

Achieving Learning Impact 2007

Annual Report from
IMS Global Learning Consortium
on the Latest Trends in
Learning, Technology & Standards



August 2007

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About IMS GLC

In service to the community of organizations and individuals enhancing learning worldwide, IMS GLC is a global, nonprofit, member organization that provides leadership in shaping and growing the learning industry through community development of standards, promotion of innovation, and research into best practices.

The views expressed in this report are solely those of the authors and do not represent the opinions of those persons or organizations named herein.

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tel: +1 407.362.7783
fax: +1 407.333.1365
www.imsglobal.org

Dear Colleague,

For over ten years now a relatively small, eclectic cadre of learning and technical experts have been gathering in locations around the world to conceive and develop “interoperability standards” for electronic learning and learning technology. This report is the first in an annual series that captures “the state of” not only these standards, but more importantly, the learning technology industry needs and trends they are so intricately tied to.

Use of the internet to support or enhance learning is a relatively new field. There was an incredible first wave of activity from 1997-2000 that reflected enormous new investment in the use of Internet technologies and had a large focus on extending lessons from instructional design and computer-based training to the Internet. After four or five years of consolidation (2000-2005) in all learning technology industry segments, our industry is poised for a dramatic next phase of growth anchored by an emerged set of leading companies and organizations that operate in the higher education, K-12 schools, and corporate education sectors. This new phase is focused on learning impact as achieved through improvements in access, affordability, and quality, as supported and enabled by technology.

This new phase is reflected in a revised composition of the IMS Global Learning Consortium. At the recent Learning Impact conference in Vancouver, the participation was equally split among three types of leaders that are now actively involved in IMS GLC activities around the globe. The first were the technical architects that are leading their organizations to develop new technology to support learning. The second were chief executives, presidents, chief learning officers, and provosts who are focused on executive leadership in either educational or business strategies. The third were the chief information officers, vice presidents of academic technology or e-Learning, representing the huge growth in the last ten years of end-users who are interacting with or leading the deployment of learning technology on a daily basis.

This report is provided to the general public of leaders and decision makers around the world focused on the same thing that IMS GLC is focused on: improving learning and education with the support of technology. It does not represent the views of any particular organizational participant and was not developed through sponsorship of any kind. This report reflects the best efforts of the IMS GLC staff to integrate an extremely diverse set of viewpoints and data presented at the Learning Impact 2007 conference, with industry backdrop gleaned from interactions with the IMS GLC Executive Strategic Council, Board of Directors, Members, and Subscribers.

We hope you enjoy this report and find it useful. We are always interested in your ideas and feedback. Most importantly, please join us for Learning Impact 2008 to be held 12-15 May at the Omni Downtown in Austin, Texas, USA. We are eager to add your name to the group of world leaders who are helping to set new and greater expectations for the role of technology to enable better learning.

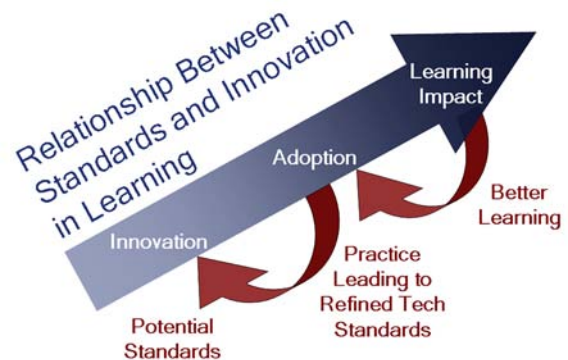
Best regards,



Best regards,

Best regards,

Rob Abel
Chief Executive Officer
IMS Global Learning Consortium



Organization of this Report

About this Report

Contains an introduction from Rob Abel, CEO of IMS GLC, a brief summary about IMS GLC, a primer about the Learning Impact conference, and identification of the Executive Strategic Council Members and IMS GLC Board of Directors.

Executive Summary

Offers a definition of the meaning of learning impact and describes how technology is impacting learning, gives a historical perspective and identifies technology trends to watch in the coming months.

Achieving Learning Impact Through Strategic Investment in Technology

Comprises the IMS GLC Executive Strategic Council members' perspectives regarding the investment in technology that impacts learning.

Summary of Learning Impact 2007 Conference

Includes reports and summaries of the primary meetings and program tracks convened during the Learning Impact 2007 conference and highlights important topics to revisit at next year's conference.

Learning Impact Awards 2007

Recognizes the Learning Impact Award 2007 winners and provides a brief description of the winning entries.



About IMS Global Learning Consortium (IMS GLC)

IMS GLC is the leading advocate for the use of technology to support and enhance learning worldwide. As a member supported global consortium, IMS GLC is the leading provider of community developed interoperability standards for learning technology, and also develops related adoption standards. IMS GLC also conducts learning technology industry research and fosters recognition of high impact learning technology innovation worldwide.

IMS GLC brings together and serves its members from across the globe, providing them with a leadership forum for shaping the future of learning. IMS GLC Members include:

Leading Providers of Educational and Training Technology and Services

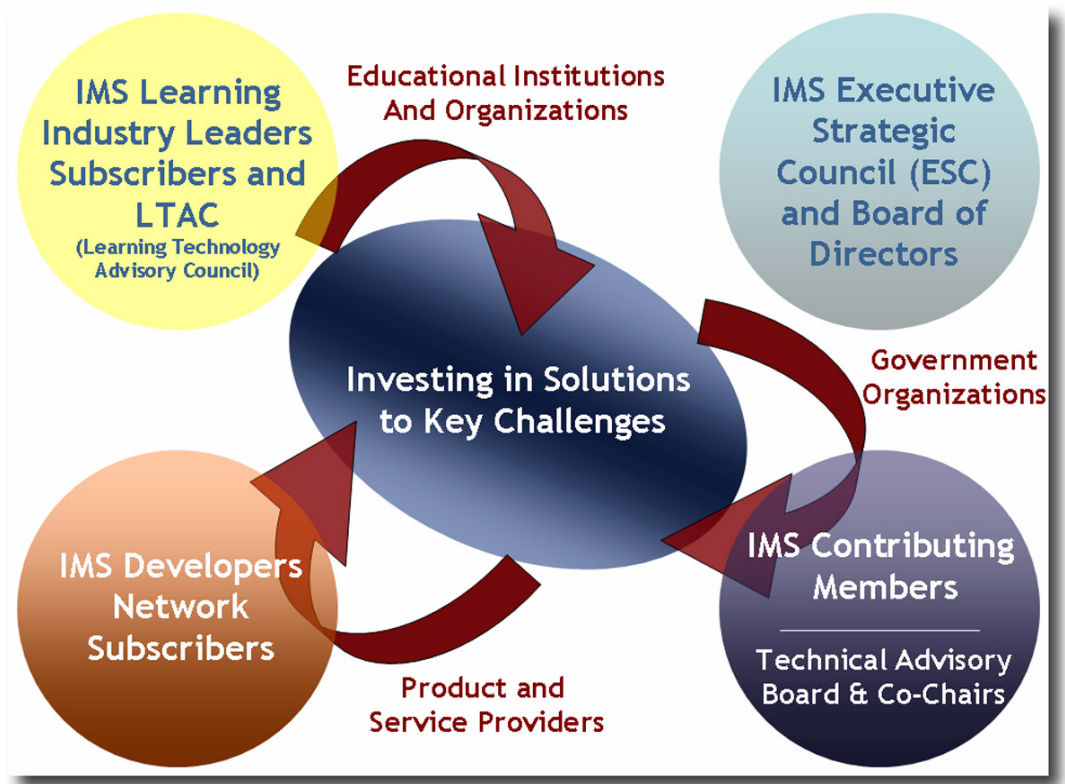
- *Learning platform and tools, publishers, assessment products, rich media platforms, classroom technology, educational services, enterprise systems*

Education Institutions and Training Organizations

- *Higher and further education, K-12 schools and districts, corporate training and human resources*

Member Associations and Government Agencies

- *Ministries of education, education R&D organizations, professional organizations associated with learning technology*



IMS GLC standards, specifications, and related publications are made available to the public at: <http://www.imsglobal.org/>.

About Learning Impact 2007 and the Summit on Global Learning Industry Challenges

In April 2007, some 210 global leaders in the development and use of technology that supports or enhances learning met at the **Learning Impact 2007** and **Summit on Global Learning Industry Challenges** conference in Vancouver, British Columbia. The attendees represented a unique, approximately equal mix of executive leaders (CEOs, presidents, executive directors), product architects (vice presidents of product development, chief architects), and leaders responsible for the use and implementation of technology in learning (CIOs, academic technology directors, chief learning officers, online and distance education leaders). This interdisciplinary group of leaders engaged in several days of keynotes, panel discussions, and program tracks, in concert with the final judging of the **Learning Impact Awards** (LIAs) and LIA showcase.

Learning Impact is IMS Global Learning Consortium's annual conference that brings together the world's leading creators, vendors, users, buyers, and implementers of learning technology to participate in program tracks focused on the latest innovations in learning systems, digital learning content, the learning enterprise, and open technologies. Presenters answer a key challenge question designed to inform the attendees on the state of innovation and best practices. For more information visit:

<http://www.msglobal.org/learningimpact/agenda.cfm>

The **Summit on Global Learning Industry Challenges** is a gathering of industry leaders to introduce and debate ideas and issues impacting the growth of learning worldwide. This is a unique and highly direct conversation for the purpose of illuminating the key business challenges facing the learning industry. The Summit is facilitated by a focused set of highly interactive panel sessions with audience participation. For more information visit: <http://www.msglobal.org/learningimpact/agenda.cfm>

Learning Impact:

Bringing together the world's leading creators, vendors, users, buyers, and implementers of learning technology.

The **LIAs** are designed to recognize the most impactful use of technology worldwide in support of learning. This unique program evaluates established, new, and research efforts in context at an implementing learning institution or organization. After a preliminary review conducted from entries collected during the year, a set of finalists are selected to showcase at the event and a panel of global experts are asked to perform the final rankings at the conference in conjunction with voting by the attendees (the attendee votes are combined to weigh as one expert vote). For more information visit: <http://www.msglobal.org/learningimpact/index.html>

The IMS Global Learning Consortium's **Executive Strategic Council (ESC)** was formed to provide vision and guidance in IMS GLC's efforts to enable improved education and learning worldwide. **ESC** members are dedicated to providing the executive leadership perspective on the role that technology can play in enabling and transforming learning in the knowledge age. The **ESC** plays a special role in guiding the **LIAs** and the **Summit on Global Learning Industry Challenges**. For more information visit: <http://www.msglobal.org/esc/index.html>

The **Learning Technology Trends and Satisfaction Survey (LSAT)** is an ongoing survey that collects information from qualified leaders of learning technology usage for classroom, distance, or blended learning. These leaders are asked about usage, satisfaction, and topical trends in more than ten different product and service categories. The purpose of the survey report is to help inform an emerging marketplace. To participate in the survey or download the report, visit <http://www.msglobal.org/ltst/index.cfm>. Attendees of the Learning Impact conference receive a copy of the 100-page report.



IMS GLC Executive Strategic Council Members

- **Dr. Nicholas H. Allen**, Provost and Chief Academic Officer, University of Maryland University College
- **Michael Chasen**, Chief Executive Officer and President, Blackboard Inc.
- **Dr. Paul Clark**, Pro-Vice-Chancellor (Learning and Teaching), The Open University
- **Daniel J. Devine**, CEO, Compass Knowledge Group
- **Dr. Dae-Joon Hwang**, President, KERIS (Korea Education Research and Information Service)
- **Doug Kelsall**, President and Chief Operating Officer, eCollege
- **Dr. John Leslie King**, Vice Provost for Academic Information at the University of Michigan in Ann Arbor, and Professor in the School of Information
- **Dr. Jolene Koester**, President, California State University, Northridge
- **Dr. Carl M. Kuttler, Jr.**, President, St. Petersburg College
- **Dr. Arthur J. Lendo**, President and Professor of Management, Peirce College, Philadelphia, PA
- **Dr. John V. Lombardi**, Chancellor and Professor of History at the University of Massachusetts Amherst
- **Dr. Bernard Luskin**, Executive Vice President, Fielding Graduate University, Director, Media Psychology Program
- **Robert A. Maginn, Jr.**, Chief Executive Officer, Jenzabar
- **Dr. Paula E. Peinovich**, former President and Provost, Walden University
- **Dr. Malcolm Read**, Executive Secretary, Joint Information Systems Committee, United Kingdom
- **Edward H. Stanford**, President, McGraw-Hill Higher Education



IMS GLC Board of Directors

- **Rob Abel**, Chief Executive Officer of IMS GLC
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- **Peter Segall**, President, North America Higher Education and Operations, Blackboard



**Executive Summary:
Key Trends in the Use of
Technology to Support Learning**

Defining Learning Impact: Access, Affordability, Quality

Regardless of whether you are an executive decision maker involved in higher education, K-12 schools, or corporate education, in the end analysis three things matter. The first is providing access to educational resources. The second is providing that access in an affordable way. The third is improving the quality of those educational resources. These are three elements that are at the heart of IMS Global Learning Consortium's view of learning impact.

Access to educational resources encompasses access to course materials, references, interactive applications, instructors, other learners or any other resource used to support learning. Much of access is about convenience for learners that makes it practical to engage in an educational experience when it otherwise would be impossible.

Affordability at its core in all segments is about the return on investment—the value add—of an educational experience. In some segments, affordability also encompasses a price tag for the educational experience that does not dissuade disadvantaged learners from engaging in an educational opportunity as a right of citizenship. In some segments affordability is measured by the organizational return on investment often heavily dependent on perceived cost savings in the creation and delivery of the educational experience. Education is expensive to produce and deliver. So lowering costs opens up new possibilities for access. Also, there is usually an affordability benefit associated with more convenient forms of access.

Quality of an educational experience is typically associated with outcomes as gauged by the ability to remember and engage learned information, the ability to perform in a similar or new context, or the ability to master one's own sense of what is known and unknown (often referred to as metacognition). Of course, access and affordability are greatly enhanced by quality. That is, access to quality educational experiences and affordable quality educational experiences is what is desired. However, quality may also have a higher cost and resultant price tag. This is a subject of considerable debate.

Access, Affordability, and Quality are at the heart of IMS Global Learning Consortium's view of learning impact.

There are also additional elements that play an important role in achieving learning

impact. In the view of IMS GLC these are adoption, accountability, organizational learning, interoperability, and innovation. **Adoption** indicates large-scale acceptance, typically meaning that a solution is highly useable. **Accountability** is the leadership imperative to determine the appropriate mix of access, affordability, and quality and to ensure its realization. **Organizational learning** is the scaffolding that supports the ability to provide high quality educational experiences. **Interoperability** enables choice and ease of implementation, a key element in enabling an efficient industry. **Innovation**, of course, represents the ability to solve problems in new ways or even envision completely new approaches. In the IMS GLC framework for learning impact, innovation replaces adoption as an evaluation element for research or new products.



The State of Learning Impact via Technology 2007

Access. Technology has had its greatest impact on access to educational resources. Many feel that today the tyranny of time and geography with respect to education is a long way toward being emancipated. The IMS GLC Executive Strategic Council (ESC) believes that access, choice, and opportunity are becoming more and more available to all. Evidence is apparent in the rapid growth of online and distance learning programs offered from a wide spectrum of universities and colleges, providing more flexible and convenient access to learning experiences. However, access is not equal or easy to all educational resources. In some respects it is a societal issue to address this challenge, but it is also a technological issue with

The primary impact of technology to quality of education today goes back to technology's ability to enable access.

respect to the cost of achieving the integration of various mixes of content and applications in the highly accessible online medium. For instance, it is a major challenge to convert course materials developed in one learning platform for use in another—not an uncommon scenario for educators to deal with today. It is also very challenging for an educator to incorporate a favorite learning tool, perhaps podcasting or wiki development, into an integrated set of learning activities.

Affordability. Impact on affordability of education by technology has been largely a matter of the “cost savings from greater convenience” enabled by Internet-accessible learning experiences. The economic value-add of higher education credentials has been strong and well-documented and has permitted tolerance of price increases in many countries. But the general feeling is that we have approached or are approaching the tolerance for price increases, even in countries such as the

U.S. which has been market-oriented in its approach. In the corporate education sector there have been well-demonstrated “savings” by reducing the cost of meetings through distributed learning or the costs of materials replaced via simulations. Therefore, return on investment is a matter of determining if the cost of implementation is less than the assumed cost savings. However, more examples of measuring return by achieving improved performance from investment in education, whether credentialed or not, are warranted.

Quality. The impact on the quality of educational experiences by technology can be viewed from a couple of different perspectives. One perspective is technology-assisted instruction that results in improved learning outcomes or the academic return on technology. Another is the entire field of assessment in the critical role of helping to ascertain learning outcomes and enable improvement of educational processes in a scalable way. It is also important to note that improved learning outcomes could result from engagement or from more effective instructional activities. Technology is capable of playing a role in both. However, in the end analysis, we are still in an era where education is considered highest quality if it occurs via access to the best educational resources. Our current higher education era is influenced greatly by the push toward research as the pinnacle of prestige and knowledge in the 20th century. It is assumed today that physical presence at the centers of research result in the highest quality education. This means that overall the primary impact of technology to quality of education today goes back to technology's ability to enable access to “high quality” resources. The growth of online and distance offerings are as “high quality” as the institutions (or perhaps individuals in other settings) that create and deliver them.

The Road Ahead

In many respects, the distinctiveness of an educational experience is determined by how well thought out the mix of access, affordability, and quality is. In other words, is the educational experience distinctive by design and does the design permeate all aspects of the experience? As pointed out by the IMS GLC ESC, whiz bang products and technologies that don't fit what educators want to do are not embraced. But, the important question for education providers is how clear are you on what is distinctive in your approach? Going forward the value of technology in education will be about how well it can support this distinctiveness. How true this is not just among and between various organizations but also regions and countries. Distinctiveness is the key variable.

The important question for education providers is how clear are you on what is distinctive in your approach?

Access. While there has been great achievement in access and it can be argued that we primarily need access to greater affordability and greater quality educational experiences, we see several other key trends in access. The first is a better design for access to integrated learning resources. The second is access to content collections that are significantly more useable than those of today. The third is more integrated access to one of the greatest sources of learning resources: libraries.

Affordability. The road ahead for affordable education will continue to be dominated by return on investment. And we believe that return on investment will be strongly connected to distinctiveness. The other important aspect of affordability will be evidenced through adoption. There will

be several key trends. The first is the need for technological support for learning to become largely transparent to the users, reducing the need for costly training and development. The second is greater use of innovative products that enable self-directed learning with an instructor in-the-loop. The third is digital or hybrid alternatives to textbooks that reduce costs while maintaining profit incentives for creators and publishers.

Quality. Going forward, quality will be most linked to the aforementioned design of the distinctiveness of the experience and how well technology supports that distinctiveness. We see significantly more activity progressing in services that help achieve a technology design to support distinctiveness. This may encourage educational process redesign by leading institutions and organizations. Education providers will be looking for ways to capture their distinctive approaches with a reasonable investment. Several key trends supporting quality are apparent. The first is tools and techniques for designing and measuring accountability. The second are use of tools that can capture the distinctive curriculum and classroom-based instructional approach of an education provider and make that content available online. The third is use of this and other content alternatives to enhance study techniques. The fourth is greater integration of formative assessment into learning experiences. The fifth involves combinations of all of the above to improve the personalization of learning.



The State of Learning Technology 2007

The Context—10 Years of Learning Technology Industry Evolution

The Rise of the Learning Platform. Scenarios vary by region, but there are some clear results after ten years of global investment. The last ten years has seen the rise of the “centralized learning platform”, referred to by several names (including course management system, virtual learning environment, learning management system, and instructional management system), as an established category along side administrative systems, in both the education and training contexts. There have been significant variations in adoption and by sector globally. For instance, in the U.S., the higher education sector adoption of course management as a core element of the enterprise has been nearly ubiquitous, while the K-12 sector is just now beginning its adoption, led by the needs to support teachers in lesson planning (instructional management systems), state-run virtual schools, and computer-based intervention and tutoring systems. The K-12 schools sector in the UK, Korea, and other countries has moved forward more aggressively in adoption of learning platforms to address such areas as personalized learning and tutoring. The corporate training sector worldwide has seen the rise of the learning management system, primarily to support self-paced learning, with an evolving new emphasis on “talent management”. The corporate education and training sector has been dominated by the influence of the human resources department and other functional depart-

ments (such as sales) that have responsibility for substantial training goals.

The Context of the Evolution of the Learning Technology Industry

- Rise of the Learning Platform
- Continued Dominance of Instructor Led and Credentialed Learning
- Custom and Supplementary Content is King
- Consolidation Leads to Stability with Open Source Emergence

Six Strategic Trends to Watch

1. Increasing Emphasis on Integrated Access to Teaching and Learning Resources
2. Content Collections Resulting in More Usable, Efficient, and Effective Digital/Print Options
3. Self-Directed Learning Programs with Instructor in the Loop for Entry-Level Education or Domain-Specific Learning
4. Evolving Forms of Collaborative Learning
5. Capturing the Classroom for Transparent “Authoring” Techniques, Rich Media, and Mobile Learning
6. Defining and Implementing Accountability and Dashboard Metrics

Continued Dominance of Instructor Led and Credentialed Learning. Despite the many overlaps among the sectors, there has been somewhat of a divergence between the educational scenario, which is dominated by instructor-in-the-loop, with centralized ICT support and decision-making and the training scenario, dominated by self-paced learning with departmental objectives and support. Interestingly, over the last ten years the

higher education and further education sectors have dominated the lifelong learning sector. Despite high hopes for various new and unconventional approaches, there has been a clear preference among adult learners to engage in degree-credit programs.

Custom and Supplementary Content is King. The use and evolution of digital content for learning has varied across the sectors as well. In the corporate education and training sector, digital content ten years ago was focused on one of two areas: computer-based training in non-custom, longer shelf-life titles (such as IT training or leadership) or custom-developed content. Much of the custom developed content was in support of enterprise implementations of ERP (Enterprise Resource Planning), compliance or departmental training objectives. While web technology dominates today, the split is largely the same with custom-developed content continuing to dwarf a relatively small market for web-based, pre-packaged content. In the higher education sector it has become commonplace for textbooks to be supplemented by a variety of digital learning materials that can be accessed through the learning platform or otherwise. While a small minority of faculty have become developers of online courses, a majority feel comfortable using the learning platform to post course information, distribute various documents, and conduct online discussion forums. In the K-12 schools sector, use of digital content has varied regionally in relation to the use of learning platforms, typically associated with overall student access to the Internet.

The value proposition of content in conjunction with the learning platforms has

largely been one of ease of distribution and access (resulting in productivity gains), as opposed to fundamentally changing the nature of instruction or learning. While gurus and pundits promoted the concept of just-in-time performance support and learning objects ten years ago as the coming trend in the corporate learning sector, this has, so far, come down to the use of web technologies to make access to relevant and up-to-date information easier, as opposed to a revolution in learning.

Consolidation Leads to Stability with Open Source Emergence. While the learning platform and supplementary digital content have gained acceptance in



the last ten years, there has been a very significant level of consolidation in terms of the number of providers. This has both caused some churn in the marketplace as well as provided a more stable and viable base of core competitors. There have been very few examples of providers that have been able to cut across sectors. However, the learning platform providers have had some success across geographies. There has also been the emergence in the last four to five years of new open source learning platforms and open learning content providers in the educa-

tion sectors. Open source is evolving as a way to pool investment through participation in a community effort, while enabling customization.

Six Strategic Trends to Watch

The Learning Impact (LI) conference and showcase features the complete spectrum of learning technology innovation from participants around the globe. The LI venue explicitly brings together perspectives on executive level issues, architecture issues, and technology-supported learning for the purpose of determining the “state of” and future directions. There are as many opinions and conclusions formed as attendees at the conference. However, the unique blend of perspectives and participants enables a gauging of “how real” are new developments and “how compelling” is the need they are addressing. Each of the four program track summaries contains a view on a particular area of learning systems, digital content, academic enterprise/assessment, and open technologies. What follows here are the top six strategic trends to watch - those that look “real” and have very compelling drivers. By “strategic” we mean worthy of consideration of being in your planning, purchase, and integration cycle during the next 36 months. Note that products may address one or more of these trends.

Increasing Emphasis on Integrated Access to Teaching and Learning Resources. This trend is being driven by three very compelling needs: convenience, productivity, and strategic inclusion of new learning tools. While it has often been noted that digital natives have no problem switching between different interfaces and applications, the reality of education today is that convenience and productivity, that is, time savings, is one of the most important potential added

values from technology. In addition, faculty and teachers are not technologists and do not have the time to become familiar, let alone expert with new technologies. Therefore, an education provider’s value can be greatly enhanced by providing integrated access to a variety of resources that fit seamlessly into the teaching and learning process.

There are many exciting new educational products emerging. There is also a desire to encompass similar functionality of popular social networking sites into a collaborative learning environment. Such products and functionality are made that much more impactful if they are made available at a single access point and in the appropriate context. This is also true of digital content integration and access. LIA Gold winner *HarvestRoad Hive & the Resource List Management System at the University of Western Australia* represents a breakthrough in an easy to use product that allows integration of library and other digital resources into a familiar “reading list” construct while handling all the underlying technical complexity.

There is a very interesting competitive dynamic as to what should be the central access point for the very large volume of learners and instructors in the educational enterprise. There are at least three options in terms of product categories: learning or course management systems, portals, or administrative systems that provide portals, all of which are vying to be the key point of entry that adds the most value to the educational process. It will be interesting to see if the predominant approach becomes solution/product-, administrator-, student-, or faculty-centric. In addition, the assessment and usage data from new and existing learning tools needs to be used strategically by the education provider in order to improve how education is deliv-

ered. There are at least three options in terms of product categories: learning or course management systems, portals, or administrative systems that provide portals, all of whom are vying to be the key point of entry that adds the most value to the educational process.

Content Collections Resulting in More Usable, Efficient, and Effective Digital/Print Options.

The future of educational publishing may be online environments that are most effective for specific educational purposes. There is compelling pressure to address the cost of textbooks while providing alternative approaches that fit how departments, programs, and individual instructors create and deliver courses. Books and print will not be replaced completely, but the production will become optimized to help reduce costs to learners. Publishers are exploring, and some are already offering, digital content options that are much more usable by faculty, teachers, and instructors than currently available products. This includes customizable courses, supplementary reference web sites, and domain specific adaptive learning environments.

Environments such as LIA Platinum winner *Cyber Home Learning System of Korea* show that even at large scale, effective support for studying supported by technology is viable. Several states in the U.S. are in the process of piloting



new initiatives that are testing various new approaches to supplementary use of digital content that will inform this trend. LIA Platinum winner *OpenLearn at the Open University, United Kingdom (supported by Moodle)* represents another innovative approach to open access to online courses. This continues a several year trend of making various forms of content openly available in order to encourage dissemination of educational practices. We feel that projects

such as this will inform the future direction of digital content for education. Another aspect of this trend will be access to best practice communities for making use of online course materials or other instructional content and support, exemplified by LIA Gold

winner *European eTwinning Action by European Schoolnet*.

Self-Directed Learning Programs with Instructor in the Loop for Entry-Level Education or Domain-Specific Learning.

It is very clear that educational leaders now “get it” when it comes to redesigning high enrollment courses to make better use of technology in order to personalize the experience. Much of this is due to the great work by the National Center for Academic Transformation. However, this trend is also exemplified by LIA Platinum winner *ETS Criterion Online Writing Evaluation service at Farragut High School, Knox County Public Schools*, and LIA Gold winner *California State Uni-*

versity (CSU) *Math and English Success Websites and the CSU Fresno Fast Forward Program*. Both of these winners help learners gauge their own progress, but in different ways. Development of effective and sophisticated applications to support self-directed learning will typically be focused on high enrollment, entry-level subjects. A critical need is to support efficient ways for instructors to be able to monitor and aid self-directed learning. ETS Criterion Online allows and enables this. LIA Silver winner *Using Giunti Labs learn eXact LCMS at the UK NHS and Royal College of Radiologists R-ITI Project* applied many of these same principles in supporting a domain-specific curriculum that enabled greater access, scale, and quality.

In addition, this trend area portends the growing importance of being able to easily integrate assessment into the web support for courses. LIA Silver winner *Respondus 3.5 and University of Alberta* represents the growing value of assessment creation that can pull together pre-developed test items from publishers, as well as institution-created items. It is very possible that the market will see more preformed collections of assessment items to supplement topical areas to make it easier for education providers to incorporate customized formative assessment into web-based course support.

Evolving Forms of Collaborative Learning. Online discussion forums have become a mainstay of instructor-led online courses or seminars. This is because there is ample evidence that they can be utilized in pedagogically successful ways that enhance the level of interactivity beyond what is achievable in many classroom settings. The “Web 2.0” phenomena of social networking, blogging, video sites, wikis, with texting and

instant messaging replacing email, are causing educators to take note and see if this energy and collaboration can be harnessed towards instructional goals. For instance, it is clear that in the appropriate instructional scenario the peer creation and review of a wiki can represent a very realistic and effective learning scenario that builds critical thinking and metacognitive skills. A new wave of innovative companies and products are beginning to address this need in a way that is more straightforward for faculty and students to integrate into the educational online experience. LIA Bronze winner *Wimba (Wimba’s Course Genie: An Authoring Tool for Common Cartridge at Langside College)* is a leader in this emerging area. There are more exotic approaches being experimented with, such as Second Life communities for various aspects of teaching and learning. LIA Silver winner *Microsoft Research ConferenceXP at Australian School of the Air and Classroom Presenter at University of Washington* represents another approach—use of a flexible platform for designing innovative approaches to collaborative learning that are institution or domain specific.

Capturing the Classroom for Transparent “Authoring” Techniques, Rich Media, and Mobile Learning. IMS GLC research into learning technology trends and satisfaction indicates that authoring of content for online environments and the tools to do so remain a challenge and high priority. The reality is that the overwhelming majority of instructors have absolutely no desire to be web developers, instructional designers, or the like. The answer that is emerging after ten years of development, deployment, and testing are the use of low cost, easy to use digital media capture with seamless publishing through a learning or course management system. LIA Bronze winner

Tegrity Campus 2.0 at Saint Mary's University exemplifies this emerging category. The compelling need is to give students options for reinforcing their study by being able to revisit the classroom experience in an efficient way, while adding little to no extra burden on the instructor to make this possible. The applications to distance learning are obvious, but we see this development as probably the most realistic and useful classroom support for learning in the market today, with a high probability of becoming mainstream. Two LIA Bronze winners, *Articulate at Jefferson County Public Schools*, and *Wimba's Course Genie: An Authoring Tool for Common Cartridge* at Langside College both addressed a slightly different solution to this same issue by enabling very easy and intuitive use of familiar desktop applications to develop course materials.

Solutions such as Tegrity's also address the potential for mobile learning with download and replay through iPods or other devices. In fact, whereas the use of rich media for learning has been long-touted, classroom capture, high-speed connections, and ubiquitous playback platforms are making it a reality in some segments. This is especially the case in serving tra-

ditional students in the U.S. higher education segment.

Defining and Implementing Accountability and Dashboard Metrics. Accountability is perhaps the single most important issue for any provider of education whether K-12 schools, further education, higher education, or corporate education and training. However, in all segments defining appropriate accountability metrics and measures beyond completion and retention rates and satisfaction surveys has proven elusive or controversial, or both. The challenge of thoughtful and useful accountability is as much a call to leadership as it is to the technological support for that leadership. This seems to be one of the most important and promising areas for breakthroughs for the student system vendors, learning management platforms, and service providers alike. Activities in IMS GLC indicate that we expect to see implementations and exemplars emerging to provide additional leadership in this important area. LIA Honorable Mention *eCollege Program Intelligence Manager at Iowa Community College Online Consortium* focused most explicitly on this topic out of all of this year's entries.

The challenge of thoughtful and useful accountability is as much a call to leadership as it is to the technological support for that leadership.



Status of Products and Services that Enable Enterprise Learning

How are the strategic trends going to be actualized in the average educational enterprise? Only time will tell. A picture we use to lay out the components needed is shown here as the IMS GLC Learning Enterprise. While there will be some variation by segment and need, we believe that all educational institutions and systems should be aware of developments in the functional areas depicted in the picture by each box. Whether each of those boxes represents a product or a functional service will depend on the strategies of product providers as they vie for a share of the learning enterprise. Interoperability standards enable interoperability of services regardless of which product they reside in. Also note that the term "enterprise" is not meant to imply a physical location. It is assumed that the functionality may exist anywhere that is reachable via the Internet.

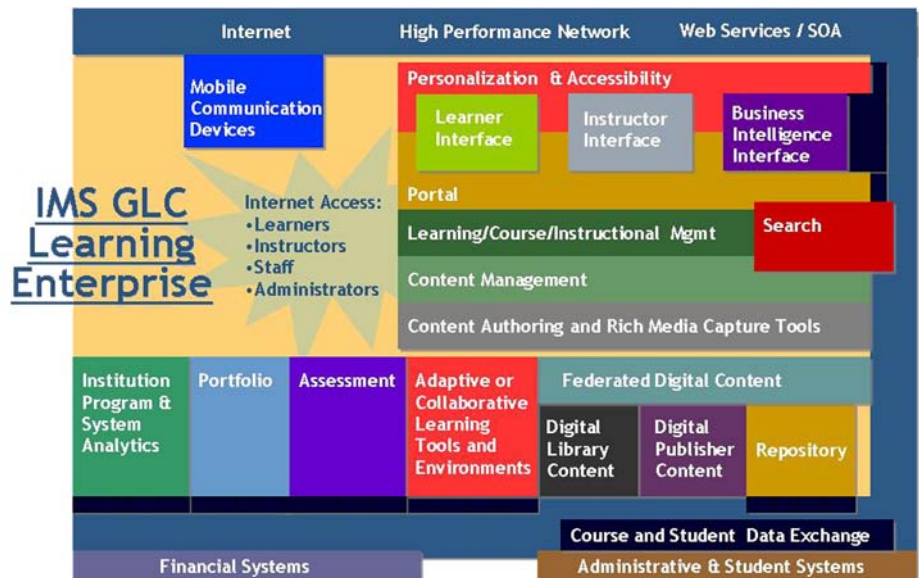
publisher content, digital library content, assessment, and collaborative learning functionality. We also consider the use of web services for learning as emerging.

Niche or R&D

We define the niche functionality of the learning enterprise as that which appears to be finding niche application in some segments of the learning industry. We define the R&D functionality of the learning enterprise as that which needs further development or compelling need to achieve more robust adoption. This does not mean that these functions will remain as niches or R&D. It is solely a reflection on our perception of the current status of these functions. In our opinion these include portfolio, repository, analytics, adaptive learning, mobile communication devices (used

Core

We define the core functionality of the learning enterprise as that which is well established today. This consists of portal, learning management (also referred to as course management, instructional management, or virtual learning environment), content management, and student system functionality.



Emerging

We define the emerging functionality of the learning enterprise as that which is showing potential for becoming mainstream, but has not yet crossed the chasm to mainstream usage. In our opinion, this consists of content authoring, rich media capture tools, digital

explicitly for learning), federated digital content, search (for educational and learning purposes), personalization, and accessibility. We also consider the use of service-oriented architecture (SOA) approaches in this category.

LIA 2007 Awards Summary

Platinum Winners:

- * ETS Criterion Online Writing Evaluation service at Farragut High School, Knox County Public Schools
- * Cyber Home Learning System of Korea
- * OpenLearn at the Open University, United Kingdom (supported by Moodle)

Gold Winners:

- * HarvestRoad Hive & the Resource List Management System at the University of Western Australia
- * The California State University (CSU) Math and English Success Websites and the CSU Fresno Fast Forward Program
- * European eTwinning Action by European Schoolnet

Silver Winners:

- * Using Giunti Labs learn eXact LCMS at the UK NHS and Royal College of Radiologists R-ITI Project
- * Microsoft Research ConferenceXP at Australian School of the Air and Classroom Presenter at University of Washington
- * Respondus 3.5 and University of Alberta

Bronze Winners:

- * Tegrity Campus 2.0 at Saint Mary's University
- * Articulate at Jefferson County Public Schools
- * Wimba's Course Genie: An Authoring Tool for Common Cartridge at Langside College

Honorable Mentions:

- * eCollege Program Intelligence Manager at Iowa Community College Online Consortium
- * Desire2Learn at Office of Open Learning, University of Guelph
- * Microsoft Learning Gateway at Shireland Language College
- * BlueStream Digital Asset Management System At The University Of Michigan (supported by Ancept and IBM)
- * ANGEL at Penn State
- * UGO Online Academic Resource Management system at the University of Montreal (supported by Logiweb)
- * A study on how to enhance support for the Cyber Home Learning System by Korea Education & Research Information Service
- * Meeting the Needs of a Global Student Body with Jenzabar at Park University
- * Microsoft Partners in Learning at Ministry of Education, Thailand

Achieving Learning Impact Through Strategic Investment in Technology:

The IMS Global Learning Consortium Executive Strategic Council Perspective

Introduction

Who has the responsibility for improving learning worldwide? Albert Einstein has been quoted as saying, "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." Perhaps the same can be said about our educational systems and processes.

The IMS GLC has formed the Executive Strategic Council (ESC) for the purpose of providing leadership in highlighting the major challenges to the learning industry community worldwide, current and future, and to help guide the strategic priorities of IMS GLC. To encourage innovative responses to these challenges the ESC provides guidance to IMS GLC's Learning Impact

Awards (LIAs) and Recognition Program and is featured in the IMS GLC's annual Summit on Global Learning Industry Challenges. The annual LIA program recognizes the most impactful uses of technology to address global learning challenges, and recognizes product and service innovation within the context of a specific organizational, system, country, or wider implementation.

In preparation for the inaugural April 2007 LIAs, the ESC members were interviewed to provide their thoughts on the potential use of technology in addressing learning challenges. This article summarizes those thoughts and provides a brief synopsis of the 2007 LIA finalists.



The context

Just a few decades ago, post-secondary institutions operated virtually unchallenged. Increasing costs were not questioned and institutions expressed little concern over the wants and needs of their students. Today, the focus has shifted to students as “customers” and a wide variety of parties interested in access, affordability, and accountability.

Is higher education in the midst of a revolution, or is the world merely experiencing a seismic adjustment? What is driving this change? And where is this discussion about assessment and learning outcomes headed?

“Every generation wants to believe that the crises and challenges of their generation will transform the world. No one knows if they are at a watershed until the watershed is history,” says John Lombardi, chancellor and professor of history at the University of Massachusetts Amherst.



John Lombardi

There have been moments in the history of U.S. higher education, Lombardi adds, that were expected to change the world in dramatic ways; events like the land grant phenomenon of the late 19th Century, the GI Bill, and the decade of the 1960s that ushered in student revolution. In the end, most institutions have changed primarily in response to available revenue and the needs of their various constituencies. And while they have responded to those demands for change in subtle ways, most institutions, conservative by nature, have resisted changing their core values or structures.

However gradually, higher education appears to be shifting its focus from reputation and prestige to performance, and for a variety of reasons.

“While reputation and prestige (i.e., exclusiveness) will always be an important differentiator for certain schools, there is intense competition in higher education for students, and this competition drives the need for differentiation,” says Doug Kelsall, president and COO of eCollege. “Performance and learning outcomes are one way for schools to differentiate themselves in a competitive environment.”

Another driver for the increasing focus on performance is the intense competition for access to public funding. As higher education comes under greater scrutiny, legislators and other key constituents are looking for greater accountability and return on their investment. A continued focus on the performance of higher education is one way to justify public investment in higher education.

Nick Allen, provost and chief academic officer of the University of Maryland University College, says another factor driving the focus on performance is society’s

need for increasing numbers of students to have access to a post-secondary education. "The elite academic institutions that were built on reputation for their inputs and selectivity will not disappear. But they will become less and less relevant in terms of providing educational opportunities for society as a whole.



Doug Kelsall

They will continue to play an important role in carrying out their research functions, but not for delivery."

While accrediting agencies and regulators will increasingly insist on measuring performance outcomes, Allen

says it is incumbent upon higher education institutions to monitor those outcomes to determine the learning rates of their students. "In earlier times, when selectivity was emphasized, the assumption was that if only the few best qualified students were admitted, and if those students put in the required seat time and were exposed to the right faculty, then learning would take place. Higher education in America was built on that premise for the most part. But high access institutions today can no longer afford to make that assumption without measurement, if they want to be quality institutions."

Many of the most prestigious institutions received their status by setting the bar for performance as measured by the reputation of their graduates or helping to drive exacting professional standards in specific fields for which their programs

have become synonymous with excellence. Those institutions measured performance in new ways, such as learning outcomes. And for those interested in learning outcomes, there is widespread disagreement over what the goals for performance should be. "Different schools and different students are looking for different outcomes from the educational process," says Kelsall. "For some, it is skills for a career. For others, it is a well rounded individual. The 'focus' on performance can get a bit hazy if there is not widespread agreement on the goals, or allowance for different types of goals."

Yet, despite all the talk of learning outcomes and performance, is the reality that the connection between research and international prestige going to drive governmental investment in higher education around the globe? "I do not believe that there is a movement away from the importance of reputation and prestige in the British higher education sector," comments Paul Clark, Pro-Vice-Chancellor (Learning and Teaching), of The Open University of the U.K. "There is the perceived need to compete internationally at the highest level of research performance and available Government-provided research funding have limited the resource input into teaching in order to focus on research."

Arthur Lendo, president and professor of management at Peirce College, says the advancement of technology, especially internet mediated distance learning, is contributing to the continued development of a commodity-like marketplace in higher education and that those institutions without large endowments will be forced to focus more on performance.

"Technology is driving both evolutionary and revolutionary changes simultaneously," adds Lendo. "Institutions will

respond to the marketplace unevenly. Elite privates and flagship state institutions will be the last sectors to respond based on perceived prestige.” He predicts that the rapid creation of new knowledge will likely dictate a faster rate of change in higher education although reactionary forces will continue to dig in their heels.

Dr. Carl Kuttler, President of St. Petersburg College in Florida, notes that we are on a “change treadmill” today, driven by “the changing nature of our students, the rapid evolution of technology in supporting teaching and learning, and, yes, demands from the students and the public for improved performance.” He does not see this as a negative, or something institutions should have to be forced to do. “Accountability in the best sense means giving students the skills and tools they need to be successful in a dramatically changing world.”

Malcolm Read, executive secretary of the Joint Information Systems Committee in the United Kingdom, says the British government has so far placed less pressure on documented performance measurement. He also believes that measuring the performance outcomes of graduates is complicated.

“Universities are judged by the caliber of their graduates (and their research),” he says. “However, as the caliber of graduates is based on their subsequent performance in the world, this takes time to establish and the perception may lag behind realities, for better or worse. The performance and reputation of graduates determines the perceived value of an institution’s degree. A performance table of cost / (immediate) learning outcomes then appears too simplistic.”

As the number of institutions, both for-profit and not-for-profit, increases in number, there is more opportunity for performance-centric programs that cater to students interested in job and career opportunities. “Access, choice and opportunity are becoming more and more available to all,” adds Bernie Luskin, executive vice president and director of the media studies program at Fielding Graduate University. “The impact on community colleges is a good example of that. It is happening through improved media communication, entrepreneurship, and that the fact that the world is flat.”

Kelsall believes the current focus on performance is an outcome of the transition as opposed to its cause. “The major transition which is occurring in education is greater demand, greater access and choice, and thus greater competition for students. Further, the expansion and continued growth of online education has provided students with even greater access and choices, as well as additional delivery mechanisms for schools to reach new markets.”

Accountability in the best sense means giving students the skills and tools they need to be successful in a dramatically changing world.

U.S. Spellings Commission findings on target or off base?

The recent Spellings Commission report addresses the quality of U.S. higher education and talks of the need for improved access, affordability, and accountability. While most agree that many of the issues outlined in the report need to be addressed, the devil can be in the details.

With all due respect to those conversations currently taking place behind America's ivy-covered walls, Lombardi says discussion about affordability, accessibility and accountability has been taking place for decades. Most would agree that U.S. higher education is generally doing a better job of preparing students than U.S. K-12, but could it do more? Sure, says Lombardi, but cautions that institutions will be more likely to pay attention to what their customers do rather than say. "Legislators, for example, say they want cheap, affordable, high quality education available to all. They support cheap education that is of generic quality and is affordable to many. They send their children, however, to the most expensive, selective institutions they can find. It's important to track what the customers actually do, rather than focus on what they say."

The real issue with the Spellings findings, says Read, is how does one really judge quality? Over what period of time? In the judgment of which stakeholders? Although the report specifically questions U.S. higher education, the issues are relevant to academia worldwide.

Lendo believes the commission's findings will have little impact on higher education until some of the underlying accountability issues are addressed. The notion of tenure and guaranteed lifetime employment is one of the items he puts at the top of the list. He noted there has been insufficient

debate about considering multi-year contracts in lieu of tenure. An all-out effort regarding ineffectiveness and inefficiency in American public school systems is needed, he says, because fewer students are prepared for college and work. Studies indicate students from other developed countries are outperforming their U.S. counterparts in many subjects.

Allen considers the findings a profound statement of expectations about opportunity, but also a challenge. The values the report espouses can only be achieved, he says, by leveraging the use of technology and good process re-engineering principles of both academic and administrative systems in America's colleges and universities.



Nick Allen

"Technology has given us an opportunity as never before to accomplish all of these values concurrently," says Allen. "In previous times, they were at tension with one another. It was assumed that to have

quality, one had to limit access, that quality had to cost more and thus be unaffordable to most individuals, and that higher education institutions were really only accountable to themselves. All that has changed thanks to technology. Technology will enable a revolution in access to a quality higher education for large numbers of people that will surpass what was experienced in the U.S. when the GI Bill was introduced following World War II."

A quality educational experience

The Spellings Commission report, along with work being conducted by organizations such as the Council for Higher Education Accreditation (CHEA) and the National Association of State Universities and Land-Grant Colleges (NASULGC) in the U.S., and the Quality Assurance Agency for Higher Education (QAA) in the U.K., highlight the struggle to define a quality educational experience. What components make for a quality education? Most agree the answer to that question is complex.

Luskin believes a key component is learning how to learn; the ability to write and speak clearly and to think critically and creatively. Another component, adds Dan Devine, CEO of Compass Knowledge Group, is to be able to complete one's formal education with a marketable skill that will allow one to adapt to the needs of the marketplace. Says Lendo: "Students must be prepared to live and work in a 'flat,' 21st century environment rooted in global competition and complex, strategic partnerships."

Read cites as an important component is excellent teachers who are knowledgeable, enthusiastic and, when relevant,

able to relate their research activities to their teaching. Other important components, he says, include: a stimulating cohort of students; a balance of passive (reading and lectures) and active (projects, production, performance) learning; good facilities and resources; and awareness and confirmation of the knowledge and skills being acquired.

"On what level does one define 'educational experience?' asks Allen. "Does it include the menu of services an institution wraps around its courses and programs to support a student's progress and needs? Is it a student's experience in a particular class from her interaction with faculty, classmates, course materials, and learning objects? Is it the student's measured growth in knowledge, skills, and abilities between the beginning and end of that experience? Is it a student's measured growth over a program of courses? I would argue that a quality educational experience includes all of these, as defined in some set of agreed upon metrics, however imperfect."



Bernie Luskin

Technology can serve as a powerful enabler of the learning experience, particularly for the new majority of students: the older, working adult student with working and family obligations as well as a non-traditional schedule and

outlook. Says Read: "By supporting the learning process and flexible learning, technology allows students freedom from the tyranny of time and geography."

Lombardi defines learning technology as simply the implementation tools for the work that higher education wants to accomplish. "Technology is always expensive, and its value is hard to predict. People should sell their stuff, see if it gets used, and watch markets emerge. Whoever figures out how to make YouTube, iPod, and Facebook useable technologies will win the war. Short term, however, there's lot of money to be made in specialized niche products that give gee-whiz value to standard educational products."

Learning technology can enhance not only the access to content, but also the interaction that takes place between students and faculty, and improve assessment through the use of data, reporting analytics and assessment portfolios, says Kelsall. "With the right information, faculty and other stakeholders can use this data to enhance the learning experience in a more systematic fashion than is possible if relying purely on in-classroom information. Educational technology is a tool; the effectiveness in the use of this tool requires training and experience."

Kuttler notes that as an increasing percentage of students opt to complete their educational programs online, it is incumbent on educators to "use the new technology tools effectively to promote student-to-faculty and student-to-student communication, to work collaboratively, and to engage in higher order skill development in areas like critical thinking."

Defining learning outcomes

Learning outcomes are, quite simply, what we want our students to take away from a particular unit of study, whether a module, a course, or a program. They are a defined set of learning objectives associated with an educational activity, the criteria to measure the success or failure of those objectives, and an assessment mechanism to measure the mastery of those objectives.

Learning outcomes can also be defined as a buzzword that means whatever the individual using it wants it to mean. For one group, it may mean an employable graduate. For another, it might mean someone who can go to grad school. And for yet another, it might define the ability to read and write and count. Outcomes are a function of purpose, and to focus on outcomes without understanding purpose is to create expectations that nurture government bureaucracy and promote an environment where some partially succeed, all partially fail, and the elite are the primary beneficiaries. So the question really becomes: learning outcomes for whom? And for what? It is not a "one size fits all" solution.

Clark points out that improving the clarity of expression of the learning outcome and making the teacher more capable of articulating the outcomes that s/he is expecting can improve both the student understanding of what is expected and sharpen the focus on the learning activities that lead to the achievement of the outcome. To what degree do institutions, programs, and individual faculty "connect the dots" between the goals of the educational experience at all three levels?

Learning technology can enhance not only the access to content, but also the interaction that takes place between students and faculty.

Allen points out that at an institutional or programmatic level, learning outcomes need to be established for what we want our students to have acquired by the time they leave with a degree or certificate. At the baccalaureate level, he says, learning outcomes seem to fall into six to ten broad areas (at least for those institutions that focus on outcomes): communication skills (written and oral); quantitative fluency; critical thinking; information literacy; technology fluency; scientific fluency; historical perspective; global perspective or cultural awareness; citizenship; and, of course, specific disciplinary knowledge. These outcome areas are the ones often advocated by regional accrediting agencies as well as some state regulatory commissions. Clark believes that high “value-added” in the academic experience is some measure of achieved outcomes related to initial educational “qualifications”. This includes: independence of thought, ability to work in conditions of uncertainty, critical and analytical capabilities, ability to work productively in collaborative or independent mode, and possession of ICT skills and information literacy skills to permit life-long learning.



Jolene Koester

With the great majority of its institutions autonomous and government funded, Read says universities in the United Kingdom see their primary objective as increasing knowledge and diffusing it throughout society. “They all would like to provide higher quality courses and better educated graduates. Unfortunately, they are under twin constraints of having

to enlarge their student intake on relatively fixed budgets, while having to maintain quality. That they have been managing to do this, more or less, is an indication that they have improved learning outcomes. However, there is a dilemma between tightening up efficiency and flexibility and maintaining the ability to take advantage of new technologies. There needs to be some freedom and willingness to innovate and take risks in the systems for HEI’s to be able to develop and try out new technologies and co-develop enhanced practices and processes.”

The old adage defines insanity as expecting different outcomes from the same processes. In like fashion, without clear measures and defined purposes, higher education cannot expect significant improvement in learning outcomes. Vague generalizations are one of the most effective tools in the academic kit for avoiding change.

Jolene Koester, president of California State University, Northridge, believes improvement will occur with specificity, through measurement or assessment, and in the public dissemination of those results. She also believes providing faculty with incentives can bring about positive change.

“Tuition-dependent institutions must evolve to more business-like models to maximize limited resources in increasingly competitive environments driven by powerful, for-profit entities,” says Lendo.

Devine says technology has enabled institutions to more effectively communicate with students, monitor their progress through the learning process, and open the door for increased collaboration between students and faculty for research. “Not only has it improved learning, but it also has opened up the marketplace. Non-traditional students who couldn’t afford to quit their jobs, abandon their families and move to another city to attend college can now

We reach diminishing returns on the investment in utility well before reaching the diminishing returns on the investment in quality.

improve their lives and engage in life-long learning.”

“We have to change the business model for

higher education, especially in the public sector,” adds Allen. “This is particularly true in the outcomes assessment area. Learning assessment in higher education is like a cottage industry. Every faculty member does it differently, according to their own judgment, interests, and personal experience. At least on a programmatic or institutional basis, we need to move to systemic, scalable approaches. We need to take advantage of the learning technology available to us now.”

The tradeoff between access, affordability, and quality

Does a high quality traditional college education cost more? In a word, yes. The reasons vary.

“Access is a function of who pays for the quality you want,” says Lombardi. “Is it necessary for an education to cost \$40K per student? No. But is it necessary that it cost \$10K per student? And if the student is poorly prepared, wants to study chemistry, or is interested in being where there is a high quality non-academic extracurricular life, then the cost will go

well beyond \$10K. There is a difference between quality and utility. A \$90K Mercedes is better than a \$20K Ford. But is it better for getting groceries? The issue of quality is a matter of cost. The issue of utility is a matter of cost. But they do not cost the same. We reach diminishing returns on the investment in utility well before reaching the diminishing returns on the investment in quality.”

Depending on how one defines quality, it can be improved at a reduced cost through the use of technology. While technology has been used to improve the administration of the learning process, there is less evidence that its use to improve the delivery of learning has significantly increased. And while technology may enable the delivery of some forms of utility at lower cost than traditional education, institutions will need to employ high cost technology in order to achieve a higher quality educational product.

In describing the challenge, Allen also shares an analogy from the automobile industry: The difference between delivering a high quality, machine tooled, custom-made automobile to the few who can afford one, as opposed to the basic, but still high-quality vehicle that’s reasonably customizable to a mass audience. It’s the concept of mass customization that is only made possible through the use of technology.

“What I am saying is that the education industry has the opportunity to do the same as the automobile and other industries if we can give up the paradigm that a college education is only possible if one goes to an ivy-covered school in a little New England village for four years out of high school, and that’s it,” he says. “It was a great experience then, and still is, but only for the select few who get the opportunity. Twenty-first century society needs much more.”

Kelsall says one of the often undervalued benefits of technology is the improved faculty and student efficiency that is obtained through its use. This improved efficiency, while difficult to quantify, can be substantial, and can result in an improved return on investment. Kuttler concurs, pointing to activities like the creation of media-rich RLOs (reusable learning objects) through projects like Merlot, which can enrich both interactivity and the understanding of complex concepts.

Roadblocks to progress

So what's standing in the way of more improved methods of teaching and learning? Resistance to change on the part of faculty and administrators? The cost of investing in development learning objectives and technology tools to improve learning outcomes? Fear of business process redesign in a risk adverse environment? Perhaps all of the above.

A primary obstacle to progress, says Allen, is belief in the outdated higher education paradigm that learning will naturally take place when the brightest students are put in a classroom with the best faculty, surrounded by ample resources. It's an approach that may work in some cases, he adds, but won't meet all the needs of the present century.

"The other problem for investing in learning outcomes is that it is complex and expensive to do," says Allen. "There are no silver bullets, no one size fits all, and there are costs. Institutions that are trying to do it are just now finding out how difficult it is. The culture shift necessary to do it in most higher education institutions alone is enormous. It requires getting traditional faculty to let go of cottage industry assessment practices to move to systems in which others may be involved in assessing how effective they have been as teachers. That

hits raw emotions and causes much of the resistance."

Read adds that it may be more effective to use technology to remove, as much as possible, the administrative burden from teachers and allow them to do what they do best, which is help students overcome mental blocks, understand what they are learning, and become comfortable with the language and practices of the discipline or profession. These characteristics, he says, are what students value and Internet communications technology is generally not capable of providing.

The role of technology as change agent

There is no question that technology is having a profound change on teaching and learning. What is the impact and what are its long-range implications?

The confluence of technology, including access to information and the use of technology to reach new markets, is forcing traditional higher education to address student needs.

Media is more than a stimulant for social change, says Luskin. Media is social change. It is transformational in that it changes the method by which learning takes place.

"The confluence of technology, including access to information and the use of technology to reach new markets, is forcing traditional higher education to address student needs," says Kelsall. "Further, the public fiscal crisis is resulting in scrutiny and justification of public investment in education. The confluence of these events: Technology, improved access to information, seeking new markets, increased competition and the demand for public justification of education investment are all impacting higher education transition."

Read says increasing globalization and growing competition from China and India are forcing the United Kingdom to strengthen its knowledge base through continued research and the development of creative and high-tech industries. The labor market is also demanding change as a result of the increased outsourcing of manufacturing and services.

Technology has become a true enabler of performance monitoring, says Devine. Contrary to the fear that the increasing use of technology will make learning impersonal, the opposite has occurred. Its application has allowed learning to become more individualized, whether in

Technology should enable scale and eventually lower the per-unit cost of education. It also can improve access, help students learn better, and help faculty and institutions assess their effectiveness.

the classroom or through distance learning. It has largely removed the concept of higher education as place and has made learning a 24x7 and lifelong process.

Are these changes in higher education making the transition to a new learning model more imminent or radical than in the past?

Absolutely, says Allen. "This transition is being brought about by raising expectations of the public at large, their hope for a better future through an education, a belief that cuts across economic, ethnic, and cultural differences. Add a global economy that drives the off-shoring of jobs in a 'flat world,' and a new view of learning that sees it as something that takes place over a lifetime rather than in a short period of adulthood. All these factors together have resulted in a need, a demand for education that is unequalled and unfulfilled. Fortunately, the explosion of information and communication technology (ICT) over the past decade changes

the equation for scale, cost of delivery, and access to higher education. It provides us an opportunity to meet the need for higher education as never before, if we are clever enough to figure it out quickly."

Investing in technology

Is investment in educational technology justified? Yes, provided it supports the improvement of student learning outcomes and is not implemented for its own sake. So, to evaluate and recognize the academic return on technology, baseline learning outcomes (non-technology enabled) should be identified and compared against student learning outcomes derived through technology-enabled delivery. If so, this suggests the determination of the value of educational technology is linked to the establishment of clear learning objectives and expected outcomes. Technology should enable scale and eventually lower the per-unit cost of education. It also can improve access, help students learn better, and help faculty and institutions assess their effectiveness.

"Technology is only helpful if we know what we want to do," says Lombardi. "The role of technology is to help people figure out better ways of doing what it is they want to do. But if they don't know what they want to do, or if the technology just adds cost and no efficiencies or improvements, it will be gee-whiz value, but not real or lasting value."

"The appropriate use of technology can increase revenue by accessing new markets, improving efficiency and effectiveness of educational resources, and gather and analyze data," adds Kelsall. "This data can be used to reduce the cost of regulatory compliance. Increased revenue while improving operating efficiency results in improved education economics."

Further, data gathered through technology can be analyzed to determine behaviors that improve learning outcomes.”

Investment in technology can come from a variety of sources; government funding; endowments; higher tuition and fees based on the belief that the technology produces higher utility or quality; and new savings from the technology itself, which is rare. Some institutions have succeeded in reallocating savings from back-end technology services realized through efficiency. As the cost of hardware, software and some administrative services comes down, those savings can be re-invested in learning technology.

“Educational institutions have to do a better job of carving out and protecting funding in their annual budgets that will be used solely for strategic investments in learning,” adds Allen. “Private industry does this, of course, and it’s usually called R&D. Whether the college or university is public or private, strategic investment money needs to be taken off the top of the institution’s budget at the beginning and before budgets are given to schools and departments to develop. Institutions have the ability, if they have the will, to do some investment of their own. That’s a function of leadership.

It also appears to be a function of mission focus. Clark says that at the Open University it is a given that the institution must allocate for investment in technology to support its distance delivery approach. Open U has chosen to, in essence, pool resources by investing in open source software. Clark adds, “The investment into ICT

for a distance education outfit is a must, but it has to be used within a framework of pedagogic analysis that guides its use and shapes the expected learning outcomes.”

An additional source of revenue for investing in technology is the development of partnering relationships between academic institutions and private industry. Care must be taken, however, in selecting strategic partners; the cultures of industry and academia are so different that “pooling” efforts, says Lendo, can become counter-productive.

“Vendors sell generic applications while universities and colleges want specific applications that help them differentiate their products,” adds Lombardi. “Vendors often sell products that require high costs to implement, and institutions, while buying these products, do not believe the vendors care about the users. Vendors are interested in extracting high margins from very low-margin university and college businesses. This lack of convergence in business models makes for poor relationships.”

“There has to be a willingness for both to work together on projects that will facilitate the provision of educational services, the delivery of curriculum and student learning,” says Allen. “I think more attention needs to be given to the student life cycle and the particular needs of the student in each phase of that cycle that could be facilitated through the use of new technology. The technology industry can’t do this in isolation from educational institutions. It has to be a true partnership.”



Summary of Learning Impact 2007 Conference



Vancouver, Canada
16-19 April 2007



Summit on Global Learning Industry Challenges

The following panel discussions were led by the individual contributors identified below.

What are the Successes of Open Initiatives in Education So Far and What is Coming Next? What Business Models are Working and Why?

- Ted Dodds, CIO, University of British Columbia
- Dr. Joel Greenberg, Open University's Director of Strategic Development, Learning and Teaching Solutions
- John Norman, Director of the Centre for Applied Research in Educational Technologies and 'Head of e-Learning', University of Cambridge and Sakai Board Chair
- Joel Thierstein, J.D., Ph.D., Associate Provost, Rice University, Executive Director, Connexions

Exploring Best Practices in Government Support for ICT

- Mr. Lawrence K. Grossman, Lawrence K. Grossman, Co-Chair of Digital Promise, former president of NBC News and PBS
- Sarah Porter, Head of Development, Joint Information Systems Committee, United Kingdom (JISC)
- Jonathan Shennan, Manager, Enterprise Architecture, New Zealand Ministry of Education
- Mr. Tae-Myung Han, Executive Director of Educational Information Center, KERIS

Performance vs. Prestige: Does the Work of the Spellings Commission Signal a New Era of Access, Affordability, and Accountability? Why or Why Not?

- Dr. Paula E. Peinovich, former President, Walden University
- Dr. Bernard Luskin, Executive Vice President, Fielding Graduate University, Director, Media Psychology Program, Founding President of Coastline Community College, including KOCE, TV in Orange County California, Orange Coast College and Founding Chancellor of Jones International University
- Dr. Arthur J. Lendo, President and Professor of Management, Peirce College, Philadelphia, PA

Will Technology Enable Higher Education to Solve the Access-Affordability-Quality Tradeoff?

- Dr. Nicholas H. Allen, Provost and Chief Academic Officer, University of Maryland University College
- Daniel J. Devine, CEO, Compass Knowledge Group
- Dr. Paul Clark, Pro-Vice-Chancellor (Learning and Teaching), The Open University
- Kendrick McLish, Vice President, Product and Marketing, eCollege

The Evolving Business Model(s) of Learning Content: Does Free or Ad-Supported Equate to Better? Why or Why Not?

- Ray Henderson, Chief Products Officer, Angel Learning
- Sebastian Vos, Vice President of eEducation, Elsevier
- Jim Behnke, Pearson Higher Education's Chief Publishing Officer
- Dr. Mark R. Nelson, Digital Content Strategist, National Association of College Stores



Program Track Summaries

During Learning Impact 2007 attendees were invited to participate in four Program Tracks running in parallel. Each track offered a different theme with presentations from IMS GLC member organizations about the current state of the art and best practices in products, services, and trends. The Program Tracks included:

- What's Next in Learning Systems
- What's Next for Digital Learning Content
- The Academic Enterprise: Assessment, Analytics and Student/Institutional Performance
- Progress in Open Source, Open Content, and Open Services

A summary of each program track follows.



What's Next in Learning Systems

Introduction

Challenge Question: What have been the primary impacts of instructional, learning, and course management systems to date and what new innovations will become mainstream in the next two years?

The executive panel sessions at the Summit on Global Learning Industry Challenges included representatives from several of the largest distance learning providers in the world including the Open University UK and the University of Maryland University College (UMUC).

Participants in the learning systems program track at the LI 2007 event were tasked at defining the current state-of-the-art and establishing a way forward for the next 24 months. A series of perspectives from Open University UK, Sakai, Wimba, Tegrity, Blackboard, Ucompass, Giunti Labs, and ANGEL Learning were provided to prompt the discussions. Further perspectives were presented as part of the Summit on Global Learning Industry Challenges in which a panel of experts discussed the question of whether technology can enable education providers to solve the access-affordability-quality tradeoff.

The Context

During one of the conference keynotes and the Summit on Global Learning Industry Challenges, Bernie Luskin of the Fielding Graduate University, referenced the data from the Sloan-C that over three million students involved in post-secondary degree programs in the U.S. took at least one fully online course, which is

nearly one in every five students, in the Fall of 2005. Data from a variety of Sloan-C studies and others has indicated that in the postsecondary segment, there is no substantial difference between outcomes in online and traditional classroom settings, assuming use of best practices are adhered to. The most recent National Survey of Student Engagement report included a finding that distance learners engaged more often in deep learning activities than campus-based students. In addition, course management systems are deployed in nearly all U.S. postsecondary institutions to support instruction in a variety of ways. In short, Internet Assisted Learning is already a staple of U.S. higher education.

During the program track, Joel Greenberg from Open University UK asked the question, "Are we there yet?" Well, as indicated in the Luskin keynote, the executive panel sessions, and a white paper distributed to conference attendees developed by educational researcher and IMS GLC CEO, Rob Abel, entitled, *What's Next in Learning Technology in Higher Education?*, it appears that over the last ten years the Internet has enhanced access to resources that support higher education, and this has improved and increased the scale of use of distance learning in the post-secondary segment. This same feature of course management systems (also called learning management systems and virtual learning environments in some regions) is useful in the on-campus learning environment primarily as a convenient communication hub where materials and discussions that support learning are organized in a way that facilitates more flexible use of time and space.

Therefore, considering the state of the key parameters of access, affordability, and quality, learning technology to date has had the most influence on access. The required resources to support education, including interaction with instructors, instructional materials, interactions with peers, plans of study, and the credential granting institutions themselves, are all more readily accessible. Technology has improved efficiency for the learners, removing access barriers of space and time.

It was generally agreed that the environment in which education occurs is an important factor. Depending on the needs and objectives of the learner, different types of environments can contribute to the 'quality' and success of the educational experience.

In general, technology has not radically changed *what* the learning activities are but rather *how* they are accomplished.

For instance, for students having the need for socialization in order to develop group skills, a robust face-to-face experience may be a critical factor in quality. For other students who may already have these skills but lack the time to assimilate knowledge, a distance program that saves the time associated with campus activities may produce a higher quality experience. However, in general, technology has not radically changed *what* the learning activities are but rather *how* they are accomplished.

Technology has not radically impacted the affordability of the educational experience either in that the costs of most of the resources supporting the educational experience have not been radically changed. However, since the overall cost of access (in terms of efficiency) is lower, quality and access are no longer as difficult to achieve simultaneously as they

once were when access was place and time dependent. Technology has been slow to show it can help improve the efficiency of most faculty, teachers, or instructors.

The State-of-the-Art

Bob Alcorn from Blackboard discussed how the course management system has become the most mission critical information system in higher education in terms of the essential 24x7 operation and the most used of any system among faculty and students. It is interesting to note that five years ago the notion of 24x7 support for these systems was considered a daunting challenge. The ability to keep a very large scale course management or portal environment operational on a global basis 24x7, while impressive, is no longer pushing the envelope of innovation: it is the expectation. The emphasis today, in contrast, appears to be on how the learning environment is used. Several extremely large-scale and impressive deployments of learning platforms were LIA Honorable Mention winners: *Desire2Learn at Office of Open Learning, University of Guelph*, *ANGEL at Penn State*, and *Meeting the Needs of a Global Student Body with Jenzabar at Park University*.

Between the LIA finalists showcase and the program track, a dizzying array of innovations was presented. A theme of many presenters in terms of what is coming next featured the reality of rapidly emerging and pervasive technologies that may have implications for support of education and instruction.

Blackboard emphasized the need to integrate results, such as gradable events and student portfolios, from the various innovative technologies, in order for their use to be of *strategic* use in the learning

enterprise. John Norman of University of Cambridge and Sakai indicated that Sakai is working to support the new IMS GLC Enterprise interoperability standard to enable real-time exchange of information between course management platforms and administrative systems. Norman also discussed what seems to be an important trend of integrating new tools to facilitate scholarship, termed a 'scholar's workbench'. Sakai also demonstrated at the conference the use of the IMS GLC LTI (Learning Tools Interoperability) specification for enabling portlet integration into Sakai.

The potential opportunity to exploit the ease with which video can be produced to enhance the instructional experience was discussed by Tegrity. Tegrity's LIA Bronze winner (*Tegrity Campus 2.0 at Saint Mary's University*) featured the ability for faculty to make searchable lecture recordings automatically available online without having to change how they teach. Interestingly, the approach used by Tegrity also has been proven to address the mission criticality issue, with the platform being used to rapidly support moving to a distance mode when a campus was forced to shutdown due to Hurricane Katrina.

Wimba discussed new approaches for integrating collaborative 'Web 2.0' features into the learning environment, including instant messaging, wikis, digital world features (identity, emotions), blogs, and other collaborative tools. Wimba's LIA Bronze winner, *Wimba's Course Genie: An Authoring Tool for Common Cartridge at Langside College*, featured IMS GLC's new digital learning content standard, Common Cartridge, which facilitates integration of learning tools, assessments and discussion forums.

Ucompass introduced integration of learning tools with the user's desktop environment, making the use of learning tools more intuitive. In addition, Ucompass demonstrated a prototype application interface and web service to launch and "play" learning applications in the new Common Cartridge standard format.

ANGEL Learning discussed a host of new features including full incorporation of Common Cartridge into the next release of ANGEL, the launching of a new digital world in Second Life to support learning, and full support of the latest version of the IMS GLC Question and Test specification, enabling faculty and teachers to more readily find and use test items. ANGEL also introduced new accessibility features, including a new wizard to create learner profiles that enables use of the IMS GLC Access for All accessibility specifications.

Open University UK discussed several innovations that they are targeting for current and future development. Open U has become an important contributor to Moodle enhancements, therefore, the Open U work may portend some future evolution of the Moodle platform. Open U brought to LI 2007 a half dozen courses from its new *OpenLearn initiative* (winner of a LIA Platinum) in the new Common Cartridge format. These were demonstrated to work in Sakai, ANGEL, and Ucompass platforms. Open U is innovating with respect to using the learning management system for 'activity-centric' learning.

There was much speculation at LI 2007 that the IMS GLC Learning Design specification could be coupled in some way with Common Cartridge to specify sequencing of learning activities, including online

and in-class, for export and import. Open U also reinforced the previous themes of improving accessibility via IMS GLC Access for All and incorporation of wikis and blogs into the learning environment. Open U is also grappling with something of major importance to institutions that publish online and in print, which is the inclusion of document management capabilities based on open standards. Elements of the importance of incorporating document management into the learning environment were reiterated by the selection of LIA Gold winner *HarvestRoad Hive & the Resource List Management System at the University of Western Australia*.

Fabrizio Cardinali of Giunti Labs described the need to move beyond traditional pedagogical content and self-generated content to personalized learning based on competencies, performance, and skills management. Giunti Labs presented an innovative approach to learning in context using mobile devices with GPS (Global Positioning System) to activate learning materials based on location, such as when touring a museum. Several presenters mentioned the pervasiveness of mobile devices in the hands of students. Giunti introduced the term “personal ambient learning”



and “blended publishing” to capture the essence of Cardinali’s earlier characterization toward a “Learning 3.0”. Giunti captured a LIA Silver with *Using Giunti*

Labs learn eXact LCMS at the UK NHS and Royal College of Radiologists R-ITI Project.

The Challenges & Opportunities

A key point of Alcorn (which he characterized as ‘from island to archipelago’) was that to enable new innovations greater interoperability, integration, and federation of new capabilities with established platforms, transparent to the many users who are used to their now familiar environment, is going to need to be a key focus going forward. The need to incorporate ideas and tools from the emerging web world into an integrated learning experience that is easy to use for faculty/teachers and strategic for the institution present both an opportunity and a challenge. The relative stability of the course management platforms in the higher education segment and the emergence of easier and more pervasive ways to author and collaborate via the web seems to portend, potentially, a new phase of integration into the learning enterprise. It is clear that although many of these new capabilities will be ‘tested’ with respect to instructional use in a non-integrated way (for instance, see the high ratings of Wikipedia, iPods, and Google in the February 2007 IMS GLC LearnSat Report <http://www.imsglobal.org/ltst/ltsttt.cfm>), the pervasive view at LI 2007 is that these capabilities will be brought into an integrated learning experience.

The executive panel sessions at the Summit on Global Learning Industry Challenges highlighted what some specific opportunities for application of technology to enhance the quality of the learning experience. And clearly one emphasis for the future is enhancing the quality of learning that can be achieved at reasonable cost. The areas of opportunity highlighted were:

- Enhancing student interaction
- Improved student study tools
- Assessment, especially formative assessment
- Improved resource searching and evaluation of online resources

Clearly, the presenters in this program track appear to be largely in sync with the views expressed by the ESC on the strategic investment in technology. It is also fascinating to note that the top ranked LIAs went to entries that had made outstanding progress in these areas. In addition to those already mentioned:

- LIA Platinum winners *ETS Criterion Online Writing Evaluation service at Farragut High School, Knox County Public Schools* and *Cyber Home Learning System of Korea* both exemplify improved study tools with formative assessment.
- LIA Gold winner *The California State University (CSU) Math and English Success Websites and the CSU Fresno Fast Forward Program* exemplifies using self-assessment to ascertain performance to college standards.
- LIA Silver winner *Microsoft Research ConferenceXP at Australian School of the Air and Classroom Presenter at University of Washington* exemplifies collaborative learning both at a distance and in the classroom.

Influence on IMS GLC Initiatives

From the perspective of IMS GLC the call to action includes the following:

- Content management, document management, resource lists, and repositories based on standards; including clarifying best practice for effective adoption. This is a potential topic for the IMS GLC Learning Object Discovery and Exchange workgroup currently under formation.
- Incorporating interoperability of a broad set of collaborative learning tools into the newly chartered Learning Tools Interoperability (LTI) workgroup.
- The importance of defining quality of the overall educational experience and how technology can support and enable higher quality. This is a potential topic for the Technology-Enabled Flexible Learning workgroup currently under formation.
- The importance of tying assessment into the learning interactions continues to grow and it is clear from this track and the academic enterprise that there needs to be greater integration between gradable events and other evidence of learning from learning platforms and tools and the enterprise administrative systems. Therefore, taking the next steps to integrate IMS GLC Question and Test Interoperability (QTI) with the latest Academic Enterprise work in IMS GLC is key.



What's Next for Digital Learning Content

Introduction

Challenge Questions: What will predominate the future of educational content and why: recorded lectures, supplementary cartridges, web sites, web searches, or adaptive learning support systems, or something else?

Daniel Rinn and Tom Grega of Thomson Higher Education chaired this session which delivered a number of informative perspectives on the future direction of digital learning content (see the list of presentations below). Throughout the session, four key themes emerged; institutional issues, innovative tools, understanding end-users and system architectures. The coverage of these themes is summarized below, followed by a list of the key *what's next issues* that emerged.

The Context

The value of technology to support and enhance learning often is intricately tied to the quality of the presentation of the learning materials. While at many points in the last ten years we have heard the famous cry "content is king", it has not been a straightforward matter to adapt web-based or web-delivered content to the needs of learners. We have also relearned a lesson known for a long time: most content by itself does not sufficiently support an educational experience. This is why proliferation of libraries by itself did not change the need for institutions of learning and so forth. For this reason, high production value content that succeeds in the marketplace has been rare, with simpler content that is better conceived to be valuable in an

instructional context has proliferated. As a result, content providers and authoring tool providers have the challenge of fitting into a variety of accepted instructional creation and delivery modes.

The State-of-the-Art

Institutional Issues. As online delivery of education has become a mainstream activity for institutions, the expectation of what the technology should be capable of achieving has similarly risen. Features once on the wish list for the future are now setting a new bar for suppliers to meet. Learning content is now expected to be:

- Capable of being personalized
- Assessable, including being adaptable for individual remediation
- Gradable (measurable)
- Portable
- Interoperable
- Suited to the construction of hybrid courses, comprised of lecture notes, services, learning content etc. to augment classroom experience

Daniel Rinn described how Thomson Higher Education are working with Sakai on their *ThomsonNow* offering to address these very issues, building on a number of IMS GLC standards. Tom Grega went on to highlight how learning systems are increasingly expected to integrate with the institutional infrastructure to ensure security and protect student privacy. He referenced work with Sakai and Unicon to achieve single sign-on authentication with the Thomson Homework management system and the need to adopt a

federated identity management service to meet institutional requirements on privacy protection.

Bryan Eldridge of Giunti Labs focused on the problems institutions can experience attempting to integrate a learning system with the broader institution and achieving a real cost benefit. Bryan stated that these issues often arise from a general lack of coordination across the enterprise with little understanding of how systems actually need to interoperate. This is compounded by a dearth of available case studies by which implementers could learn from the experience of others. But perhaps few would be sufficiently brave to publish the full facts of a costly nightmare project (inevitably, such cases might be the most illuminating).

Giunti Labs has devised a methodology (the *exact Method*) which institutions can follow to work through these issues and encourage an ongoing process of planning, tracking, and improvement to achieve continuous improvements to institutional learning management systems. Giunti Labs received a LIA Silver for the work it had done with its *Learn eXact LCMS for the UK NHS on the Royal College of Radiologists R-ITI Project*.

Greg Flesher described how Elsevier is moving from being product focused to being more consultative, offering a mix and match of products and services to meet the needs of the institution. Their "Evolve" Solutions products are living up to their name—evolving to provide solutions for institutions creating the virtual university. But equally important are the services to back these up. Faculty need training and 24/7 support in order to be effective in this new regime.

Core print products are increasingly being complemented with digital resources such as simulations, case studies (e.g.,

for the medical arena), and diagnostic testing and evaluation tools offering remediation. The IMS GLC Common Cartridge (CC) standard offers a solution for distributing these resources. CC combines interoperability specifications enabling content providers, developers, and users (faculty/teachers) to access and distribute these resources without having to conduct significant conversion activities prior to distributing or installing content. This is of great value in the context of integrating LMSs within the institution or at the system level as the CC standard provides the ability to exchange institution-specific or vendor provided content packages among disparate LMS systems, reducing the cost required to develop, maintain, manage, share, and house/store these resources. It also provides access to quality content resources that occurs as vendor-provided and faculty developed, scrutinized, and approved resources accumulate.

Innovative Tools. Chris Moffatt of Microsoft introduced the *ConferenceXP Research Platform*, offering high quality broadband video conferencing and application sharing. The platform harnesses the Classroom presenter, Conference XP client and Microsoft OneNote applications and appears to build on the premise that, far from eliminating student-to-student interaction, online learning needs to be augmented with collaborative tools that offer communication at least as rich as face-to-face interactions. Microsoft Research took a LIA Silver for its *ConferenceXP tool used by the Australian School of the Air and Classroom Presenter used at University of Washington*. Microsoft also received two Honorable Mentions, firstly for the *Microsoft Learning Gateway at Shireland Language College* and then for *Microsoft Partners in Learning, the Ministry of Education, Thailand*.

Ed Mansouri of Ucompass.com gave a demonstration of Enrich, a content enrichment tool that can be used potentially even with legacy content hosted within an LMS/CMS. The Enrich tool exploits tags used to embed javascript for adding enhanced features to the content. Content can be uploaded to an Enrich server so that the desired tags can be applied automatically. He then demonstrated an Enrich Common Cartridge Server, able to play a cartridge directly from the source zip at the server end via a flash client on the desktop.

Understanding End-Users. Andrew Shelffo of Jenzabar focused on the changing nature and attitudes of learners. Typifying the older generation as digital immigrants, then the younger generation are perhaps more digital natives, having grown up with the technology and for whom it is more intuitive. For the younger generation, their sense of community embraces much more online interactions and they happily consume online content but, they read fewer books. Andrew suggested that institutions need to rethink how they present to learners their learning community.

Alan Wolf of the University of Wisconsin gave some useful insight into how faculty search for and use digital resources. The conclusions drawn were based upon a survey of more than 4,500 academic staff across 250 institutions. Whether a general search engine or a collection was used depended upon the nature and intended use of the material sought:

- Gathering information for teaching (content)—search
- Pedagogical information—collection (except when seeking syllabi—search)
- Primary source material that can be integrated into a course—collection

Alan suggested that when the individual has an organizing schema, then they will search. When they do not, they seek a collection of materials, often offering peer review and additional information on use of the material. Interestingly, animations and simulations were the least used of the various digital resources available, even though they have great potential for communicating processes and concepts. Perhaps digital natives entering the teaching profession will be more at ease with the use and creation of these materials in education?

System Architectures. Peter Lamothe of HarvestRoad covered the evolution from the stand-alone LMS to its integration with a dedicated Learning Content Management System and the emergence of the institution-wide repository-enabled model. Moving to the present day, Peter advocated the adoption of a Service Oriented Architecture (SOA) to construct an enterprise service bus, capable of achieving the integration of learning systems into the wider institution and its existing services. Peter further proposed adopting federated search as the means of facilitating cross-repository access. HarvestRoad were awarded a LIA Gold for their *Hive & the Resource List Management System at the University of Western Australia*.

George Ward of California State University also proposed an SOA approach for the institutions Academic Technology eFramework, the first instantiation of which will be the CSU Digital Marketplace.

He predicted the need for a new generation of applications for use by faculty (e.g., syllabus builders, portfolio managers, ...) which will need to plug into the institutional infrastructure. However, here a layered SOA model is proposed, comprised of desk-top clients calling educational applications, which sit over com-

mon services, which in turn sit over back-office systems and federated repositories.

With respect to students, there is a perceived need for new collaborative applications, along with automated system remediation and a general move toward self-paced learning.

The Challenges & Opportunities

Whilst the main focus of the session was digital content, the discussion was allowed to roam when it came to identifying the challenges and opportunities now before the learning community. Recognizing that learning systems have evolved from being stand-alone, discrete applications, to themselves being increasingly composed of multiple software components, and which also have to interwork with the wider institutional infrastructure, there was a keen interest in SOA and the Enterprise Bus to help educational institutions manage this complexity. But equally, it was stressed that this complexity needed to be transparent to the user and single sign-on authentication should now be the norm, not the aspiration. There was also felt to be a need for a greater emphasis on identity management to protect students.

Expectations for content advances were centered around the need to be able to personalize learning and provide timely adaptive assessment for remediation. There was expectation that greater use could be made of animations and simulations in online learning, but also recognition that these are currently very expensive to implement. The solution proposed was the development of suitable authoring tools for the next generation of teachers to speed up creation of animations/simulations.

But, learning is not just about more or better content. Many felt a need for richer collaborative tools, able to offer greater support to the virtual learning community and there was a call for the whole community to embrace virtualization as a vehicle for online social networking.

Interestingly, it was suggested that perhaps the most effective way to improve learning provision generally, would be a greater exchange of knowledge and experience amongst practitioners. Publication of case studies of experiences working with the technology and best practices on sourcing, implementing and operation of technology would enable the inexperienced to learn from the experts and generally foster good practice.

Influence on IMS GLC Initiatives

- IMS GLC has embraced SOA in its web services approach, but this work will need to be periodically revisited to keep it abreast of new developments in the field.
- Content Packaging and Common Cartridge should be examined for enhancements that will enable personalized learning to be more readily constructed from available content.
- Adaptive assessment suggests the need for a harmonized sequencing mechanism across content and assessments (i.e., QTI).
- The newly formed Learning Technology Advisory Council (LTAC) within IMS GLC is in an excellent position to publish case studies of experiences with the technology and define best practice on sourcing, implementing and operation of technology.
- Single access integration across a myriad of emerging tools.



The Academic Enterprise: Assessment, Analytics, and Student/Institutional Performance

Introduction

Challenge Question: What are the most important metrics by which to measure quality and success of courses or programs? What will be the role of formative and summative assessments and analytical tools?

Participants in the assessment, analytics, and student/institutional performance program track at the LI 2007 event were tasked at defining the current state-of-the-art and establishing a way forward for the next 24 months. A series of perspectives from Blackboard, Respondus, Desire2Learn, Oracle, SunGuard Higher Education and Pearson Education were used to prompt the discussions. A further perspective was presented as part of the Summit on Global Learning Industry Challenges in which a panel of experts discussed the work of the Spellings Commission and its implications for access, affordability and accountability in U.S. Higher Education. The early nature of this work was also reflected in the Learning Impact Awards (LIAs).

The Context

During the Summit on Global Learning Industry Challenges, Nicholas Allen of the University of Maryland University College, provided an overview of the Spellings Report. In September 2005, Margaret Spellings (U.S. Secretary of Education) convened a Commission charged to examine vital issues central to quality Higher Education, namely: accessibility, affordability, accountability and quality. The Commission's report was released in October 2006 with its focus as compli-

ance, conformability and comparability within Higher Education (HE).

Amid a variety of findings the most pertinent to our discussion is "Because data systems are so limited and inadequate, it is hard for policymakers to obtain reliable information on students' progress through the educational pipeline. This lack of useful data and accountability hinders policymakers and the public from making informed decisions and prevents higher education from demonstrating its contribution to the public good." As a consequence of identifying the lack of suitable metrics the corresponding recommendation by the Commission is that "To meet the challenges of the 21st century, higher education must change from a system primarily based on reputation to one based on performance".

While the Spellings Commission is solely concerned with the U.S. similar exercises have been undertaken around the World. In June 1999 the European Union announced the Bologna Declaration, to put in motion a series of reforms needed to make European Higher Education more compatible and comparable, more competitive and more attractive for European citizens and for citizens and scholars from other continents. In Australia, the Commonwealth Government introduced the Institution Assessment Framework (IAF) in 2004. The IAF produces an across-the-board assessment of institutional achievements based on quantitative and qualitative data from universities and external sources and includes quality outcomes for systems and processes in teaching and learning.

Therefore, it is clear that compliance, conformability and comparability within HE are worldwide issues. The problem is compounded when we need interoperable technology solutions that cross national boundaries to reflect the growing multinational reach of HE Institutions.

The State-of-the-Art

Neil Allison from Blackboard identified, with the other speakers confirming, the starting point when considering assessment as a problem with three levels: the Course which reflects a topic of study; the Program in which courses are combined; and the Institution where the teaching aspirations are reflected in the nature of the Institution. These levels are tied together using target outcomes which drive the creation of the programs and courses and against which performance is measured through achievement or otherwise.

If Learning Outcomes combine to thread the three levels together then appropriate measurement is essential. We can use direct measures, such as tests or indirect measures such as course evaluations. But as David Smetters of Respondus stressed, the issue becomes one of 'quality of data'. By quality we mean is the data valid and reliable; are consistent measures being used; do we have sufficient data to be statistically meaningful; are enough courses, programs and institutions providing data; and are enough fac-

ulty participating at the course level? Smetters also reported that over 90% of U.S. HE Institutions have course management systems but less than 10% of all HE courses deliver assessment using these systems.

So what do we conclude? We understand the problem and we have technology that can help us but we have not yet enabled faculty to use it. The Spellings Commission identified that there is resistance to a culture of inquiry and this theme was further developed during Kenneth Chapman's presentation of Desire2Learn. He identified some of the key concerns from faculty including heavy workloads and insufficient time to re-design courses to take advantage of the available technology; the limitations of the current one-size-fits-all approach from technology;

and, most significantly, lack of tools to track and organize learning outcomes across an Institution. Eric Bassett of Sun-Gard Higher Education provided an alternative perspective that balanced the tension between the expense of accountability

and the affordability of access. Technology is essential to establish that balance but it is not sufficient. A culture of performance must be established and it is within such a culture that technology can enable change.

Our speakers showed how technology currently available could be used to support various assessment activities and how these can be used together to start



to realize some of the Spellings Commission's recommendations, including:

- The Blackboard Outcomes System enables an institution to coordinate manage the assessment process within the classroom, at the program level and for the institution as a whole. The focus is on usability by faculty to enable them to embrace a culture of inquiry.
- Respondus showed how their assessment tools can be used to author and manage formative and summative assessments. These assessments can be integrated with a wide range of content and leading management systems and other third party tools and so use the Respondus tools as an interoperability bridge. The application of *Respondus 3.5 at the University of Alberta* was a LIA Silver winner.
- Oracle described how their Campus Solutions Warehouse is used to provide an 'Admissions and Recruiting Mart', a 'Students Records Mart' and a 'Students Financials Mart'. Together these can be used as a database of various metrics of direct and indirect measurement for course, programs and the institution.
- Desire2Learn presented their popular 'Design Process' add-on that supports the definition of outcomes in terms of competencies, learning objectives and activities. This is closely linked to assessment and enables data to be aggregated and made available to other applications. This approach for the *Office of Open Learning at the University of Guelph* received a LIA Honorable Mention.

The significance of 'quality of data' and the difficulty in obtaining and analyzing such information was reflected in the LIA

Platinum winners *ETS Criterion Online Writing Evaluation service at Farragut High School, Knox County Public Schools and Cyber Home Learning System of Korea* both exemplify improved study tools with formative assessment. In both cases, the collection and depth of analysis of the assessment data was exemplary which reflected the capability of the systems to supply the raw data.

The Challenges & Opportunities

So, we've established that the problem is not just one of technology. However, the limitations of a technology always mask the people issues. So, what are the technology-based pain-points that we need to address as soon as possible? A starting list includes:

- Tools, applications, and systems that enable the definition of outcomes in terms of competencies, learning objectives and activities and where all of these can be defined at any level and shared within parts of an organization. Different tools need to be able to process and manage the same information.
- Tools, applications, and systems that enable the collection and analysis of quality data that can be used to evaluate assessment at the course, program and institutional levels. These tools need to be able to manage the relationship of the outcomes and these different levels and to create the appropriate reports.
- Tools, applications, and systems that support direct and indirect measurement of assessment for courses, programs and institutions. Both formative and summative direct measurements required. More importantly, indirect measurement of the usage and suitability of learning con-

tent is essential including student/student, student/instructor and instructor/class interactions.

- Tools, applications, and systems that support the lifecycle for performance improvement. This includes the ability to discover, prioritize, re-design, pilot, assess, adjust, scale, portalize and monitor all aspects of the assessment process for courses, programs and the institution.

Influence on IMS GLC Initiatives

From the perspective of IMS GLC the corresponding activities to support market development are to:

- Improve and refine the Question & Test Interoperability (QTI) specification—the QTI specification has wide adoption, particularly for formative assessment. The latest version, QTI v2.1 (available to IMS Members now but publicly in late 2007), addresses the issues of the design and delivery of summative assessment, and incorporates the IMS Content Packaging to support a wide range of meta-data associated with the items and assessments for outcomes, learning objectives and activities.

- Create a service to support the exchange of enterprise-wide outcomes information—the new Enterprise Services v2.0 specification (available to IMS Members in late 2007 and publicly available in mid 2008) has a new Outcomes Service that supports the management of results. These results can be managed in terms of the relevant courses and programs as well as the grouping of respective student groups.
- Create the next version of the Tools Interoperability Guidelines—the new version 2, called the Learning Tools Interoperability (LTI) specification (available to IMS Members in early 2008 and publicly available in late 2008) will support a broader set of tool interactions including outcomes reporting and will be integrated with the IMS Common Cartridge v1.0 specification.
- Establish a competencies framework to serve as the backbone for assessment offering—the various building blocks have been established, including the IMS Reusable Definitions for Competencies and Educational Objectives (RDCEO), and the next stage is to establish the best practices that show how the various IMS GLC specifications can be used to create such a framework.



Progress in Open Source, Open Content, and Open Services

Introduction

Challenge Questions: What are the successes of open initiatives in education so far and what is coming next? What business models are working and why? What is the practical role that Service Oriented Architectures will play, if any?

Participants in the open source, open content, and open services program track were tasked with assessing the state of progress of various active open initiatives. A series of perspectives were presented by the Joint Information Systems Committee (JISC) United Kingdom, the Department of Education Science and Training (DEST) Australia, Microsoft, Sakai, Open University UK, and the Center for Open Sustainable Learning at Utah State University. Additional perspectives and discussion were brought forward during the Summit on Global Learning Industry Challenges by a distinguished panel of experts.

The Context

It is clear that open initiatives in education and educational technology have been largely successful to this point. The learning community has witnessed the birth and substantial growth of open content and sharing of learning resources made possible through the advancement of technology and infrastructure. Open source software for managing and supporting online learning environments has matured and been widely received. More and more services are being built up around enhancing learning systems and improving the learner experience.

The panel of experts that discussed the successes and future directions of open initiatives during the Summit on Global Learning Industry Challenges included higher education technology leaders from universities in the UK, Canada, and the U.S. Comments were focused on current projects and prevailing concerns at their institutions. Joel Greenberg, of the Open University UK, emphasized the important role that open source plays by giving institutions a common core to start with that can be built upon, improved, customized, and then shared back again with the community.

On a similar thread, John Norman, University of Cambridge and Sakai Board Chair, identified innovation as an important factor in considering the adoption of open initiatives. It is not just about cost and quality—products and models that institutions adopt should allow for greater innovation that truly impacts learning. Focusing further on the student, Ted Dodds, of the University of British Columbia, described their vision for the future of student systems as being student-centric. This emphasis allows the system to function around what each student needs in order to receive his/her desired education, rather than the old paradigm of back office systems most common today. Speaking to the need to improve the development of learning materials, Joel Thierstein, of Rice University and Connexions, identified shifts of thinking required at the provost level down to instructors and researchers in the way academic research is valued by creating new processes for properly vet-

ting and dispersing materials back to the community.

In summary, the overall feeling within open educational initiatives is positive. Progress is being made and open initiatives are working well in learning contexts, yet specific challenges and opportunities lie ahead as we continue forward.

The State-of-the-Art

In recent years, open courseware and open educational resources initiatives have garnered worldwide attention and inspired many institutions to make their course materials and instructional content open and freely available online. Despite initial resistance from educators and instructional designers, there is now a growing acceptance of the idea of open content and reusable, community learning resources. The Open University's OpenLearn program, as presented by Stephen J. Bradley, is pushing this concept to a higher level of innovation by offering free access to online learning materials within an advanced learning management environment that also offers added support and encourages the establishment of collaborative learning communities amongst this new category of learners. Brandon Muramatsu described several projects sponsored by the Center for Open Sustainable Learning at Utah State University. These initiatives contribute to the advancement of open content in this space by encouraging the development of tools that make it easier for learners and instructors to reuse and share online learning materials.

Considering which business models work best for educational open source, content, or service initiatives, the educational technology community has largely followed the lead of the open source soft-

ware industry. In many ways, open initiatives in education find themselves in a similar state—at times struggling to subsist—as those facing the open source software community of the late 1990s. We can learn from these earlier open source software projects that went on to enjoy stunning success by building sustainable communities and/or supportive foundational organizations that have proven critical in establishing open initiatives and engaging willing participants. Sakai has done just that, following a model similar to Apache's in the open source software world, Sakai's open community model, as presented by Charles Severance, has seen marked success in a short period of time. This can be attributed, in large part, to operating under the umbrella of a foundational organization consisting of corporate sponsors and member/user institutions that share developer resources to help sustain the community.



Service Oriented Architectures are being carefully scrutinized by the learning community for the potential benefits of services-based infrastructures, such as extensibility, integration, and interoperability. Sheila MacNeill and Dr. Lyle Winton discussed the initiative, called the e-Framework, sponsored by their respective organizations, JISC and DEST. This open community initiative is focused on identifying processes and models that higher education and research institu-

tions can use to establish a framework for better integrated educational systems and streamlined processes. Commercial vendors are also keying in on this space, such as the Microsoft Learning Gateway. The objective of the Learning Gateway, as described by Cliff Lloyd of Microsoft, is to provide a standards-based platform that allows broad application support, data portability, and system interoperability from multiple vendors, including open and community source solutions.

A primary driver behind the quest for more services focused frameworks is the desire for local, institutional configuration and customization. This allows institutions or organizations to implement only those specific elements that fit their unique needs, which helps clear the path toward future technical trends that see institutions moving away from big, monolithic systems to disaggregated, interdependent components.

The Challenges & Opportunities

The growth and reach of these and future open educational initiatives depend upon what steps are taken to address some of these important requirements identified by those who presented and participated in the open initiatives discussions. These challenges and opportunities include:

- **Building Strong Communities around Open Initiatives.** It is impossible for one organization to support and drive all activities of an open initiative. A thriving community of willing volunteers will do more to guarantee the success of an open initiative than anything else.
- **Making Activities Relevant and Compelling.** In order for open initiatives to attract willing volunteers, there must be compelling drivers. If the

project offers impactful solutions or capabilities, the community will build and maintain itself; however, this cannot be artificially manufactured.

- **Evaluating the Impact.** Measuring the success of the learner experience is crucial to furthering open content initiatives. The emphasis needs to be on the learner and evaluating his/her needs and learning experiences.
- **Allowing Time to Succeed.** In particular with open content, funding is not the most important factor of success. What's needed is time and dedicated, contributing effort.
- **Keeping it Easy.** When discussing the development of or planning for system architectures, the focus needs to be on keeping implementation paths unencumbered by overly complex requirements.

In recognition of the impact that the Open University's OpenLearn program has had on learning, the OU was awarded the LIA Platinum 2007. OpenLearn educational resources, made freely available for download and reuse within a Creative Commons framework, attracted over 370,000 learners from 159 countries in the first six months of the project. Materials are structured in an open source virtual learning environment that includes learning support and collaboration tools. Learners and educators are connected in self-sustaining communities through forums, learning journals, video conferences, and instant messaging.

Influence on IMS GLC Initiatives

The following activities within IMS GLC correspond to supporting and improving initiatives in the open source, open content, and open services communities:

- IMS Common Cartridge (CC) is a standard for delivering content to compliant systems or learning environments. During Learning Impact 2007, several IMS contributing members, including Open University UK, demonstrated content prepared in the Common Cartridge format. This specification is currently being adopted by many IMS contributing members and will be available to the public in late 2007.
- IMS Learning Tools Interoperability (LTI) specification is being developed to provide more advanced interactions and integration of third-party learning applications with student learning systems. Sakai demonstrated portlet integration during Learning Impact 2007 using this specification.
- IMS Service Oriented Architecture project group-under-formation is exploring what activities it can engage in the developing standards or best practices around services based systems. IMS contributing member representatives from JISC and DEST are helping align these efforts within their e-Framework initiative as well.



Summary of Influence on IMS GLC Initiatives

What's Next in Learning Systems

- Content management, document management, resource lists, repositories based on standards; including clarifying best practice for effective adoption. This is a potential topic for the IMS GLC Learning Object Discovery and Exchange workgroup currently under formation.
- Incorporating interoperability of a broad set of collaborative learning tools into the newly chartered LTI workgroup.
- The importance of defining quality of the overall educational experience and how technology can support and enable higher quality. This is a potential topic for the Technology-Enabled Flexible Learning workgroup currently under formation.
- The importance of tying assessment into the learning interactions continues to grow and it is clear from this track and the academic enterprise that there needs to be greater integration between gradable events and other evidence of learning from learning platforms and tools and the enterprise administrative systems. Therefore, taking the next steps to integrate QTI with the latest Academic Enterprise work in IMS GLC is key.

What's Next for Digital Learning Content

- IMS GLC has embraced SOA in its web services approach, but this work will need to be periodically revisited to keep it abreast of new developments in the field.
- Content Packaging and Common Cartridge should be examined for enhancements that will enable personalized learning to be more readily constructed from available content.
- Adaptive assessment suggests the need for a harmonized sequencing mechanism across content and assessments (i.e., QTI).
- The newly formed LTAC (Learning Technology Advisory Council) within IMS GLC is in an excellent position to publish case studies of experiences with the technology and define best practice on sourcing, implementing and operation of technology.
- Single access integration across a myriad of emerging tools.

The Academic Enterprise: Assessment, Analytics and Student/Institutional Performance

- Improve and refine the QTI specification—the QTI specification has wide adoption, particularly for formative assessment. The latest version, QTI v2.1 (available to IMS Members now but publicly in late 2007), addresses the issues of the design and delivery of summative assessment, and incorporates the IMS Content Packaging to support a wide range of metadata that be associated with the items and assessments for outcomes, learning objectives and activities.
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Learning Impact Awards 2007

Each year the IMS Executive Strategic Council, in coordination with the IMS Board of Directors, looks to identify and award examples of high impact products and services. Submissions are collected based on an open call to industry participants from August to December of each year. A select group of finalists are selected the following January based on criteria agreed to by the IMS Executive Strategic Council and Board of Directors. The finalists are invited to discuss and demonstrate their projects at the IMS Learning Impact conference and Summit on Global Learning Industry Challenges.

Judging of the LIAs is done by a panel of distinguished experts. Participants attending the Learning Impact event also vote on the finalists, and the awards are presented at the conference. The LIAs are very exclusive. They signify those products, services, and implementations that have the greatest impact or potential impact on global learning industry challenges and the greatest potential return on investment.

Join us in congratulating the 2007 LIA winners.



About the Learning Impact Award (LIA) Program

The Learning Impact Awards (LIAs) are an annual global competition for the purpose of informing the worldwide community involved in learning technology innovation of progress that results in major advances in technology-enabled learning. This unique program evaluates established, new, and research efforts in context at an implementing learning institution or organization. Entries collected via the IMS GLC web site by December 31, are evaluated according to eight categories, including: Access, Affordability, Quality, Adoption, Accountability, Organizational Learning, Interoperability, and Innovation (see the section, Defining Learning Impact in this report for more discussion on the evaluation criteria).

From the large set of entries the top twenty-five are selected, based on the evaluation criteria, as finalists to showcase at the Learning Impact conference event held in Spring. The twenty-five finalists for 2007 included fourteen from outside the United States. Three of the finalists represented government-led initiatives. Five represented collaborations/use across a system or other group of institutions. Two represented community sharing of content. Fifteen represent individual institutional initiatives. Four winners were in the research category, six in the new category, and fifteen in the established category.

The winners profiled here represent the few best from around the world that succeeded through all the evaluations. Platinum, Gold, Silver, Bronze, and Honorable Mention designations indicate the final rankings by a panel of global experts are asked to perform the final rankings at the conference in conjunction with voting by the attendees (the attendee votes are combined to weigh as one expert vote).

For more information on the Learning Impact program, including this year's global experts, demos/presentations, and how to enter a nomination, visit:

<http://www.imsglobal.org/learningimpact/index.html>





Platinum Award Winners

ETS Criterion Online Writing Evaluation service at Farragut High School, Knox County Public Schools

CriterionSM Online Writing Evaluation is a web-based instructional tool that helps students plan, write, and revise essays. It uses ETS proprietary technology to provide a holistic score and annotated diagnostic feedback. Three quarters of a million students, worldwide from 4th grade through graduate school, have used the Criterion service to practice their writing. Educators say the feedback and revision cycle helps students become better writers. High school English teacher Aleeta Johnson says the Criterion service was a major factor in her district's jump from 69% of students passing the state writing assessment to 86% passing four years later.

Visit: <http://www.ets.org>

Cyber Home Learning System of Korea

The Cyber Home Learning System in Korea is a nationwide e-learning service utilized by 8,218 cyber teachers, 2.2 million students, and 2,786 parent tutors. This system provides students with one-on-one study management services. The four major services are: customized learning using content for self-motivated study; a cyber teacher Q & A service; assessment of academic performance through an items pool; and career counseling service for school applications. The cost-saving effect in private tutoring expenses and content development has amounted to approximately 40 billion USD per year and 197 million USD for the past three years.



OpenLearn at the Open University, United Kingdom (supported by Moodle)

The Open University is first UK university to launch an open educational resources website. OpenLearn provides free access to thousands of hours of content from across the curriculum - attracting over 370,000 learners from 159 countries in the first six months. Materials are structured in an open source virtual learning environment incorporating state-of-the-art learning support and collaboration tools. Learners and educators are connected in self sustaining communities through forums, learning journals, video conferences and instant messaging.

All OpenLearn materials are available for free use, download and adaptation across the global learning community and within a Creative Commons framework. This increases the reach of educational materials - widening participation in higher education - and reduces the cost barrier to access, course creation and dissemination for other organizations.

Visit: <http://www.open.ac.uk/openlearn>



Gold Award Winners

The California State University (CSU) Math and English Success Websites and the CSU Fresno Fast Forward Program

The CSU Math Success (www.csumathsuccess.org) and English Success (www.csuenglishsuccess.org) websites have been designed to help high school students prepare for college level work. Each year over 100,000 students visit the sites to make use of the customized advising and interactive math and English prep tools.

The CSU Fresno Fast Forward to Academic Success program leverages the website tools to reach underserved high school seniors in California's rural Central Valley. This innovative program integrates the website resources into a rigorous college prep curriculum that ensures that students take the right steps to prepare for the CSU. Once students arrive on campus, the program continues to provide support ensuring high retention rates.

European eTwinning Action by European Schoolnet

The eTwinning Action promotes school collaboration in Europe through the use of Information and Communication Technologies (ICT) by providing support, tools and services to make it easy for schools to form short or long term partnerships in any subject area.

The eTwinning Portal (www.etwinning.net) is the main meeting point and workspace for the Action. Available in twenty-one languages, the eTwinning Portal now has the involvement of nearly 30,000 schools and over 4,000 project partnerships between two or more schools across Europe. The Portal provides online tools for teachers to find partners, set up projects and start working together immediately using the various eTwinning tools available on the "TwinSpace".

Launched in 2005 as the main action of the European Commission's eLearning Programme, eTwinning is now part of the Lifelong Learning Programme. Its Central Support Service is operated by European Schoolnet, an international partnership of 26 European Ministries of Education developing learning for schools, teachers and pupils across Europe.





Silver Award Winners

Using Giunti Labs learn eXact LCMS at the UK NHS and Royal College of Radiologists R-ITI Project

The Radiology Integrated Training Initiative consists of three integrated components - Physical Academies, a Validated Case Archive and an electronic Learning Database which address the specialist training needs of doctors moving to specialize in radiology. The electronic learning database is a repository of around 650 hours of radiology based knowledge and skills, developed with the involvement of over 350 practising consultant radiologists and a central team of 16 e-learning experts, to cover the first three years of a five year radiology training programme. The toolset, Giunti Labs' learn eXact package, has enabled the development, in rapid time, of a large amount of content and the management of a workflow that involves nationally distributed developers and SMEs. Reviews have been enabled through the toolset so that the time of the day-to-day work of the consultant radiologists in developing the content has reduced significantly. By now over 600 hours of highly interactive e-learning materials had been developed. This solution is now being rolled out to 4,000 radiologists across the UK, with significant interest from the USA, Europe, and the Far East in procuring access to the solution.



Microsoft Research ConferenceXP at Australian School of the Air and Classroom Presenter at University of Washington

ConferenceXP enables the delivery of interactive experiences over the Internet and in wireless-enabled classrooms. ConferenceXP has had an impact on reaching new populations of learners through an implementation of ConferenceXP in support of the "School of the Air" in the Northern Territory of Australia. Classroom Presenter is a ConferenceXP application developed at the University of Washington that is in wide use across academia and the basis of a number of research projects into the effectiveness of technology in the classroom.

Visit: <http://research.microsoft.com/conferencexp/>

Respondus 3.5 and University of Alberta

Respondus 3.5 is a Windows application that makes it easy to create and manage assessments for ANGEL, Blackboard, eCollege and other LMSs. The offline editor is similar to a word processor and will additionally import questions from MS Word. Respondus can print assessments or publish them directly to an online course, thus bridging the gap between print and online exams. The QTI 1.2 standard is supported and Respondus can also convert assessments from most major LMSs.

Test banks for over 1,500 of the leading higher education textbooks are available in Respondus format. Nearly 3,000 universities worldwide use Respondus 3.5 to enhance their learning systems.

Visit: <http://www.respondus.com>



Bronze Award 2007

Bronze Award Winners

Articulate at Jefferson County Public Schools

Jefferson County Public Schools (JCPS) in Jefferson County, Kentucky is among the largest school districts in the U.S. Using Articulate Rapid E-Learning Studio Pro, JCPS has implemented a very successful e-learning program. Articulate Rapid E-Learning Studio Pro provides a comprehensive, yet easy-to-use set of desktop authoring tools, that empowers non-programmers to quickly create Flash-based courses, quizzes, and interactions.

Articulate Rapid E-Learning Studio Pro was selected as the standardized authoring platform because it is simple to use, affordable, and provides output that is supported by browser-based Macs and PCs. Additionally, teachers are able to create stimulating courses that hold the interest of the students. Student progress is tracked in the district's LMS via Articulate's integrated SCORM-support. The e-learning program is credited with improving the county's scores in statewide achievement tests and increasing student retention of at risk students. The Articulate created courses have also proven so successful that several other states throughout the U.S. have purchased them. Visit: <http://www.articulate.com>

Wimba's Course Genie: An Authoring Tool for Common Cartridge at Langside College

Wimba, the education technology company that helps people teach people, has created a prototype for Common Cartridge authoring utilizing its popular Course Genie product. Course Genie will be one of the first WYSIWYG authoring tools for Common Cartridges. Using Course Genie, any faculty member or staff administrator who uses Microsoft Word® even minimally will be able to easily create a Common Cartridge containing text, images, audio and/or video files, flashcards, animations, and assessment questions that can be imported into any CMS that supports Common Cartridges. We believe that the power of Common Cartridge, combined with the ease of use of Course Genie, will greatly lower the barrier of entry for any instructor or designer who wishes to author truly interoperable course content.

Wimba's Common Cartridge implementation will be useful for the academic community because it will provide a platform-agnostic format for sharing course materials and assessments. In other words, when creating content for their courses, faculty end-users will not have to create it for a specific CMS. The implementation will be most useful for institutions with multiple CMSs as well as for those changing their CMS. It will also be useful for publishers who will only need to create the content once. Visit: <http://www.wimba.com>



Honorable Mention

eCollege Program Intelligence Manager at Iowa Community College Online Consortium

As online programs evolve, it is increasingly more important for institutions to have data at their fingertips to identify ways to grow their program. Program Intelligence Manager (PIM) is an interactive data analysis toolset that helps institutions easily identify and act on key drivers affecting student satisfaction, course and program quality, and completion and retention rates. eCollege has one of the largest online learning databases in the world, and because of the detailed current and historical data it stores for its customers, institutions can analyze and leverage data in a way that is not possible through any other eLearning solution. Program Intelligence Manager uniquely positions institutions to better understand the key components and trends within their programs, giving them the strategic insight to know exactly where improvements are needed to strengthen programs, drive profitable growth and facilitate regulatory compliance. Visit: <http://www.ecollege.com>

ANGEL at Penn State

Penn State's Course Management System (ANGEL) is used throughout resident instruction and the World Campus. The goal was to implement a web-based system that is easy for faculty to use for teaching and create a common learning environment available to faculty and students at all 24 campus locations.

The rapid adoption of ANGEL at Penn State has provided the University with new ways to share course materials and effective pedagogical strategies. It has also provided a framework for meeting other institutional needs for faculty, staff and students. In fall 2006 our usage peaked at 75,000 users with 8,925 active course sections in ANGEL; 56% of total PSU courses offerings.

Penn State integrated shibboleth in ANGEL to support the Geographical Information Systems (GIS) Worldwide Universities Network (WUN) initiative. This now allows the exchange of courses and students in Penn State's online Master of GIS degree program and the program offered jointly by the University of Leeds and Southampton (United Kingdom).

Our ANGEL implementation also supports important non-instructional uses to include a pilot of the online Student Rating of Teaching Effectiveness and a Faculty Senate's Curriculum Consultation and Submission System project. We also worked with our Office of Student Affairs to help manage the large number of official student clubs available at every campus. The framework for this initiative is ANGEL groups. More information about this effort is provided under Expanded Access: Impact on reaching new populations of learners.



A study on how to enhance support for the Cyber Home Learning System by Korea Education & Research Information Service

This study suggests a means of expanding "Auxiliary Resources" for greater flexibility in producing e-learning content based on the learning object. For instance, for K-12 education, a number of auxiliary functions are greatly needed in the study of foreign languages, such as dictionary, syllabus, and pronunciation improvement tools. The study also suggests how to expand SCORM 2004 and standardize support activities, commonly called collaborative learning activities. To provide effective e-learning services, a cyber environment similar to an actual classroom setting is needed. This study anticipates that by meeting consumer demands, the effects of the system on academic performance of learners will be further improved.

LIA 2007 Awards Summary

Platinum Winners:

- * ETS Criterion Online Writing Evaluation service at Farragut High School, Knox County Public Schools
- * Cyber Home Learning System of Korea
- * OpenLearn at the Open University, United Kingdom (supported by Moodle)

Gold Winners:

- * HarvestRoad Hive & the Resource List Management System at the University of Western Australia
- * The California State University (CSU) Math and English Success Websites and the CSU Fresno Fast Forward Program
- * European eTwinning Action by European Schoolnet

Silver Winners:

- * Using Giunti Labs learn eXact LCMS at the UK NHS and Royal College of Radiologists R-ITI Project
- * Microsoft Research ConferenceXP at Australian School of the Air and Classroom Presenter at University of Washington
- * Respondus 3.5 and University of Alberta

Bronze Winners:

- * Tegrity Campus 2.0 at Saint Mary's University
- * Articulate at Jefferson County Public Schools
- * Wimba's Course Genie: An Authoring Tool for Common Cartridge at Langside College

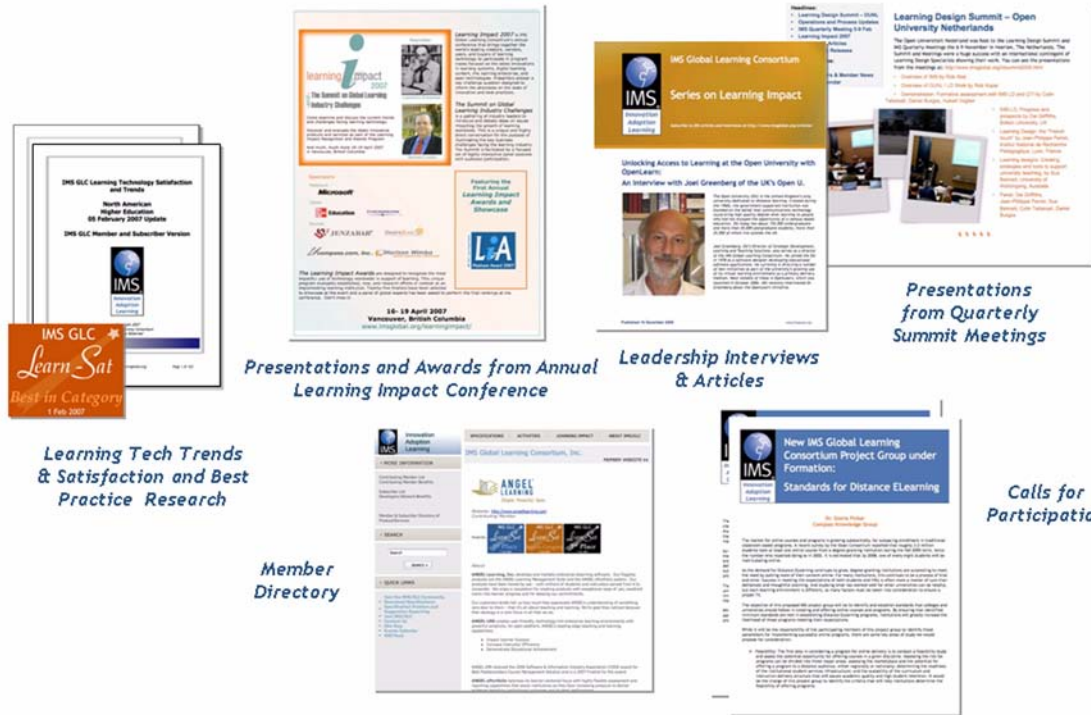
Honorable Mentions:

- * eCollege Program Intelligence Manager at Iowa Community College Online Consortium
- * Desire2Learn at Office of Open Learning, University of Guelph
- * Microsoft Learning Gateway at Shireland Language College
- * BlueStream Digital Asset Management System At The University Of Michigan (supported by Ancept and IBM)
- * ANGEL at Penn State
- * UGO Online Academic Resource Management system at the University of Montreal (supported by Logiweb)
- * A study on how to enhance support for the Cyber Home Learning System by Korea Education & Research Information Service
- * Meeting the Needs of a Global Student Body with Jenzabar at Park University
- * Microsoft Partners in Learning at Ministry of Education, Thailand

Appendix A - Acronyms

CC	Common Cartridge
CMS	Course Management System
ERP	Enterprise Resource Planning
ESC	Executive Strategic Council
GPS	Global Positioning System
HE	Higher Education
IAF	Institution Assessment Framework
ICT	Information and Communication Technology
IMS GLC	IMS Global Learning Consortium
LI	Learning Impact
LIA	Learning Impact Award
LMS	Learning Management System
LSAT	Learning Technology Trends and Satisfaction Survey
LTAC	Learning Technology Advisory Council
LTI	IMS Learning Tools Interoperability
QTI	IMS Question and Test Interoperability
RDCEO	IMS Reusable Definitions for Competencies and Educational Objectives
SOA	Service Oriented Architecture

Join the IMS Global Learning Consortium Community



The IMS Global Learning Consortium Community is open and free to everyone interested in learning technology. The Community offers:

- Articles – Discussions and interviews with learning technology industry leaders that showcase important developments of products, services, and trends within the learning community inside IMS GLC and beyond.
- Best Practices – Reports and research conducted to help inform readers about the use of technology to support teaching and learning. These reports look at trends in how technology is being used and supported, as well as the technologies themselves.
- Calls for Participation – Notifications to the worldwide IMS GLC community informing them of new initiatives beginning within IMS and inviting all to contribute and participate.

The Community portion of the IMS GLC website also provides access to the Specification Maintenance Database, Use Case Repository, Profile Registry, and Presentations from various events. You'll also be sent notification of IMS GLC News and Press Releases, the Dispatch, our monthly newsletter, a copy of this annual report, and other tremendous resources!

Become part of the Community here: <http://www.imsglobal.org/register/welcome.cfm>



Join us for Learning Impact 2008

Austin, Texas, USA

12-15 May 2008

<http://www.imslobal.org/learningimpact2008/>

Register now!