

Learning Objects Phase Two: Integration into performance support portals

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Introduction

Over the past two years, many involved in instruction have been exposed to the idea of web based pieces of instruction which may be retrieved by means of meta tags. Whether called reusable learning objects, knowledge bits or any of a host of other names, the chimera of instruction created on the fly of pieces from all over the world has captured our imagination. As this undertaking moves from fantasy to reality, serious questions have been raised. In this paper, we consider three concerns and examine using objects in support of performance (instead of training) located in a web portal with additional functionalities.

Four inter-related considerations are raised in this paper. They are:

1. Bringing the notion of meta tagged objects together with the notion of a web based portal which allows customized access to information.
2. Using objects in the service of performance and human performance technology (HPT) instead of training and instruction.
3. Introducing the concept of Information Objects –objects with no aspiration to teach, such as shipping rates, which are, nonetheless meta tagged for customized delivery.
4. Introducing the concept of Performance Objects as a meta term, referring to both learning objects and information objects.

Where are we now?

Phase One

A year ago, the focus of most people working on learning objects was mostly technical. What tags were needed? Could Learning Management Systems be made to open compliant objects? Could agreement be reached between software companies, training providers, educational institutions, government representatives and other key players on meta tag standards?

In August, 1999 the IMS released its first meta data specification. Last summer, ADLNet released its SCORM (shareable content objects reference model) 1.0 specification. At a Plugfest (a release party of sorts put on by ADLNet) last August, with great fanfare, the makers of three LMS packages showed that a compliant object (a course in this case) could be opened and used in all three packages. One presenter said, "This may not look impressive, but it could not be done a couple of months ago."

Phase Two – Now build something

At that time, having a good foundation, some people in the field were beginning to look to the next challenge. "We can do it.. now what are we going to do?" The people who had been thinking about learning objects were, for the most part, software engineers. The next phase had to involve instructional designers and creators of learning objects. Objects had to be built and tagged and used. As the process of developing learning objects and using objects in the instructional design process began to move forward, concerns about learning objects arose. These included granularity, customization and control.

Concerns

Granularity

How small should an object be? There is no clear answer. Currently, many objects are quite large. Many objects are actually online courses divided into units. Each unit is a learning object. This is certainly easy and fast. It allows vendors to claim adherence to standards, but offers little else. If this is the end result of the learning objects movement, it is doubtful that any lasting impact will be made. One hungers for the ability to search and retrieve smaller pieces – perhaps pictures and sections of text. However, the smaller the granularity, the greater the cost of tagging. Each object must be tagged. Tagging a unit is a small cost, but tagging each picture and paragraph may cost more than producing the training. How small is feasible? A colleague suggests specifying the lower limit as being any object to which can be attached a learning objective. This focusing on function rather than size is both simple and effective. How small is cost effective? A balance must be struck between the extra precision gained from smaller granules and the extra cost in time and personnel for tagging more granules. There is no clear and easy answer.

Customized Tagging Schemas

Closely linked to questions about granularity are questions about schemas. The organizations which are promoting schemas (ADLNet and IMS) have settled on a rather limited set of tags. As these are organizations of entities wishing to produce and/or use objects, it is to their benefit to promote a universal, one size fits all approach to tagging. However, by creating unique schemas for use within an organization, one may gain much greater power over search and retrieval of learning objects.

As with granularity, the temptation is to go for the greatest freedom. However, while more tags provide more freedom, they also require more work. In addition, standards are important. There have been attempts to have universal tagging standards for the web. They have been unsuccessful, as anyone who has used a web search knows. If one plans to trade objects, superfluous tags included with objects going to another organization are sure to create confusion. It would be necessary to strip out those extra tags before sending the objects out. In addition, any objects acquired will have only standard tags, so will have to be repurposed before using. While one gains the freedom of extra tags, one loses the instant interoperability which can be of great use in some applications. As with granularity, there is no clear answer, just a decision point to be reached within each organization.

Control

Who controls the search and retrieval of learning objects? Many instructional designers are very uncomfortable with the notion of learners controlling their own learning. Years of research, training and experience certainly count for something. In many cases, the learner does not know what they should learn. An expert can structure the scope and sequence of learning events. Learning objects, say this camp, should be available like film strips or textbooks. An expert reviews, chooses and assigns. Learning objects can support the task of instructional developers, but should not be self selected.

Others, however, view the power of combining instruction with the search and retrieval powers of the web empowerment for learners. While in some cases they will ask for guidance, they want to be self directed learners and view this as one more tool. Instructional designers, much like librarians, will become experts at aiding learners combine information from disparate sources including learning objects (through developing and deploying tagging), information resources, and other employees.

Performance support not training

While originally conceived as a tool for web based instruction, we suggest using meta tagged knowledge objects for performance support. Locating this tool in the realm of performance support sidesteps many of the concerns with learning objects in training.

Performance support implies situated cognition. In the course of performance, a worker/learner needs to acquire a bit of knowledge for a specific purpose. The implication is a shorter time engaged with a more directed task. This approach encourages a finer granularity. It also provides guidance for those wishing to create unique meta tagging schemas. Finally, by focusing on performance rather than training, the instructional designer can provide necessary guidance through trainings, while segueing into a role involving connecting and supporting more varied learning experiences. This move to performance suggests the following implications.

Use of Portals

Performance encompasses more than learned skills. In order to effectively support performance, a variety of functions in addition to learning objects is required. As learning objects are de facto web based, bringing the concept of web portals into play is a natural step. A portal is a web page that provides access to other web sites and web functions, including search and retrieval. The software, technical experience and necessary infrastructure are well in place for the construction and maintenance of a web portal.

New Terms

While a portal will offer more than training, the same power of customization via meta tags may be applied to information such as postage rates, inventory and the like to great effect. These objects are not learning objects, but **are** tagged. We propose the term **information object** for objects of this type. To refer to the larger category containing both learning objects and information objects, we use the term **performance object**.

Customization to Personalization

A function common in portals is customization (my Yahoo and the like). Performance support has unique needs for each person. Meta tags have usually been conceived of as created by an authority in order to customize what users see. While standard tags and company tags would certainly remain the purview of a "tagging authority", users could personalize access to their information, building a "library" of performance objects complete with "notes in the margins".

Communication – Help, Chat, BBS and person to person

Communications is an intrinsic power of the web. Isolation of users is an inherent weakness. There is a time lag between development of processes and knowledge and training which reflects that new direction. Performance need not rely completely on information reified into learning objects. Often, the best, fastest or only available support is person to person – through synchronous or asynchronous chats or direct connection facilitated through a performance portal supported by instructional designers in their new role as institutional learning supporters. These powerful methods for engaging the learner in situ are not new technologies. However, they offer some of the greatest challenges for designers. Getting users to "pick up the phone" with these communications tools has been an elusive goal.

Open system – Knowledge grows

Finally, in combination with all the implications above, a performance portal implies a dynamic system with active moderating. If the portal is used, new performance objects (both learning and information) will be requested, discovered, acquired. Tagging schemas will be revised. Most important, the contents of communications – the chats and bulletin boards can be reformatted and included as objects. We hesitate to call this knowledge management, as this conjures up notions of objectified knowledge warehoused. We prefer to think of these new objects, developed from the discussions where knowledge was created, as **knowledge leavings** (perhaps not as exciting as when the parade passed by, but of certain use in encouraging growth).

A Model of a Performance Portal

Working with a group at Crane Naval Weapons Station, we are developing a performance portal prototype (termed electronic knowledge portal) for maintenance workers for the electronics of a sophisticated aircraft. We are undertaking extensive front end analysis to decide on functionality and a unique tagging schema. Using rapid prototyping, we focused on end user input to enlist support and tune the look and functions to the needs of the end users. As each user group is different, each performance portal will be different. However, we believe that the following functions offer a strong beginning prototype from which to work, making changes based on end user analysis. The functions in our initial prototype included: Learning Center (learning objects), Look up Center (information objects), Latest News (push customized by client group), Help Functions (email, tutorials, FAQ and live), Chat Sections (synchronous and asynchronous) and Person to Person connections.

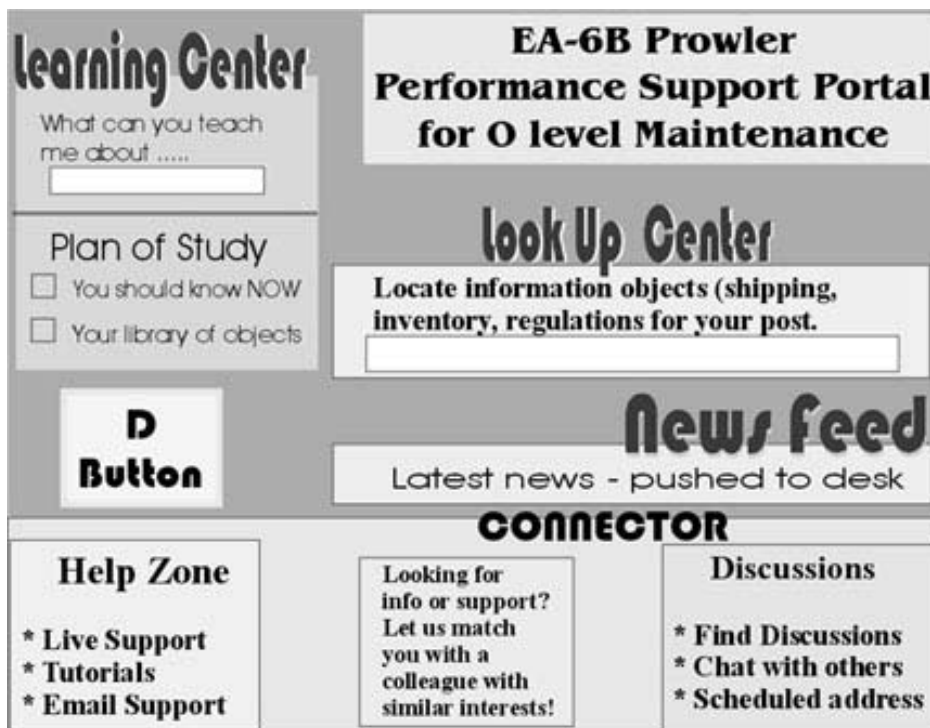


Figure 1 Beginning Prototype for Performance Support Portal

Learning Center

Three areas considered – search for objects (meta tag based), prescribed lessons (instructional designer directed) and library (storing personal favorites). Note that this approach to learning objects allows many different uses. Control is in the users' hands during search and in the library, but guidance is provided in the prescribed learning area. Personalization in the library is an important function as it supports commitment by the user, increasing the utility of the tool and, thus, increasing the likelihood of continued use.

Lookup Center

Search and retrieval of information objects that are meta tagged – so customized, but have no aspiration to teach. (For example, shipping rates displayed based on user's location and company shipping providers). Not necessary in an online learning environment, but essential in an online performance support tool this information would often be dynamic, providing the latest information on items such as inventory and costs.

Support/Help

There are many roads to support in order to overcome user isolation. Timely help functions are essential to successful adoption because users have already turned to the portal because they have a problem. If they also have problems with the performance portal, then they have two problems. We started with a commitment to providing live or very timely support.

New information customized and pushed

Again, taking advantage of a web technology, a push section will allow information tailored to the user providing the latest updates. Telephone call centers use this technology now to provide ongoing information of individual performance as well as alerts, promotions and incentives.

The Connector Zone

This area, as originally proposed, had four areas. **Scheduled web conferences** would allow presentations at set times with discussions afterwards. **Synchronous chats or web paging** allow tech to tech quick questions. **Threaded discussions** allow more detailed, thoughtful postings. Users can come to discussions long after the fact and gain from the information shared. Indeed, as users work out solutions through this medium, knowledge creation is reified and may be tagged for future search and retrieval. The final area proposed, the **matchmaker**, uses the instructional designer as a learning resource to help connect people who are working on similar problems.

Overarching Considerations

The use of meta tagged performance objects for both learning and support provide a powerful tool. Locating these performance objects in a portal with other functionalities which take advantage of the medium of the web while working to overcome the isolation of users holds great potential. As with any new enterprise, much experimentation is necessary. It is hoped that the proposed portal can provide a model for those beginning to seek useful applications for meta tagged objects. Some final considerations should remain with us as we develop and deploy these tools.

Dynamic Tools

A portal is not like a ship – built and launched upon the seas. It is a dynamic, ever changing environment, more like a garden, which requires on going proactive interactions. As new objects are developed, they

must be tagged and included. As new knowledge is explored (for example, a process detailed in a discussion), it must be reified and tagged. Discussions must be moderated and encouraged. New tags may be added. Old objects may be culled. The guiding principle in this work is to listen to the user. As the portal is used, users will discover new needs. The more proactive the portal is to the needs of users, the more the portal will be used. A positive cycle of improvement is possible.

Killer App

The killer app is the application which forces everyone to take the leap to the next level. For personal computers, the killer app was the spreadsheet. With Lotus 1,2,3... every businessman wanted a computer. For desktop publishing, it was postscript, which allowed laser printers to work. For the internet, it was email. Each of these applications had enough value to users to overcome the expense in time, money and frustration required. The value gained by the app was greater than the cost.

In making performance portals, one can very easily make something very cool that is not used. Look for a killer app – a function that will be so useful that it will get users to try the portal and keep them coming back again and again. The killer app does not need to be the center of the portal. It does not have to be flashy. The killer app provides an answer to a regularly occurring problem.

Users – First, During and Always

The way to find the killer app, the way to make a portal that overcomes the initial resistance to "another new thing", the way to create discussions which are pertinent and used, the way to success is the end user. Before building, focus on the user. Do needs, task and environmental analysis. Talk to users. During development, keep getting feedback on the designs. As the portal launches, seek out user feedback. To date, attempts to create online communities (as opposed to supporting already existing communities) have had limited success. It is clear that a "if we build it, they will come" strategy doesn't work. User centric design is essential. There is an enormous temptation to get lost in the challenges of creation, particularly when working with these new techniques. However, it is vital to look to the end user, to see how a portal can help them do what they are already doing – better, faster and easier.

Conclusions

The advances in the concepts of tagging and retrieving learning objects offer a great opportunity. However, the greatest promise may not be in training, but in performance support. Using concepts from human performance technology for guidance, a focus on the needs of the user takes on primary importance. The time is now ripe for the creation of performance support portals allowing personalized performance objects that offer learning and information via unique schemas while providing feedback mechanisms linking people throughout the organization so they may share and co-create knowledge, capturing the knowledge leavings for those who follow. A new world... a new view... we truly live in interesting times – be that boon or curse.

Biographical Sketch

Steven Schatz specializes in information design for electronic communications. He has worked with Xerox PARC developing educational applications, consulted with Fortune 500 companies on advanced electronic presentations, presented at national conferences including ASTD, Online Learning and Training 2000, provided ground breaking models for use of web conferencing, built computer and web based trainings for thousands of students and is developing a prototype performance support portal using meta tagged knowledge objects. Mr. Schatz was on the faculty of San Francisco State and is working on his Ph.D. at Indiana University's IST department.

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