Learning Tools Interoperability

Scenario

Alex is an IT admin at a private college for the performing arts. This morning the IT committee is meeting with the provost to discuss learning tools interoperability (LTI), a standard that makes integration with the LMS much faster and less expensive. The campus LMS is LTI-compliant, and Alex suggests that whenever possible the college should choose applications that conform to LTI. The provost asks how doing this might affect future platform migrations. Alex explains that in such a plug-and-play environment, migration would be fast, interoperability would not be a concern, and LTI-compliant digital resources and tools would simply appear in the LMS as if they were built into it, making life easier for teachers and students alike.

Back at his desk, Alex receives a call from Professor Addison, who wants to know how long it will take to integrate a new music composition tool into the campus LMS. Integration would allow him to assign collaborative work in which each member of the study team could use the new tool to write a score for a different instrument. Team members could discuss their joint intent in the class forum and test their combined work in real time in the new composition tool. Issues can be tweaked on the spot during an online group meeting, and the results can be sent to a performance program so other teams can discuss and critique the final composition. Last year a similar integration took six months to complete, but because the new composition tool is LTI complaint, Alex tells Professor Addison he can complete integration by the end of next week.

Alex works with staff at the university's teaching center to help other faculty understand the benefits of using LTI-compliant learning applications in their courses. Through various communication channels, Alex and his colleagues highlight a range of factors important to instructors. Integrated applications let students discuss assignments online, select a new application from the campus tool portal, and begin work on their exercises without ever leaving the LMS. Data such as scores in the new application are automatically passed to the grade book. Best of all, LTI makes some applications so easy to integrate that faculty might choose to do it themselves.

1 What is it?

Learning Tools Interoperability (LTI) is an open specification from the IMS Global Learning Consortium. It is designed to enable plug-and-play integration of educational applications with the institutional enterprise. Previously, to connect a custom or vendor-provided learning tool with a campus platform such as the LMS, a university IT department either had to assign a developer or hire a specialist to integrate the application with the platform. In either case, the process might take months to complete and would probably need to be redone for each tool and potentially redone yet again when software is upgraded to a new version. By contrast, if the APIs (application programming interfaces) for learning tools and platforms conform to the LTI specification, it is comparatively easy to get the platform and tools to interoperate. Integration time with LTI-compliant components is typically a fraction of what it would otherwise be.

2 How does it work?

The most common use of LTI is to integrate tools into the campus LMS. A "tool" in this context refers to any service or application that might be interconnected with an LMS: e-portfolios, e-books, presentation/authoring tools, collaboration tools, library resources, assessment tools, homework tools, grading tools, video tools, and subject-specific tools. Like other software platforms, learning management systems typically offer APIs that allow third parties to integrate other applications with the platform. But integration is usually a separate process for each application because the APIs for each LMS are unique. LTI, by contrast, provides a common way to perform integrations, a vendor-neutral approach that accomplishes integration with far less repetition of effort. LTI is a standard to allow API synchronization to enable a rapid deployment of enterprise applications.

3 Who's doing it?

Software that conforms to the LTI standard is increasingly in use across the spectrum of higher education, and more than 100 colleges and universities are actively engaged with LTI at a strategic development level. At one point, Western Governor's University struggled with dozens of learning resource providers that had to be integrated separately.

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For WGU, standardizing on LTI meant they could write a single, LTI-compliant integration program for all the resources that ran on their LMS. For some institutions, LTI helps accommodate and encourage innovation. At the University of Michigan, faculty members may develop their own tools, and frequently they choose useful apps from commercial and open-source providers. LTI compliance means these tools can be easily integrated into the LMS, eliminating the multiple login procedures, multiple grade books, and manual handling of student accounts that can occur with non-integrated tools. As interest from colleges and universities has risen, numerous suppliers have become LTI-compliant to meet the demand. The IMS Global website offers a catalog of products that are certified LTI-compliant, a list that currently includes 18 platforms and hundreds of tools.

4 Why is it significant?

Faculty and students benefit when learning applications are integrated into campus platforms, particularly the LMS, rather than being stand-alone tools. When vendors take advantage of a common approach to interoperability, such as LTI, integrations can be completed considerably faster and at a much lower cost. The key result of this approach is that courseware, software, and web services developed at an institution or by a commercial vendor can be available for prompt use elsewhere. Moreover, allowing instructors to select and integrate learning applications creates a do-it-yourself environment that changes the relationship with and role of IT staff. Students and faculty can simply log into the LMS and have access—in a single, familiar location—to all of the applications and services to which they have rights. If universities and colleges ask for, develop for, and purchase LTI compliance, the resulting tools will interoperate with any LTI-compliant platform. This means tools can be changed easily and future migration can be dramatically simplified should the campus change to a different LMS.

5 What are the downsides?

In some cases, vendors claim their products comply when they do not, and even where LTI is properly employed and deployed, the long-term efficacy of the specification requires industry collaboration and cooperation. **Many highly desirable applications—particularly older ones—might not conform to LTI**; an institution might choose a suboptimal application based on its LTI compliance. At the same time, the proliferation of diverse learning applications on campus could result in an inconsistent student experience.

6 Where is it going?

Growing adoption of the standard by the higher education community, along with increasing vendor support to meet that demand, should create the kind of **synergy that will accelerate the growth of LTI**. Also, an update to the LTI specification is being developed, and this new version further streamlines the integration process. One goal of the new specification is to enable one-click integration of most applications, which will allow faculty and other users to integrate tools even more quickly and easily. The new specification will also support more deep-linking options that will enable tool providers to create a much more seamless experience for teachers and students than is typically available today. One particular area that has captured the interest of developers and educators is the use of LTI to collect data about usage, outcomes, and activities. Such data, collected from numerous tools, has previously not been in a common format that allows the exchange of data. But changes under way will make data available anywhere on campus: to the LMS, to the student information system, or to an analytics application.

7 What are the implications for teaching and learning?

LTI could be an important component in the emerging discussion of connected learning, which focuses on the interconnectedness of learners and the resources of learning. In a model that encourages educators and learners to create personalized networks of tools and resources, wide adoption of a standard such as LTI enables colleges and universities to provide rapid and seamless integration of most or all of their academic tools. Using applications that conform to LTI can allow instructors to personalize their courses by choosing the specific learning tools they prefer and quickly integrating them into the LMS. In this way, widespread implementation of LTI also has the potential to further recast the role of central IT in higher education—if faculty and even students have the ability to easily create their own connections and integrations with multiple learning applications, the responsibility (and authority) traditionally given to IT units or instructional designers might shift to end users.