EMERGING TECHNOLOGIES
PERSONAL LEARNING ENVIRONMENTS

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Language instructors in higher education are finding that the current generation of students is coming to campus with quite sophisticated technology skills and habits. Many are fully conversant with and committed to communicating through social networking sites. They use on a regular basis a variety of Internet-based services to manage much of their lives: to locate and obtain resources, plan free time, maintain contact with peers, access media, stay informed, and maybe even learn a language. These students find waiting for them at most universities a quite different use of the Internet: communication predominantly through email and interactions with instructors and peers through a top-down, fairly inflexible learning management system. Some instructors are finding that they are able to provide a flexible and creative learning environment more in tune with today's students through the use of (mostly) free tools that allow for a customized set of resources and services. Instructors choose a variety of mini-applications or widgets, with the resulting Web site becoming what is often referred to as a Personal Learning Environment (PLE).

INTEGRATION TOOLS

It has been possible for some time to create a personalized home page through services such as My Yahoo or my.msn.com (now Windows Live). Many teachers have used the availability of such services to create Web sites for their students, particularly in situations where no Web page hosting is available or where restrictions on Web posting hamper teachers' efforts to provide resources to students. More recent home page creation services offer greater flexibility and functionality than earlier options. They are also designed to be easy to use, requiring nothing more than checking off the desired components to create a page. iGoogle, for example, greets first-time users with the message, "Create your homepage in under 30 seconds" with a list of checkable interests, a theme to select, and a location to specify. Filling out the form creates a typical page structure, with three columns and a sidebar, displaying the services selected in self-contained boxes. Google calls its Web page components "gadgets," which include the typical range of news feeds, simple games, search, calendar, email, movie reviews. iGoogle also features localized options such as weather, movie listings, or restaurant recommendations. The page can be customized in terms of both look and functionality but retains the same basic structure. It is also possible to create one's own gadget. This is a simple process of choosing a pre-defined behavior or of pasting in existing HTML or XML code.

Laowai Chinese provides a good example of the use of an integration tool like iGoogle for language learning. The iGoogle page collects and displays the headlines/links to 21 different Chinese language learning blogs and Web services on one page. Since it uses RSS (Really Simple Syndication) feeds to gather this information, the latest additions to the targeted Web sites are shown. Users are able to rearrange, add, or remove content, thus customizing the page to fit individual needs and interests. This provides a quick and easy way for Chinese learners to skim multiple Web sources without having to navigate to them individually.

Oskar Casquero's PLE project also uses iGoogle as a means to put together learning services and materials. The concept is that a university might create a set of fixed, pre-configured widgets containing institutional tools, services, and information. The user (student or instructor) is then able to add individually desired widgets to this mix. iGoogle was chosen as the front-end for several factors. The "canvas" view option in iGoogle enables a full-page display of a given widget, important for optimal use of some communication or writing/editing tools. iGoogle also features topic-based tab creation, which

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allows search results for a given topic (like "learn Chinese") to be automatically added as a tab with widgets. The project also plans to use the Google App Engine to create server-side applications that collect and process data from selected widgets, and then detect common patterns to build new services such as recommended resources or suggested new interest groups.

Another popular integration tool is Netvibes, a free service from France. Like iGoogle, Netvibes uses "themes" to allow for different looks and also allows creation of widgets. Netvibes allows for users to easily designate pages as private or public. An example of how to put together a Netvibes site for educational/institutional use is the home page for the Kankakee (Illinois) Public Library. The Bamboo Project blog describes a number of interactive widgets used in a Netvibes PLE. The service that seems to currently be among the most popular with teachers is Pageflakes. In fact, Pageflakes has a specific starting page designed for teachers, which features widgets such as a teaching schedule, Google Research search field, grade tracker, and free access to a file server service. It has an especially large number of widgets available, called "flakes," and features a full, multipage desktop interface. It has some innovative features which have contributed to its popularity, including drag and drop of widgets from one page to another (not only within the same page), and a very nice user interface. Like other integration tools, Pageflakes has recently increased the options for integrating social networking services into its sites.

An interesting example of Pageflakes used to create a course-oriented PLE is the home page for Intermediate Italian created by Professor Enza Antenos-Conforti at Montclair State University (link to CALICO 2009 conference presentation). The starting page features the following components: course announcements, a mini-blog (discussion in Italian), discussion forum (practical issues, in English), YouTube video (showing an Italian language video), news in Italian (RSS feed from an Italian newspaper), shared bookmarks, and a to-do assignment list. Professor Antenos-Conforti was easily able to re-arrange the look and feel of the site, dragging and dropping widgets and changing from a 3-panel to a 2-panel display. Pageflakes pages by default are private. The "pagecasting" feature is used to grant others access, which can be either to anyone or to a select group. Guest access by default is read only, but it is also possible to give editing privileges to others.

There tend to be similar kinds of tools and services that are included in such course-oriented PLEs:

Chat. Synchronous private or group communication, which may be through traditional instant messaging, or newer options such as Skype or Twitter

Calendar/To-do-list. Class assignments/announcements and keeping track of work done; can be a clickable list

News Feeds. RSS feeds with the option of customizing to pull in items on a specific topic, from a particular source, or in a given language

Personal Publication Tools. Blogs or wikis, for individual or group reading/writing

Social Bookmarking. Services such a Delicious provide a means to recommend sites to others in a group; some offer rating and annotation options

Writing Tool. Simple text editor or on-line word processor

Media Player. For display of streaming video, podcasts; ideally with audio recording option

Language Tools. On-line dictionaries, word lists

File storage/distribution. Could be a service such as Box.net or collector for specific kind of file, like Flickr

Quizzing/Polling. Tools such as Blog Quiz provide basic assessment types; dukaBUZZ supplies an audio polling widget

Not all these tools would be needed in all situations, but together they offer a variety of language use options: writing in different contexts/registers, practicing speaking and listening, and reading short, peer posts as well as longer native speaker texts. Most integrator sites offer the option to display page info in languages other than English. Other typical teaching services such as a shared whiteboard, mind mapping, or slideshow presentation could also be included. It is also possible to integrate social networks such as Facebook or MySpace, although students sometimes seem to prefer to separate private and educational spheres.

WIDGETS AND STANDARDS

In addition to the tools/services listed above, services like iGoogle, Netvibes, and Pageflakes make available to users a large number of widgets they can add to their personal pages. In addition, there are sites that offer collections of widgets, such as Widgetbox, Widgipedia, and Clearspring. They allow for search or category-based browsing. On the largest of these sites, Widgetbox, a search reveals some 2,600 widgets in the education category and some 80 for language learning. The latter tend to be applications such as flashcards, Web page translators, dictionaries, or word of the day, but also include mini-apps like a multi-lingual text to speech engine, a Second Life language learning integrator, and HowStuffWorks (for content-based English language learning). Not all widgets found in collector sites will work in all environments. In fact, there are two principal kinds of widgets: desktop and Web. Desktop widgets are designed to run in particular environments, such as the Dashboard system for Macintosh OS X or the "sidebar" in Microsoft Vista. Web widgets, on the other hand, can be deployed more widely. While they may be designed for a particular service, they can generally work on any Web page. This may require some adjustments to the code, which, if created in one of the widget authoring environments, will be done automatically through the export/integration process.

Both desktop and Web widgets have the same basic components. Fundamentally, they use Web compatible formats, even if intended to run in a desktop environment. This means that the core of the widget is HTML and CSS code which contains the actual content of the widget, namely text, linked images/video or content pulled from a server of Web service. Alternatively, the widget content can be created using Flash, although this may limit its use on some mobile devices. The content is contained within an XML file that provides essential metadata about the widget, such as its name, version, language, etc. The third component of most widgets is JavaScript, which is used to provide the programming logic behind any interactivity in the widget. To make widgets run in different environments typically necessitates only changing elements of the metadata contained in the XML file. There are sites such as Wix.com or Sproutbuilder.com that provide tools for creating widgets through a simple drag and drop interface.

A powerful feature of widgets is the ability to pull information from a server in order to continuously update data displayed to the user, or to have data pre-loaded to browser memory, so as to be available for quick display as needed. This kind of background server-client interaction is often described as AJAX (Asynchronous JavaScript and XML). There are many AJAX code libraries available, which make the tasks of creating widgets on Web pages using AJAX much easier. There is an effort underway, called OpenAjax Alliance, which aims to make it easier to mix and match components from different AJAX libraries. Another effort to achieve increased interoperability is OpenSocial, from Google. OpenSocial defines a set of APIs for social networking services to be accessed and run within different Web environments, including widgets. One of the more popular tools for building social networks, Ning, has adopted the OpenSocial standard, as has iGoogle.

INTERFACING WITH LEARNING MANAGEMENT SYSTEMS (LMS)

Ning is one of a set of Web services that aim to be easily customizable portals for interest groups. Several such services have been designed specifically for educational use, such as Colloquia and Elgg. Both are

free, open-sources groupware systems. Colloquia, formerly known as Learning Landscapes, features off-line access to learning materials. Elgg features multipage page views (i.e., for mobile devices), easier theme-based customization and a widget framework.

Other systems have been built to have widgets as their core. This is the case with LAMS, Learning Activity Management Systems. The creators of LAMS have designed the integration of widgets as a means to extend the concept of "learning design" (LD), as exemplified in the IMS LD specification. The main focus in this sense of LD is on collaborative, activity-based learning, rather than on content delivery and formal sequencing. LAMS uses a graphic workflow model for authoring, which is quite different from authoring in a traditional LMS. Authors drag and drop the widget-like "activities" and then determine display and sequencing. LAMS allows instructors to share activities and to easily customize activities to one's own needs.

LAMS provides tools for its integration into LMSs such as Moodle, Blackboard, and Sakai. In fact, there has been considerable interest in integrating services such as Netvibes or Pageflakes into a traditional LMS. There are demos available that show Netvibes and Protopage integration into Desire2Learn. In the Netvibes integration, the Netvibes page is used as the home page within Desire2Learn, while the Desire2Learn toolbar is still available at the top of the page. This setup allows the instructor to incorporate easily tools such as blogs, wikis, Skype, or slideshows into a course site. This also offers the benefits that the page potentially could be used within a different LMS, should the university decide to change products.

This kind of integration may also raise the issue of the need for having an LMS at all. In fact, instructors are using products such as Pageflakes to replace the use of an LMS like Blackboard. At the 2009 CALICO Annual Conference, the titles of two sessions point in this direction: "Beyond Blackboard: Using Wikis in L2 Composition and Collaboration" and "Pageflakes vs. Blackboard, the LMS Winner by T.K.O...Pageflakes." The large number of widgets available may make the smaller number of services and tools available in a mainstream LMS seem paltry by comparison. The quick and easy drag and drop interface for a PLE generally is more intuitive and flexible than the authoring interface for a LMS. The possibility for students to further customize the PLE is an additional benefit. Indeed, the possibility exists for the entire learning environment to be personalized by the student, depending on individual learning styles, needs and course requirements. Finally, the PLE, in contrast to an LMS, does not need to be course-bound. Peer-to-peer and student-teacher contact through the PLE can easily continue independent of the academic calendar. This makes the PLE seem a more compelling environment for informal and life-long learning. In fact, there is some work being done on PLEs as forms of e-portfolios.

At the same time, there are compelling arguments for an institution to maintain an LMS. Typically an institution has put time, energy and manpower into setting up and running an LMS. This is also a system that offers robust support services, even if they may be quite expensive. PLEs use services not hosted by the institution. As a consequence, the institution will not have control over that content or be responsible for its maintenance. This raises issues of security and reliability. E-learning services have become mission-critical on campuses and institutions may be leery of having essential services and data located on third-party servers.

There are also some specific services offered by an LMS that are more difficult to implement within a PLE. User authentication may be at the top of that list. This is awkward in a tool like Pageflakes, but is handled automatically and seamlessly in an LMS like Blackboard (assuming integration with student services has been done). Assessment options tend to be much more limited in a PLE, and less secure. It is possible to use tools like Hot Potatoes or Blog Quiz with a PLE, but they do not provide robust options for formal assessment. Electronic gradebook integration is also much easier in an LMS. Finally, both teachers and students may feel more comfortable with a known and uniform learning environment. The decentralization that a PLE offers promises more flexibility but also greater complexity. Currently, it is

not nearly as quick and easy to set up a course Web site in Pageflakes or iGoogle as it is in Blackboard or Moodle.

OUTLOOK

LMSs have been slow in adapting to new developments on the Web in terms of social networking and widgets. They also tend to remain fixed in the instructor-designated, top-down approach, which differs markedly from the ever more collaborative environment which is the hallmark of Web 2.0. There has been some movement among LMSs, with Blackboard, for example, adding blogs and allowing third-party tools to be integrated through its Building Blocks initiative. Despite Blackboard's stated plans several years ago to support Web 2.0 tools, Desire2Learn and Angel have gone further in providing new collaborative options for users. The most flexible major LMS remains Moodle. With its modular design, it is fairly easy to add functions and features through installation of additional modules. For language learning, the additional flexibility and interactivity of Moodle tend to tip the scales in its favor. Epoche.net gives an interesting example of enhancing Moodle for language learning through the addition of social networking sites. One of the developments which may be helpful in allowing and encouraging more mainstream LMSs to offer more options is the IMS Tools Interoperability standard. This provides a means for third-party tools to be integrated into an LMS.

PLEs are intriguing to many educators because they seem to hold out the promise of using technology in a way that better parallels the student-centered approach of today's classrooms. Some proponents of PLEs see this approach as the needed counterpoint to intelligent tutors. In "Designing for Change," Wild, Mödritscher, and Sigurdarson (2008) write,

> Planned adaptation takes experiences away from the learners: external planning keeps them from becoming competent, as it takes chances to self-organise away and personal discovery is prevented. Learners, however, are not only sense-makers instructed by teachers along a predefined path. Learners need to actively adapt their learning environment to their needs so that they can construct the competences necessary for successful learning. (p. 3)

The authors argue that the process of creating a PLE can itself be a learning outcome. It certainly is the case that if an easy-to-use PLE could provide a common site for institutional instructional use, informal learning, on-the-job training, and a form of e-portfolio, this would offer a compelling alternative to an LMS.

REFERENCES

Wild, F., Mödritscher, F., & Sigurdarson, S. (2008). Designing for change: Mash-up personal learning environments. *eLearning Papers, 9*. Retrieved April 15, 2009 from http://www.elearningeuropa.info/files/media/media15972.pdf

RESOURCE LIST

Personal Portal Services & Integrator Tools

- Create a Customized Web Portal with Netvibes From PC World
- Creating a Librarian's Info-Portal with Netvibes and RSS
- iGoogle
- My Yahoo

- Netvibes
- Ning
- OUseful Info: An Institutional Dashboard Using Pageflakes
- Pageflakes
- Pageflakes - Teacher Edition
- Pageflakes - Teacher Start Page
- Personalized Start Pages from About.com
- Protopage

Personal Learning Environments: Info & Projects

- Colloquia
- Developing a Personal Learning Environment for Language Learning Using Web 2.0 Tools Video
- EuroCALL 2008 Virtual Strand: Developing Personal Learning Environments Using Web 2.0 Tools
- Personal Learning Environments
- Phillip D. Long on Virtual Learning Environments
- Ple/Report - CETISwiki
- Social Web and Language Learning
- The Personal Learning Environments Blog
- The Present and Future of Personal Learning Environments
- Virtual Learning

Learning Management Systems vs. Personal Learning Environments

- CopperCore Run Time (CCRT) Environment
- Desire2Blog: Web 2.0 Inside D2L - Netvibes as Home Page
- Desire2Blog: Web 2.0 Inside D2L - ProtoPage Widgets
- Facilitating Language Learning with LMS: (A Brief Review on Blackboard and Moodle)
- From VLE via PLE to SLN
- LAMS: Learning Activity Management System
- Pageflakes vs Blackboard
- The Ed Techie: The VLE/LMS is Dead

Widget Collections

- Clearspring
- Etiqueta Language Learning - Widgets de Netvibes
- Gadgets API - Google Code
- Gadgets MS
- Language Widgets From Widgipedia
- SpringWidgets
- Top iGoogle Gadgets Series - Continuous Learning & Development
- Widgetbox

- Widgetbox - Language Widgets
- Widgets 1.0: The Widget Landscape (Q1 2008)
- Widgipedia
- Laowai Chinese "Learn Chinese" iGoogle Page Grand Unveiling

Standards

- OpenAjax Alliance - Architecture
- OpenAjax Alliance - Wikipedia, the Free Encyclopedia
- OpenACS Home
- OpenSocial
- IMS Learning Design Specification
- IMS Tools Interoperability Guidelines