Vertical Web Portals in Primary Education

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INTRODUCTION

Advances in digital technologies and proliferation of the Internet as an ubiquitous platform for communication and information open up new opportunities for teaching and learning in the 21st century. In the past decade, K-12 schools have made considerable investments in the educational technology infrastructure, as evident by the decrease in students-per-computer ratios from 10.8 to 4 in a 10-year period between 1994 and 2004 (Robelen, Cavanagh, Tonn, & Honawar, 2005). However, while the investments in computing infrastructure have been steadily increasing, teachers' training and the integration of technologies into the elementary school classrooms have lagged far behind the infrastructure investments (Ivers & Barron, 1999). One strategy to address the technology gap between teachers and their students is to develop customized grade-level Web portals for elementary classrooms, and to train teachers to maintain and integrate Web portals into the teaching-learning processes of their schools (Preiser-Houy, Navarrete, & Russell, 2005).

Today's elementary school children are the "digital natives" that "speak" the language of computers and other digital devices (Prensky, 2001). They enjoy a full range of digital activities, including video and computer games, and that experience greatly impacts their lives outside of school (Yelland & Lloyd, 2001). Grade-level Web portals can bridge the technology gap between the "digital natives" and their teachers, many of whom were brought up and educated in a predigital era.

In this article, we explicate the concept of vertical Web portals in primary education. First, we define the portal concept. Following that, we describe the essential components and the benefits of K-6 portals. Next, we present a portal development strategy comprised of planning, design, training, and integration phases. We also discuss future trends in evolving K-6 portals. Finally, we delineate areas for future research on the multidimensional impacts of portal technologies on elementary school teachers, their students, and student families.

BACKGROUND

Elementary school educators and administrators are at a pivotal juncture in today's educational landscape. Over the next decade, the increasingly complex global environment will necessitate the mastery of technologies in many fields of human endeavour (U.S. Department of Education, 2005). Vertical K-6 Web portals, with a customized, targeted set of resources and tools for elementary school teachers, students, and student families, offer a variety of opportunities to integrate technology into the educational processes of elementary school classrooms.

What is a *vertical Web portal*? The term *portal* refers to a doorway, a gate, or a large, imposing entrance (Neufeldt & Guralnik, 1988). A *Web portal* is a collection of Web pages that provide a gateway to digital resources on the World Wide Web (Zhou, 2003). For example, Web portals like AOL.com and Yahoo! provide gateway access to the World Wide Web's vast content and services. The fastest-growing second generation of Internet gateways is a *vertical Web portal*, also known as a *vortal* (Jasco, 2001).

Vortals provide Web pages of deep content for specialized topics targeted to the needs and interests of a specific user group. Content, community, and commerce features define vortals (O'Leary, 2000). *Content* refers to a mixture of proprietary and generic content, such as search engines, e-mail accounts, discussion forums, and news. *Community* refers to a group of people with common business, professional, or hobby interests who visit the portal for information and(or) social exchange. Finally, the *commerce* component, which is prevalent in commercial but not in the not-for-profit portals, refers to the consumer-to-retailer or business-to-business transactions enabled by the portal. An example of a commercial vertical portal is Covisint.com, a business-to-business portal for conducting trade between car manufacturers and part suppliers.

Vertical Web portals for elementary school classrooms are Web sites with specific grade-level educational resources and communication tools for students and student families. The World Wide Web offers a multitude of educational resources in digital format. Grade-level Web portals make

a targeted subset of these resources available to students anywhere/anytime, and expose students to digital content not available in a traditional classroom setting. Web portals provide a vehicle for students to extend their own learning beyond the traditional school day, thus, putting students in charge of an important portion of their own education. With the availability of classroom portals, the students have a choice on whether, when, and how to extend their learning through a targeted set of digital resources provided to them by their teachers.

An educational portal of the Punahou School (http://www.punahou.edu) is one example of a vertical Web portal that extends the learning network beyond the brick-and-mortar boundaries of the school's classrooms. Punahou's portal brings together an electronic community of students, teachers, parents, and alumni to meet the communication and academic needs of the school's community (Takemoto, 2004). For example, the portal provides resources and tools for accessing course schedules, classroom information, message boards, and chat rooms. In the next section, we describe the components of a vertical K-6 Web portal, and discuss the benefits of using portals in elementary school classrooms.

USING VERTICAL K-6 WEB PORTALS IN PRIMARY EDUCATION

Vertical K-6 Web portals provide the technological scaffolding for integrating the vast digital resources of the World Wide Web into a classroom that extends the teaching/learning network into student homes. This section provides an overview of portal components, and discusses the benefits of elementary school portals.

Web Portal Components

Three components comprise a K-6 Web portal—*target audience*, *purpose,* and *content*. The *target audience* of a portal may include students, student families, school administrators, other elementary school teachers, and members of the external community. Among the *purposes* of a portal are student enrichment, parent-teacher communication, showcase of student work, and exchange of curricular resources with the virtual community of primary educators. The *content* of a portal may vary depending on the portal's purpose and target audience. Among the content options are helpful links to standards-based curriculum resources for research projects, homework assignments, and educational enrichment games. Classroom portals may also include hyperlinks to student projects, newsletters, field trips, a photo gallery, a calendar of classroom events, and informational pages for student families on classroom policies and behavioural expectations.

Figure 1 provides an example of a second-grade Web portal at the Chaparral Elementary School. The portal's target audience is the second-grade students and student families. One of the purposes of the portal is to enhance student enrichment through the developmentally appropriate digital

Figure 1. An example of a second-grade Web portal