

Learning and Online Knowledge Use

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Abstract

Online support for senior secondary students is something of a growth industry in Australia. The groundbreaking and award-winning venture in this field was HSC (Higher School Certificate) Online and it is now being complemented by several commercially-oriented web sites. HSC Online (<http://hsc.csu.edu.au/>) was launched in 1997 as a joint initiative of Charles Sturt University and the New South Wales (NSW) Department of Education and Training to assist final year secondary students. In 2000 a substantial reform of the senior syllabuses in NSW schools took place, and the current site has been restructured and renewed to accommodate this major curriculum change.

Introduction

This paper uses a Knowledge Use (KU) framework—previously developed by the author—to appraise the utility of the original site, and to trace the shifts in focus that are occurring with the redevelopment of the new site.

Knowledge Use Framework

In the latter part of 1999, teachers of senior classes in NSW attended in-service sessions on the introduction of the new senior curricula. Advantage was taken of this opportunity to survey 1393 teachers within the Society and Environment curriculum area, and the evaluation was couched in a Knowledge Use framework in which the following questions were asked:

Medium: What is the medium being used?

Sources of KU: Where does the information come from?

Intensity of KU: How much information is being used?

Role responsibilities: Who is using the information?

Social interaction: How is the information being used socio-professionally?

Utility: What worth or value does the information have?

Incentives: What is the motivation for using the information?

Setting: In what context is the information being used?

Functions: For what purpose is the information being used?

Creative Tensions

The results of this evaluation illustrate a number of creative tensions that have emerged during the establishment of the original Web site, and the consequent shifts in focus on the renewed site.

Firstly teacher use of the site has been modest, and teacher reactions have been quite mixed (See Figure 1.) Secondly this modest use raises questions about the weight of attention given to promoting/ marketing the site as opposed to focussing more on the quality of the content. Thirdly the new site is oriented toward student use rather than teacher use, and this raises many questions about curriculum implementation support and teachers' professional development. Fourthly the original site lacked interactivity but addressing this deficiency has not been a straightforward business. Fifthly the interests of the joint partners in the project have not always been consonant, and sixthly the competition in this field is raising some interesting questions for the management of HSC Online. In 1997 Charles Sturt University (CSU), in partnership with the New South Wales Department of Education & Training (DET), launched an online project to support teachers of the 65,000 final year secondary students sitting for the Higher School Certificate (HSC). Within this HSC Online project, six subject Nodes went online initially and were ultimately followed by a further 22 subject Nodes, including nine Society & Environment subjects. Subsequently a major reform of the HSC was introduced in 2000–2001, and a new site has been re-launched to support this curriculum revision.

At its inception, the site was groundbreaking in its purpose to establish this form of support and assistance to senior secondary students and their teachers. Its innovatory nature has brought public recognition in the form of several awards.

The purpose of this paper is to report on the use and evaluation of the Society & Environment subject Nodes on the site, and to discuss the shifts in focus that have occurred within the project following the reform of the senior secondary curriculum in NSW.

Conceptual Framework and Research Design

One way of approaching the evaluation of curriculum support to teachers is to draw on the literature on Knowledge Use. Using elements from a previously developed Knowledge Use framework (Hall 1997,

Weiss 1981), the following parameters were identified and the related questions posed:

1. Phenomenal type: What are the phenomena being used?
2. Sources of KU: Where do teachers get information about the support from?
3. Setting: In what context is the information being used?
4. Intensity of KU: To what extent is information being used?
5. Utility: What worth or value does the information have?
6. Functions: For what purpose is the information being used?

Answers to these questions were sought by soliciting responses to a 12-item questionnaire distributed and collected at the State-wide DET in-service courses on the introduction of the new 2000-2001 senior syllabuses. Advantage was taken of these meetings, in the latter half of 1999, to survey teachers on their use of the Society and Environment subject Nodes (eg. Economics, Geography, Modern History), with a view to improving support for the new HSC syllabuses.

Results

Data were collected from 1393 respondents across the Society and Environment subject areas. 812 teachers indicated that they had not used HSC OnLine, whilst 577 teachers reported that they had, and it is the data collected from this set of 577 teachers who had 'Ever Used' the site which has been analysed below.

Phenomenal type: What are the phenomena being used?

Each HSC On-Line Node included tutorial material addressing specific topics and texts as well as giving students and teachers access to relevant reviewed quality sites (URLs), information from the NSW Board of Studies (which is responsible for examining the HSC), and access to a virtual library in education. The site also contained a teaching/learning Node with an electronic journal, information about study and examination techniques, an HSC Update area, a Broadening Horizons area, a Professional Teachers Association Node, and hot links to the Board of Studies Syllabus/Assessment pages.

Sources of KU: Where do teachers get information about the support from?

As has been found in many previous KU studies (Huberman and Marsh 1985), colleagues were the main source of information about HSC Online, followed by school publications and other websites. There was still only a limited awareness of HSC Online despite the substantial efforts put into publicising and marketing it. For example the project team negotiated with the Sydney Morning Herald—a leading broadsheet newspaper—to cooperatively run an annual series of reports on the HSC, featuring HSC Online. Despite this exposure, newspapers, were cited by

just 6% of respondents. This limited awareness may in part be a product of the difficulties that teachers have with online access at school. If access is only available in a computer room or at a single workstation in the library, then teachers are unlikely to regard it seriously as either a resource for teacher development or as a learning resource for their students.

Setting: In what context is the information being used?

Teachers mainly accessed the Nodes in their staffrooms, but almost half mentioned home access and a third mentioned the school library. School classrooms, probably computer labs, were cited by 10% of teachers. Teachers reported that their students mainly accessed the site at school, though almost a third also cited home use.

Intensity of KU: To what extent is the information being used?

One measure of the use of the site is the number of "hits" or requests on each page. On October 17 2000 the number of daily requests on the original site—registered by the CSU server—peaked at 95,708, and the claim has been made that the site is visited more than that of the most popular youth music station in Australia (Blake 2001). But interpreting this figure is not a straightforward business. The user's browser issues a request directed at the server hosting the web site. Each time the server is asked to send data counts as a "hit" on the server. However this an imprecise measure of use in that:

- each image may generate a request so that for example a heavily imaged page can generate 20 or more separate 'hits';
- working through the hierarchical structure of the site generates separate clusters of requests, each one inflated by the number of images, graphics etc on each page;
- users accessing through proxy servers will understate the number of requests, as does the fact that DET personnel access the site via a DET mirror site, for which data are not available.

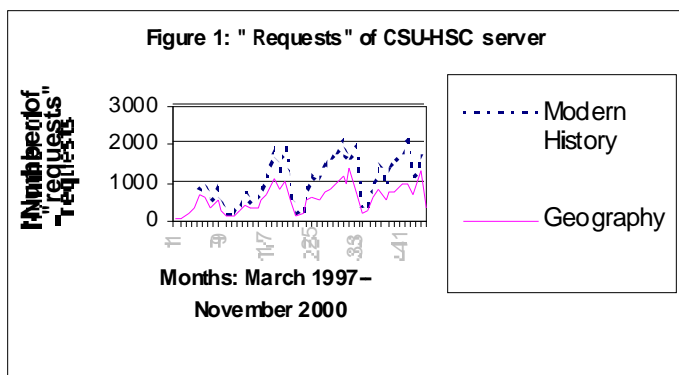


Figure 1: "Requests" for CSU-HSC Server

Nevertheless this request data does have some value in showing Node use over time, and for comparing use between Nodes. Predictably, each year there were twin peaks around mid-year and before HSC examinations (September-November), and use picked up in March

after a summer trough, as illustrated by the curves for the use of the Geography and Modern History Nodes.

A different picture of teacher use of the site emerged from the data collected at the in-service courses. Overall, 42% of the respondents reported ever using the site, but this percentage was probably an overestimate for two reasons:

- Some teachers attending the sessions chose to not return responses rather than handing in surveys indicating non-use.
- It is evident that there was some understandable confusion in some teachers' thinking between HSC Online, the Board of Studies site and the DET NewHSC site. In addition, 14 % of those teachers indicating they had used HSC Online did not respond to the question on which Nodes they had actually used.

Only 17% of the 577 respondents reported using HSC Online regularly or frequently, and this represents just 7% of the total sample of HSC teachers attending the in-service sessions. Most respondents of the "over-used" sample reported using the site "sometimes" (40%) or "rarely" (34%). Moreover in a separate survey of student use of the Geography subject Node, very few students had used the site and there were no instances of teacher-led student use of HSC Online (Hall 2000).

Utility: What worth or value does the information have?

General comments were grouped into those that were generally positive or negative, those that were more specifically positive or negative, and those related to time and/or technical difficulties. There were 88 positive comments and 104 negative comments. All of the Society and Environment subject Nodes generated this range of feedback. That is, it is not the case that some Nodes were perceived overwhelmingly positively and some negatively. All had a mix of positive and negative teacher reactions. Technical difficulties were mentioned by about 2%, and time difficulties by about 4%. The least use of the Nodes was for setting examinations and saving to disk.

Creative Tensions and Shifts in Focus

Consonant and dissonant interests

The interests of the joint partners in the project have not always been identical. For the DET, online assistance has increasingly been regarded as the main vehicle for teacher professional development, in-servicing and curriculum support. For the University, the main function of the project is as a marketing strategy to attract the attention of final year secondary students seeking University places. The University's main contribution to the site has been to provide the technical base and to develop the cutting edge publishing software (Blake 2001). The DET's contribution has been to develop the curriculum content of the site and therein lies one area of contention. Initially the subject Nodes were coordinated jointly by DET and CSU personnel, but the University's capacity to provide curriculum expertise has been repeatedly challenged and

on the revamped site the DET have essentially taken over responsibility for posting curriculum content.

Teacher resistance

Online use compared well enough with other forms of electronic systems such as CD ROM, and was preferred to web surfing. However, print-based materials were regarded more favourably and this appears to reflect a broader phenomenon. Teachers were reacting against online support and favoured print or face to face support. Some teachers were aware of the Node and made use of it, some teachers were unaware of it, and some were aware of it but decided for various reasons not to use it. Some teachers considered themselves insufficiently computer literate or web literate, or had too many technical difficulties in gaining access, or classroom use was a logistical nightmare, or the pedagogical benefit didn't repay the investment required because the quality of information was perceived as superficial and didn't meet expectations.

Learner centredness

With the new HSC site however, there has been a shift in focus in that students are now regarded as the main audience. If student use proves to be high, then we can speculate that teacher use could increase significantly and a crucial point here relates to developing creative teacher use of the Node. On the current site, information has been printed out by teachers and distributed for classroom discussion or as revision material. The challenge is to take that further, perhaps encouraging structured enquiry-oriented investigation, focussed on the syllabus learning outcomes, based on the text or hyperlinks within the Node, and making use of additional relevant information sources. In this context there is a continuing dilemma about whether to provide a vast range of hyperlinks for users to pursue, or whether to provide a small number of carefully selected sites which students can use productively and autonomously.

Interactivity

It is unexceptional to assert that use of the site is related to the quality of the information provided on it. The original site was something of an experiment; as a number of respondents pointed out, it was quite static. There were hot links to other Internet sites of direct relevance to the Year 12 students, but a large part of the site comprised information dumping, printed out by teachers for use in classroom expositions or distributed to students as revision material. The original site lacked interactivity. The new site has gone some way to being more enriched and more multidimensional. For example there is a greater range of information forms being used including audio, video, photos, maps, and animated graphics. Other forms of interactivity may be explored for the new site, but there is a tension to consider here between fully exploiting the pedagogical possibilities of online technology and the practical difficulties that users may experience related to the technical infrastructure available for the broadband required.

There is a growing realisation of the necessity to provide bulletin board or forum access to facilitate

communication among users. Two related factors have impeded the moves in this direction; one is a concern (especially from the DET) to monitor and control students' postings, and the other is the resourcing required to ensure quality advice to students. The site should be more than an electronic textbook and could make creative use of quizzes, structured debates, problem-solving exercises, sample HSC questions with answers/ commentaries, samples of other students' work with commentaries, and opportunities for students to communicate with experts. Nevertheless, there will inevitably be a substantial amount of text material on the site, and that raises the question of the most appropriate writing style to use. The indications are that contributors still prefer an academic style to a conversational style, or journalistic style or a "web" style which makes liberal use of dot points and aims to be concise and visually scannable.

Competitors

HSC Online has been joined by a number of other online learning services (including Worldscool, XSIQ, Infosentials, Education Online Network) looking for senior school clients (Baker 2000). Whether these educational dot.coms go the way of dot.bombs is still an open question. Worldscool's stock market debut, when its share price was discounted 71% on the first day, was remarkable (Nicholas and Eakin 2000). What is important here is that these online services may generate delivery benchmarks against which the new HSC Online will be measured. With their higher levels of resourcing and more appropriate organisational structures, they are likely to establish a service standard which is difficult to emulate and therein lies the challenge.

Another dimension to the competitive environment in which HSC Online finds itself relates to teachers' contributions to the site. The lack of teacher ownership was mentioned in the evaluation responses and informally it has been mentioned that the success or failure of the site hinges upon teacher involvement. Teachers routinely share their ideas and teaching/ learning resources with their colleagues, but this is not translated into finding the time and/or motivation to publish more widely and more formally. With HSC Online, contributions have been made by a small number of teachers and there is now competition amongst online agencies for this teacher input. The problem in the public sector is that the time and/or financial incentives offered to contributors have been limited to the development phase. There were resources available to publish in the initial phase; adding to and enhancing the material since the launch of the site relied mainly on a combination of goodwill, professional interest and voluntary labour. Resources need to be made available on a continuous basis, but that still leaves the question of how teachers can realistically be encouraged to contribute.

Equity

The final point is to do with equity. It is an issue which refuses to go away because it has not been adequately addressed. The facility itself offers the potential for students in rural and/or remote areas, or in disadvantaged

schools, to access high quality material to support their HSC studies. However the speculation is that it is students from metropolitan and middle-class homes who are taking advantage of the facility, increasing the social divide between the educationally resource-rich and the educationally resource-poor. However, so far no empirical data are available to confirm or refute that assertion.

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