Web Services for Learning in Educational Settings

Brent B. Andresen
Danish University of Education, Denmark

INTRODUCTION

It is only quite recently that politicians and educational thinkers have begun seriously to reconsider the traditional learning environments and to value the application of Web services into primary and secondary schools. In addition, many school leaders and teachers have been more inclined to value the application of portal technology because they believe that it fosters learning.

The continuing concern about the validity of the Victorian models of schooling thus reflects the rapid development of the portal technology. Currently, school district portals cover a spectrum of services and *resources* from public portals to learning management systems integrated with various internal Web services. Real changes in learning took part once these intranets and the Internet began offering a new tool and medium with which to support and mediate schooling (Abbott, 1995).

This article covers the application of portal technology into schools (grade 0-12). By providing guidance for researchers and practitioners in this field, this article aims to add to the body of work in the use of Web resources and services at primary and secondary schools.

INNOVATIONS IN EDUCATIONAL PRACTICE

Accepting the ideal typical definition of innovation set out below, it can be implied that Web services foster educational innovations. Keeping in line with the literature on innovation, an innovation can be defined as an idea, a practice, or an object that is perceived as new by individuals or other units of adoption (Rogers, 2003).

The application of Web portals is perceived as a catalyst of innovation: "ICT is no panacea, but can be conducive to active teaching methods, contribute to better quality teaching and act as a catalyst for change" (Commission of the European Communities, 2000).

At present schools, the application of Web services raises essential questions related to teaching and learning activities (i.e., questions like How to use portal technology, for what purpose, in which ways, and with which impact)? In order to provide answers to such questions, it is necessary to be analytic with respect the nature of educational practice.

Firstly, educational practice implies administrative work. Analysis has shown that many teachers benefit from their use of Web services for administrative purposes (Vuorikari, 2003). Often it is feasible to replace paper-based routines with the use of Web services for booking, exchanges of minutes of meetings, and so forth.

Secondly, educational practice implies provision of various educational resources. Web portals providing educational resources for teachers, school administrators, and the wider education community are considered useful (Schofield & Davidson, 2002).

Thirdly, Web portals have proper functionality and usability in order to support teacher's work. According to teachers and school leaders, the portals can be used in various ways to address barriers to student learning, provide information about student tasks and assignments, as well as guidance and feedback to individual students (Andresen, 2004). A consequence of the latter is that the students can be challenged within their particular zone of proximal development.

Fourthly, the application of portal technology as means of communication enables teachers to engage in conversations with their colleagues. Teachers' communities of practice also benefit from the digital means of communication. So do the planning of individual teachers of tasks that motivate the students. However, the claim about the power of the information technology for creating "reflective communities" for teachers has not been well-supported in general by systematic empirical evidence (Zhao & Rop, 2001).

In general, the full communication potential that the technology offers still has to be mirrored in actual educational practice. The educational culture seems to be a barrier for realising the potential of portal technology.

INNOVATIONS IN STUDENT LEARNING

In medieval time, learning was considered lifelong (Illich, 1973). Thereafter, the worldview held by many educators has been more inclined to value the school building as the only or most vital site for learning (Abbott, 1995). It is only quite recently that the educators have begun to consider the learning environment partly psychical and partly virtual.

The latter opens for various forms of e-learning. Often young children attend classes, but there are good examples of

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e-learning devoted to pupils who do not attend the school for some reason (absence because of travelling or illness, home schooling, etc.). Often older students benefit from blended e-learning where they have to attend classes a particular amount of time and engage in self-directed learning efforts the rest of the time.

For example, every day in the Danish gymnasium (16-19 years old) one lesson is allowed to be virtual (i.e., the students do not attend classes but use various portals to access learning materials, cooperate with other students and receive guidance, and feedback from their teachers).

According to the so-called "Arm's Length Law," information needs to be within easy reach to be used. If it is difficult or time-consuming to get to a bit of information, students easily lose interest. Most students find it very beneficial that the material is readily available when they need it the most. A typical flow for students gathering information via Web-based portals is:

1. choice of subject,
2. gathering impressions or information,
3. processing impressions or information into knowledge, and
4. communicating output.

In the first phase, students are localising sources fitted for deeper research. The content has to match their academic level, reading skills, etc. In general, they are reporting that portal technology has much to offer in this phase (Andresen, 2004). However, searching information is not always easy when the students are using a general search tool. Sometimes, it is more efficient to begin exploring links provided by teachers, official agents, or publishers of educational materials. Students skim, look over, and familiarise themselves with these resources before processing them into knowledge.

Often this use of portals has a positive impact on students' learning outcome. It is evident that students, who are established computer users, perform better than students with limited computing experience (OECD, 2006). Considering a wide range of students' use of computers, moderate users perform better than students who are either using ICT very often or not using ICT (using it rarely).

Currently, many students realise the potentials of the application of Web-based portals containing their individual portfolios. These portals allow them to store texts, pictures, sounds, and videos at one place.

Since it provides access anytime anywhere to materials essential for learning, it has proven very useful when the students want to process, store, and present their work. Furthermore, many students experience that the learning portals help them with planning and reflecting their individual and collaborative work.

The contents of student's portfolios consist of two main parts: One part is a process portfolio containing students' drafts, outlines, calculations, and drafts; another part is a presentation portfolio with students' work suitable for presentations.

From the drafts and final products, the portfolios have room for students' reflections on their learning objectives and processes. Consequently, students benefit from their portfolios when they judge, evaluate, and present what they have learned. In addition, they can use their portfolios in developing lifelong learning skills.

In many cases, students' products are supplied by feedback on drafts and previous assignments from teachers. A portfolio helps in creating a picture of a student's learning processes. It can be used to track each student's development pertaining to specific goals, address barriers to learning, and form the basis for required action (in which areas do the student need to improve?) and evaluation.

Research indicates that students hereby create an ability to evaluate their own performances (Andresen, 2004). They can become quite good at choosing and presenting their own work by using these portfolios. Moreover, the research indicates that students who normally would be shy about presenting their schoolwork have more confidence when presenting their portfolios.

INNOVATIONS IN THE COOPERATION WITH PARENTS

Students' use of e-portfolios can contribute to closer cooperation between school and home. Using a portfolio can be an extra asset in a portfolio meeting at school when a group of students attend along with teachers and parents. At these events, students typically enjoy presenting, explaining, and evaluating their work while at the same time showing content taken from their presentation portfolios.

Many schools use portal technology in order to provide information about school life, schedules, and results of student assignments for parents. Many parents greatly appreciate this new means of communication (Table 1).

Data in Table 1 is from a study among students in Danish secondary schools. The study indicates that parents in general prefer receiving information about the best way to support their children's schoolwork on the Web portal of the schools.

CONCLUSION

This article reports findings from research, currently in progress, regarding educational settings that release the potentials of portal technology to foster student learning.

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