware.

Publicity and promotion of the website usage may also present some problems. This clearly links to the above data updating issues. From the questionnaire findings, it is clear that the students want to access more up-to-date materials for their coursework and honours project before they will really rely on the resource centre. Practically, however, lack of resources makes this difficult as collecting data always demands continuous efforts.

Conclusion

The TDG project has been successfully executed and a high-quality on-line resource centre have been developed

and implemented. Although the resource centre still needs further development and improvements to cover more materials, frequent updating and to provide more learning assistance, the rich on-line resource will certainly enhance the teaching in China study, particularly resource and environment related courses.

Further improvements and enhancements are needed to make more comprehensive and up-to-date on-line teaching materials. The on-line resource centre needs to be further promoted to the students for accessing more assistance and teaching materials in a more efficient and cost effective way.

Appendix 1. Summary for On-line Resource Centre for Resource Management in China

Total samples: 26

1. How often do you use the on-line resource centre for resource management of China (including image database, map database, photo and video databases and document database)?

Answer	No.	%
Quite often	3	12
Occasionally	16	62
Rarely	7	27
Never	0	0

2. How often did you find the on-line materials (e.g. images, maps, photos and documents) requested by you?

Answer	No.	%
Quite often	2	8
Occasionally	14	54
Rarely	9	35
Never	1	4

3. What did you use the on-line resource centre for? (Tick all that may apply.)

Answer	No.	%
Course work for GEOG3850	25	96
Course work for other courses	8	31
Honours project	3	12
Personal interest	10	38

4. How do you think about the on-line resource centre?

Answer	No.	%
Quite useful	13	50
Somewhat useful	13	50
Waste of time	0	0
I have never used it. How could I tell?	0	0

5. In what way that you think the on-line resource centre useful? (Tick all that may apply.)

Answer	No.	%
No, I do not think it useful.	0	0
It gives me materials that I need for completing course work.	26	100
It gives me materials that I need for completing honours project.	3	12
It shows the correct answers to the course work.	9	35
I think it might help for me to pass exam.	5	19

It contains a lot more materials than I need now but I would probably use it later.	13	50
Other reasons (please specify):	0	0

6. Why do you like this on-line resource centre? (Tick all that may apply.)

Answer	No.	%
I do not like it at all.	0	0
I can get reference materials very easily so that I can save time to search Internet.	16	62
A lot of materials are not easily available elsewhere.	10	38
There are many beautiful photos.	12	46
The interface is friendly and easy to use.	12	46
It would be nice to have the on-line materials handy when I take the exam.	8	31
Other reasons (please specify):	0	0

7. What are the reasons that you do not like this on-line resource centre? (Tick all that may apply.)

Answer	No.	%
I like it. It is perfect.	3	12
The interface confuses me and I found it difficult to locate materials.	1	4
It does not tell me what is available so that it takes too much time to search.	5	19
There are not enough materials.	11	42
There are not enough explanations on the data.	8	31
There are too many out-of-date and missing links.	8	31

Other reasons (please specify): "Sometimes load slow"	1	4

8. In which area you would like to see the improvement? (Tick all that may apply.)

Answer	No.	%
Making better interface (e.g. index and table of contents) for search.	5	19
Putting more up-to-date materials.	16	62
Including on-line student feedback and chat room.	1	4
Including more Internet links to useful sites.	16	62
Making upload area so that we can share materials (e.g. photos).	11	42
Adding more categories of materials (e.g. all previous honours project, field reports, etc.).	15	58
Others (please specify):	0	0

9. Any other comments and suggestions?

"More photos"
"More promotion regarding the online-resources centre. Don't waste money and time for setting up the web-site"
"Worth to use"