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TECHNOLOGY FOCUS

Understanding the Competitive Landscape for Educational Technology (Technology Focus)

An analysis of the leading LMS and lecture capture solutions

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DATAMONITOR VIEW

CATALYST

In an effort to balance competing and contradictory demands, education institutions are becoming increasingly judicious and strategic about purchasing technology that supports teaching and learning.

SUMMARY

The market for educational technology is an attractive opportunity for vendors. However, as institutions prefer vendors with deep industry knowledge and experience, all vendors will not realize the same level of success. It is, therefore, crucial for vendors to invest in understanding the subtleties of the competitive landscape for educational technology in order to ensure that their products and sales strategies are well-positioned in the market. This brief argues the following statements:

- Important factors influence the adoption of education technology;
- While relatively mature and widely adopted, online learning continues to evolve; and
- Lecture capture solutions are an emerging solution area in higher education.

METHODOLOGY

Industry opinion research	Interviews were conducted with leading digital and online learning vendors.
End-user research	Institutional technology decision-makers and departmental administrators were interviewed.
Secondary research	Secondary research sources were used to guide and validate the conclusions of this brief.

ANALYSIS

Important factors influence the adoption of educational technology

While the education market has made significant strides towards using technology in ways that will improve instructional effectiveness and expand access to educational resources, considerable room for improvement remains. Adopting technology solutions that are more closely aligned to the unique needs and realities of the educational environment will be an important strategy institutions will use to improve teaching and learning. Consequently, Datamonitor believes that it is crucial for vendors to acquire a deep understanding of the underlying forces driving and inhibiting the uptake of educational technology. It is these forces that will shape what functionality technology must have in order to meet needs of education institutions and which vendors will realize the most success in this growing market.

A complex set of forces drives the uptake of educational technology

Including both educational and external motivations, the set of factors driving the uptake of educational technology is large and complex. From a purely pedagogical perspective, the belief that technology is a powerful tool for customizing instruction to the needs of individual students is held widely amongst educators. Faculty often cite technology as having the unique potential to help them overcome the challenges associated with teaching a large and diverse group of students effectively and helping these student to meet curricular standards and course objectives. From a demographic standpoint, the percentage of individuals for whom using technology is an assumed rather than novel activity continues to grow, shifting the balance of institutional power to educators who have only known a digital world and away from those who have accepted it only reluctantly. As these individuals populate the education market, the purchase and adoption of pedagogical technology will move forward rapidly. Finally from a purely cost perspective, the adoption of educational technology offers institutions attractive tools to scale their offerings while maintaining costs. In the education market all roads lead toward the more substantive adoption of educational technology, the question is how fast the distance can be covered.

There are considerable hurdles to the more substantive adoption of educational technology

While powerful forces are driving the uptake of pedagogical technology in the education market, significant hurdles are simultaneously mitigating the strength of these forces. The combination of shifting public perceptions of and priorities for educational technology and the inherent difficult of embedding its usage more deeply within the classroom is prompting many educators and policymakers to reconsider their enthusiasm for investing in educational technology. In no way does this suggest that the education market will stop purchasing or drastically reduce its investment in curricular software titles or learning management system (LMS) solutions. Instead, institutions will exhibit increasingly conservative purchasing behavior by requiring vendors to provide appealing pricing strategies, evidence that solutions are effective and direct alignment between the solution's functionality and existing classroom practices. If vendors are able to meet these requirements, the hurdles to more substantive adoption of educational technology will be only short-term ones and overcoming them will usher in a new era of more robust technology uptake.

The competitive landscape for educational technology represents an appealing opportunity for vendors

The characteristics of the educational technology market make it an attractive one for vendors seeking to grow their revenues and to increase their presence amongst education institutions. However, as institutions are skilled at identifying the degree to which technology solutions align to their unique needs and prefer vendors with industry knowledge and experience, all vendors will not find this market to be equally open. Datamonitor, therefore, advises technology vendors to invest in understanding the subtleties of the competitive landscape for educational technology in order to ensure that their products and sales strategies are positioned well for success. In this report, Datamonitor will provide an analysis of the competitive landscape for both LMS and lecture capture solutions and put forth a set of recommendations for how vendors should navigate these landscapes in order to realize the most benefit.

While a relatively mature and widely adopted, online learning continues to evolve

Although LMS has an established history and reached near ubiquity, how institutions are using online learning continues to develop in new and exciting ways. Online learning is adopted widely in the higher education market with few institutions failing to include an Internet-based component in their course offerings. There is considerable variation, however, in the extent to which each institution is using online learning. As the solution area matures and best practice with online learning becomes broadly accepted amongst educators, the depth of adoption will growth and drive increased institutional investments in online learning solutions. In order for vendors to facilitate the pace at which this development occurs, it is important to understand the following characteristics of the market for online learning, including:

- Online learning is supported by a diverse set of applications;
- LMS solutions are increasingly used as powerful pedagogical tools; and
- A few players dominate the competitive landscape for LMS solutions.

Online learning is supported by a diverse set of applications

The market for online learning is awash in solutions referred to by three-letter acronyms. Learning management systems (LMS), course management systems (CMS) and virtual learning environments (VLE) are all terms used by vendors and institutions to refer to their online learning solution. For the purposes of this report, Datamonitor will refer to online learning solutions as LMS solutions. While this type of ambiguity around what a solution is called typically impedes its widespread adoption in the higher education market, in the case of online learning it has not had an impact and represents an almost unique phenomenon. At the end of the day, all of these solutions provide features and functionality that support, in an organized way, the delivery of instruction, through a myriad of pedagogical approaches, over the Internet. However, specific features and functionality – or how online learning is supported – do vary across each vendor's online learning solution. As the demands upon an online learning solution differ depending on the pedagogical requirements of the course, it is important to explore this variation. Most notably of these requirements is the distinction between fully online and hybrid courses. Hybrid courses contain both in-class and online components and represent the most common type of online learning in higher education. And even within this category there is significant diversity as some courses simply post a syllabus and reading materials and deem it online learning, whereas others have the majority of instruction occurring over the Internet with only limited classroom interaction. It is important to note, however, that how a vendor refers to its solution, CMS, LMS, or VLE, does not necessarily correspond with the degree of functionality required for a hybrid or fully online

course. A CMS is as likely as an LMS to support a fully online course. Consequently, Datamonitor advises institutions to delineate their online learning needs, from a pedagogical perspective, in order to ensure that they select the most suitable solution as fully online courses typically make more robust demands of an online learning solution than hybrid ones.

LMS solutions are increasingly used as powerful pedagogical tools

The demand for more sophisticated LMS solutions is growing in the higher education market. Fueled by increasing demands for accountability, continuing budgetary pressures and growing familiarity with and preferences for online learning by students, institutions are ramping up the robustness of their online offerings for both fully online and hybrid courses. In response to this activity, LMS vendors have dramatically expanded the features and functionality of their solutions. There are two areas of development that are particularly notable:

- Portfolios
- Performance reporting

Portfolios in LMS solutions

The concept of portfolios is hardly new to education. Creating a portfolio is a time-honored tradition for many humanities' disciplines. Yet, the transition of these largely paper-based portfolios to a digital format and their expansion to other academic areas has developed only recently. Students live in a digital world and as larger numbers of them fulfill their educational aspirations entirely online and seek to join a virtual workforce, a hard-copy portfolio becomes a largely antiquated concept. Moreover, as entering the workforce increasingly requires teamwork and collaboration skills, students are expanding their definition of what should be in a portfolio and are including such items as video podcasts of presentations and audio transcripts from group-work sessions. Without question, this drive towards the expanded use of portfolios will not occur over night, as it signifies a dramatic pedagogical shift. However, many LMS vendors have introduced more robust portfolio functionality to their solutions in order to support this trend. The ANGEL ePortfolio 2 is an excellent example of such functionality. Enabling students to store "artifacts" in multiple formats, subscribe to RSS feeds and publish their own work, ePortfolio 2 takes a strong step towards the new conceptualization of a digital portfolio in the context of an LMS solution.

Performance reporting

Education institutions are under increased scrutiny by an ever-widening constellation of constituencies. Policymakers and government agencies are seeking to hold institutions more accountable for their performance. Students and families are demanding evidence of effectiveness and improved service. And the business community is asking for more qualified and highly-skilled graduates. Consequently, there is a heightened awareness, in the higher education community, of the need to track, evaluate and then improve institutional performance in more meaningful ways. Historically, institutional performance was measured by only a few, fairly basic, indicators, such as acceptance and graduation rates or the endowment size. New policies and constituent demands, however, seek to hold institutions accountable for more substantive measures of performance, such as instructional effectiveness and student satisfaction. As a growing percentage of instruction is delivered over the Internet and the majority of courses have at least some online component, institutions are finding the use of an LMS solution to measure instructional effectiveness to be an attractive option. Always attuned to meeting institutional needs, many LMS vendors have recently released new reporting and analytics functionality.

The Program Intelligence Manager (PIM) offered by eCollege is a particularly interesting and long-standing example of an analytics tool embedded within an LMS solution. The PIM application offers institutions the ability to track student usage of and performance within the eCollege LMS, as well as anonymously benchmark their own performance against peer institutions. The hosted delivery structure of eCollege's LMS is an important factor in its ability to provide such a powerful reporting solution, nonetheless, PIM clearly represents the next generation of analytics in the LMS solution area.

A few players dominate the competitive landscape for LMS solutions

The LMS market is distinguished by the considerable success of a small number of vendors. As the solution area has matured, the number of LMS vendors in the higher education market has decreased through mergers & acquisitions (M&A) and general attrition. Yet, even with the significant consolidation over the last few years, the LMS market is not monolithic and significant diversity remains. Datamonitor considers the following vendors to hold key positions in the competitive landscape for LMS solutions, including:

- ANGEL Learning
- Blackboard
- Desire to Learn
- eCollege

ANGEL Learning

Originally created as an online learning solution for Indiana University – Purdue University Indianapolis in 1996, where it continues to be used today, ANGEL Learning was established as a private company in 2000. Used by millions of faculty and students, ANGEL's flagship Learning Management Suite and ePortfolio applications have been implemented at higher education institutions and K12 districts across the US, including such institutions as the Newton Public Schools, Brevard Community College, Pittsburg State University and Yeshiva University. ANGEL Learning offers institutions both hosted and non-hosted delivery options for its solutions.

Given its history as an educator-developed solution, it is not surprising that ANGEL Learning's product development is strongly guided by a commitment to create tools that advance effective teaching and learning and support the work of instructors regardless of their level of experience or expertise with online learning. This commitment is evidenced, at least in part, by its having been awarded the Software and Information Industry Association's (SIIA) CODiE award for Best Postsecondary Course Management Solution in both 2006 and 2007.

ANGEL Learning is particularly active in the open standards movement for online learning applications and is a contributing member of the IMS Global Learning Consortium (IMS/GLC). When the IMS/GLS sought to create common standards for digital content cartridges, ANGEL Learning donated its own intellectual property to the effort. As these cartridges represent an important and oftentimes expensive way for institutions to integrate textbook content into their LMS solutions, the creation of common standards is an important way to expedite the more rapid and widespread adoption of LMS technology.

Blackboard

Founded in 1997, Blackboard has quickly grown to be the largest provider of LMS solutions in the US and internationally. This growth has been accelerated with the February 2006 acquisition of its leading competitor, WebCT, in a deal worth $174 million. A public company traded on the NASDAQ, Blackboard reported in 2006 that it generated $183 million in revenue and supported 3,462 clients. Blackboard's clients include higher education institutions, K12 districts, government agencies, corporations and textbook publishers.

Using hosted and non-hosted delivery models, Blackboard supports a robust set of products including its Academic and Commerce Suites, as well as professional and consulting services. The Academic Suite is comprised of multiple products including the Blackboard Learning System (Enterprise, Vista and CE licenses), the Blackboard Community and Content Systems and the Blackboard Portfolio and Backpack applications. The Blackboard Outcomes System, launched in 2007, represents the vendor's entry into the market for reporting and analytics specifically focused on learning outcomes. The Commerce Suite supports a variety of campus transactions including one-card capabilities.

With an extensive network of user group communities, Blackboard hosts a series of popular end-user conferences, including the well-attended Bb World event which attracted over 2,000 attendees in 2007. Engaging with its end-users and the larger LMS community is an important part of Blackboard's overall strategy in the market. By using its published application programming interfaces (APIs), Blackboard's Building Blocks program enables institutions and other vendors to develop extensions to the Academic and Commerce Suites. The extensions, or Building Blocks, are then widely distributed through the end-user community.

Desire2Learn

Founded in 1999, Desire2Learn has grown rapidly and now supports teaching and learning for 4 million students and faculty at over 400 institutions, government agencies and corporations. While focused primarily on the US and Canadian education markets, Desire2Learn has expanded its reach into the UK, Australia and South America. Particularly successful with supporting the online learning needs of complex university systems, Desire2Learn clients include the Minnesota State College & Universities, the University of Wisconsin System and the North Dakota University System.

Delivered through hosted and non-hosted models, Desire2Learn supports a comprehensive suite of online learning applications. Built on its Learning Platform, Desire2Learn offers three product lines including Desire2Learn Learning Environment, Desire2Learn Learning Repository and Desire2Learn Live Room. The Desire2Learn Learning Environment provides a powerful application for creating and delivering online courses, whereas the Desire2Learn Learning Repository offers institutions the ability to create, version and store valuable "learning objects" for reuse across multiple courses. The Desire2Learning Live Room application enables more synchronous collaboration amongst faculty and students. Desire2Learn also offers an eCommerce System that manages financial transactions and online course registration. In an effort to make its robust solutions more accessible to smaller institutions, Desire2Learn developed its Desire2Learn Essential solution.

One of Desire2Learn's key differentiators is its relatively substantial investment in the research & development of its products. Committed to providing highly configurable rather customizable products, the Desire2Learn product suite is able to support the online learning needs of a wide variety of institutions and organizations while reducing the cost to institutions

of maintaining them. Robust reporting and analytics capabilities are a particularly noteworthy characteristic of the Desire2Learn product suite and enable institutions to track student performance again key learning objectives.

eCollege

Started in 1996, eCollege has developed into a leading provider of online learning programs, especially among for-profit higher education institutions. A public company traded on the NASDAQ, eCollege stockholders recently approved the company's acquisition by Pearson Education in a deal worth $538 million. In 2006, eCollege generated nearly $46.7 million in revenue and supported the online learning needs of 280 unique-named institutions in the US and Canada.

Exclusively using an ASP model to deliver its solutions, eCollege has created a pricing model with considerably less financial risk for institutions. eCollege sets its price based on how many students enroll in online courses rather than how many students are enrolled at the institution. As a result, institutions, even the largest ones, are able to start small with an online program with only a limited financial exposure. Committed to providing a total online learning solution to higher education, eCollege organizes its applications and services into four areas: Support Services, Technology Infrastructure, Program Administration System (PAS) and Teaching Solutions. The Teaching Solutions are comprised of eCollege's Course Management and Content Management applications. Guided by the vision that online courses should be easy to use but not at the expense of content and pedagogical richness, these applications are highly accessible to the end user and include robust communications, authoring and document sharing functionality.

Similarly, the PAS solution provides institutions with extensive communications, reporting and evaluation capabilities, including online mass messaging, portal, surveys, course evaluations and institutional research reports. It is important to note that because eCollege has only delivered its solutions through an ASP model, institutions are able to "slice and dice" their own performance and usage data easily, as well as to compare, on an anonymous basis, their performance to peer institutions. These types of capabilities will be increasingly important to institutions as they seek to improve the instructional effectiveness of their online courses.

Open source applications are an important alternative to commercial solutions

While an exhaustive discussion of the role open source applications have in the education market is outside the scope of this brief and will be covered in an upcoming Datamonitor report, it is important to touch upon the position open source plays in the LMS competitive landscape. Representing an important alternative to purchasing a commercial solution, Moodle and Sakai have become arguably the most well-known and highly-developed open source LMS applications. Initially, the appeal of open source LMS has focused on increased control over product development, customization and ease of integration with other applications. However, many institutions have also found the freedom from rising annual maintenance and licensing costs to be an attractive feature of open source LMS. It should be noted, however, that open source does not offer a "free ride" for obtaining an LMS solution and as a result, institutions should factor considerable development and ongoing maintenance costs, as well as the availability of skilled IT resources, into the equation for selecting an open source LMS. Yet, even if the costs are similar, in the end institutions are likely to have better control over or visibility into the year-to-year costs of an open source LMS as compared to commercial applications.

In the last year, vendors from outside of the LMS market, particularly those in the student information system (SIS) space, are increasingly using a strategy of partnering with the "managers" of these open source LMS applications to extend their

own solution stack. These vendors, often referred to as "commercial affiliates" by open source initiatives, offer considerable benefits to their open source partners including development and monetary resources, as well as reach into their installed base. As part of its Academic Enterprise Initiative (AEI), Oracle has established a partnership with Sakai. AEI brings together the Sakai LMS with Oracle's suite of back-office applications, including the ERP, SIS, and relationship management applications, such as CRM, to offer institutions a fully integrated technology platform that is more closely aligned to the specific needs of higher education. In a somewhat similar fashion, Campus Management recently launched its CampusLearning solution which offers services and support for the open source Moodle application. The underlying premise of this solution is that many institutions have neither the resources to support an open source LMS application nor the ability to integrate it tightly within their existing SIS and ERP solutions. In either the Oracle or Campus Management examples, it is clear that the competitive landscape for LMS solutions is likely to see the introduction of more commercially-supported open source applications over the near- to mid-term.

Lecture capture applications are an emerging solution area in higher education

While the lecture capture solution area has had only a short tenure in the higher education market, institutions are jumping with both feet into its adoption. Easily integrated into classroom practice and relatively affordable for most institutions, educators readily see how lecture capture solutions support instruction and extend student learning in important ways. Pioneering vendors, with a keen sense of how lecture capture contributes to the core mission of higher education, are contributing to the rapid uptake of this solution area. Datamonitor advises that in order for this momentum to continue, it is important for vendors to understand the following attributes of the market for lecture capture solutions, including:

- Lecture capture solutions offer a pedagogically attractive extension to traditional and online courses;
- Few obstacles stand in the way to more widespread adoption of lecture capture solutions; and
- Innovative vendors are taking an early lead in the higher education market.

Lecture capture solutions offer a pedagogically attractive extension to traditional and online courses

Lecture capture solutions provide institutions with an appealing way to increase the accessibility and effectiveness of both traditional and online courses. Except for the highly gifted, most students, at one time or another, struggle with note-taking, particularly in courses that are information, formula or concept intensive, such as organic chemistry, economics or calculus. Lecture capture solutions relieve some of the note-taking burden for students, enabling them to engage more actively with professors and peers in class and to review concepts and information more effectively outside of class. With an established history and process for collective note-taking, law and medical schools often represent the "entry point" for lecture capture solutions into a higher education institution, as these schools are more apt to immediately recognize the value of enabling students to review lectures in a digital format.

Part of the solution's appeal centers around its ability to be introduced into courses with little additional effort on the part of faculty or students. In many cases, faculty need only to turn on a wireless microphone or flip a switch to begin the digital capture of their lecture and when the lecture is finished the lecture is automatically posted to an online location, such as a student portal or course in an LMS. There is little need for significant training or professional cajoling in order to prompt faculty to use the solution. Similarly, there is no question that the majority of students are well-versed in how to access video and audio files from the Internet and download them to their computer, iPod or MP3 devices. The overwhelming

success of the iTunes service and YouTube is evidence of their skill with this activity. Given the low barrier to implementation and potentially high impact on academic outcomes, it is not surprising that the uptake of lecture capture solutions is growing rapidly in the higher education market.

These solutions also expand the accessibility of higher education to non-traditional students. Due to the multiple and competing priorities that many non-traditional students face, regular attendance is often a significant hurdle to successfully completing a program of study. The ability to review lectures on their own time and to catch-up on missed work has the potential to make higher education significantly more accessible for these students. Moreover, as retention and graduation rates are key indicators of institutional effectiveness, it is often easy for institutions to justify the purchase of technology that improves them. The University of Massachusetts at Lowell, for example, cited the need to improve retention in key feeder courses, such as Calculus I, as a key driver for their purchase a lecture capture solution. In the end, the powerful impact that these solutions can have on improving student learning outcomes more than outweighs the only minimal change required by faculty and investment by the institution.

Students use lecture capture solutions in potentially unexpected ways

As an increasing number of institutions recognize the value of adding lecture capture functionality into their classrooms and begin the process of implementing a solution, it is useful to consider how students will use the application. While it is easy to see the parallels between captured lectures and other recorded events, such as TV shows or professional sports games, how students utilize this content is quite different. Students are unlikely to sit down and essentially "attend," or in some cases re-attend, the lecture in the same way they would a recorded episode of Grey's Anatomy by watching it from beginning to end on their laptop or desktop computers. Rather, students are more prone seek out discrete sections of the lecture that cover the topic in which they are interested. In a study conducted by the Fox School of Business at Temple University, after surveying 1,700 students about how they used the institution's lecture capture solution, the school found that 63% use the solution for exam preparation, 62% to review instruction, 54% to clarify concepts, 40% to reduce note-taking and 28% to obtain better grades. These findings suggest that lecture capture solutions must have sophisticated search and indexing capabilities in order to be well-aligned to students' needs and preferences. The Tegrity solution, for example, offers students significant capability to search lectures for specific content including thumbnail views and keyword search functionality.

Also drawing from Temple's study, it is interesting to note that students did not indicate that they were using the lecture capture solution as a substitute for attending class. Although faculty were initially concerned that this would be the case, Temple University found no appreciable increase in student absenteeism and over time, faculty reported that students were more active in class because they were not as concerned with taking copious notes and increasingly likely to discuss more substantive ideas rather than to review basic concepts during faculty office hours.

There are few obstacles to the more widespread adoption of lecture capture solutions

Unlike most technology applications, lecture capture solutions are likely to enjoy a relatively barrier-free path to widespread adoption. Over the last few years, many institutions have invested in outfitting their classrooms and lecture halls with significant audio-visual (AV) technology, including whiteboards, projectors, wireless Internet connectivity and laptop computers. As a result, a significant percentage of classrooms are already prepared for the introduction of a lecture capture solution and require little additional investment in hardware. As institutions implement lecture capture, they often

find that the rate of adoption is determined not by the need to obtain faculty and student acceptance but by how quickly additional classrooms can be equipped with the necessary AV equipment. As a means to reduce this hurdle still further, Anystream has introduced its Coursecaster appliance. With little value outside of its Apreso lecture capture solution, the Coursecaster can be mounted on the wall or ceiling, effectively freeing institutions from the security risks involved with installing a computer in the classroom. This type of innovation demonstrates a deep understanding of the unique needs of higher education institutions.

While innovation, a close alignment with classroom practice and appealing pricing strategies are driving, at least in part, the adoption of lecture capture solutions, it is important to discuss a potential bump in the road. While some might not consider a course to be a piece of intellectual property, in fact, it is a core component of an academic's work and livelihood. The creation of a syllabus and compilation of reading materials, as well as the transmission of ideas and analysis in a classroom setting, either traditional or online, is a professor's intellectual property. As a result, some academics have raised concerns over the capture and broad distribution of their lectures. There is the appearance that professors cede more control over their intellectual property when it is distributed in a digital rather than paper format, such as a journal article. Without question, there is clear merit to these concerns and the growing field of intellectual property law serves as evidence to it. It will not, however, be an issue that is solved easily and the higher education community will struggle for many years over how to secure intellectual property in the digital age. In the meantime, many institutions are finding their own way with how to assuage faculty fears. The University of Massachusetts at Lowell, for example, has instituted a policy where at the end of each year all captured lectures are deleted. Although the connection to securing intellectual property may be tenuous, it does establish the primacy of the live lecture. In the coming years, it will be increasingly important for vendors to work with higher education institutions to develop tools and protocols to secure intellectual property. As ideas are the lifework of academics, vendors that are able to ensure the safety of their intellectual property will be well-received in the market.

Innovative vendors are taking an early lead in the higher education market

The competitive landscape for lecture capture solutions is characterized by innovation and an understanding of the unique needs of the higher education market. Vendors have invested, to varying degrees, in the adoption forward-thinking functionality, rapid deployment options and accessible pricing models and as a result, these solutions are quickly gaining traction. Datamonitor, nevertheless, believes that lecture capture solutions will continue to be an emergent solution area over the near- to mid-term in higher education and has identified the following vendors to be early market leaders;

- Anystream
- Lectopia
- Sonic Foundry
- Tegrity

Anystream

Founded in 2000, Anystream is a leading provider of automated digital media production and publishing solutions to such organizations as the BBC, CNN and NFL Films. In 2003, after three colleges approached Anystream looking for an application to capture lectures in a digital format, Anystream began the development of its Apreso solution. With over 100 institutions under contract and adding new ones every week, Anystream is growing rapidly in the higher education market.

Key clients include such institutions as Gallaudet University, the University of Massachusetts at Lowell and Temple University. Focused predominately on the US higher education market, Anystream has gained some traction in Canada and the UK as well.

While Anystream offers both hosted and non-hosted delivery options, because there is intellectual property involved and the application is relatively easy to support, the majority of institutions choose to host the solution themselves. The Coursecaster appliance frees institutions from having to install a valuable PC in the classroom. Designed to scale to institution-wide implementations, there are three components to the Apreso solution, including Apreso Classroom, Apreso Coursecaster and Apreso Podcast. The core solution is Apreso Classroom which enables institutions to capture lectures in an audio and video format. Capturing and synchronizing instructor audio, video and projected course visuals through a dedicated device, the Apreso Coursecaster solution frees institutions from the security concerns of installing computers in lecture halls. The Apreso Podcast solution offers institutions the ability to create and post podcast recordings or lectures automatically. Anystream includes built-in support for iTunesU which reduces the need for manual publishing and as iTunesU is more broadly adopted by institutions, this support will be an increasingly important differentiator.

Lectopia

The University of Western Australia developed the Lectopia solution, called iLecture in the Australian market, in 1998 as a way to support the needs of a growing population of part-time students more effectively. With a long history of providing recorded lectures on audio cassette to students that were enrolled at satellite campuses, the University of Western Australia found that students on the main campus also had an interest in obtaining recorded lectures. In the nearly ten years since its initial development, the solution has been adopted by 40% of Australian institutions. Lectopia is still exploring how to commercialize its solution for the international market and has been working with Duke University to find the right model. In the interim, the University of Newcastle (UK) licensed the Lectopia earlier this year and represents the first UK institution to purchase the solution.

Guided by the belief that a solution, in order to be useful for higher education institutions, must be as unobtrusive and automated as possible, the University of Western Australia drew upon its considerable instructional expertise to develop a solution that is closely aligned to the specific needs of institutions, faculty and students. Evidencing the successful execution of its belief, Lectopia estimates that only a half-time staff person is required to maintain the solution, faculty simply need to turn on a microphone to start using it and students are able to review captured lectures on a variety of devices including laptops, iPods and cellular telephones. As part of an international strategy, the recently released Version 3.5 of Lectopia includes UTF-8 support for non-English languages. It is important to note that the Lectopia solution is designed specifically for an institution-wide rather than point solution implementation and to be integrated with the institution's LMS solution.

Sonic Foundry

Founded in 1991, Sonic Foundry is a public company traded on the NASDAQ, generating $12.6 million in revenue in 2006 and supporting over 250 higher education institutions with its Mediasite solution. With a strong presence in the higher education market, Sonic Foundry also targets the healthcare, government and corporate sectors as well. Education, however, is particularly important to Sonic Foundry as this market represents somewhat less than half of its total installed customer base.

Designed to support and institution-wide implementations, Sonic Foundry also offers a hosted delivery option for institutions seeking a more rapid implementation. The Mediasite solution is comprised of three components, including Mediasite Server Software, Mediasite Recorder and Mediasite Viewer. Sonic Foundry developed its Mediasite Server Software, as a tool to help institutions better access and manage their captured lecture content. This software also enables institutions to report on the usage of specific captured lectures in terms of who is accessing them, when they are doing it and how long they are engaging with the content. Mediasite Recorder captures the lecture, including audio and video content and requires no additional requirements of faculty for using it beyond turning the application on. Sonic Foundry has also launched the ML Recorder which allows institutions to record lectures regardless of their location, due to its portability. The Mediasite Viewer enables end users to view the captured lecture live or at a more convenient time and includes a number of powerful collaboration tools to increase student engagement, particularly for those that viewing the lecture in real-time as online students. The ability to capture a lecture and stream it live over the Internet is a key differentiator for Sonic Foundry and expands its potential usefulness for institutions.

Tegrity

Founded in 1995, Tegrity focuses almost exclusively on meeting the needs of the higher education market. Growing rapidly, Tegrity currently supports over 400 institutions and recently launched its first annual end-user conference in June 2007. Clients include a diverse array of institutions, such as Coppin State University, Colorado Technical University, Kansas State University and the Medical College of Georgia. Committed to increasing instructional effectiveness, Tegrity positions its Tegrity Campus solution as a student achievement system rather than lecture capture solution. This conceptualization clearly demonstrates Tegrity's substantial understanding of the specific needs of higher education institutions and their commitment to students learning.

Delivered entirely over the Internet, Tegrity launched Tegrity Campus 2.0 in August 2006. Using a web-services architecture, the new version dramatically improves solution usability, including better integration with core institutional applications, such as the SIS and LMS, increased reporting capabilities and the freedom from having to install desktop software in order for faculty and students to use the application. Robust search capabilities are also included in new solution, whereas students are able to search the Tegrity database for specific words contained on lecture slides or scroll through a podcast lecture to find a particular concept or idea. Well-aligned to how the millennial generation is likely to use lecture capture solutions, this type of functionality is likely to drive more widespread usage and acceptance by students. A key differentiator for Tegrity is its Digital Pen and Notes solution which enables students to synchronize their own note-taking with the captured lecture by using a special pen and paper. By clicking on specific section in his or her notes, the solution advances the captured lecture to when in the lecture, from a time perspective, those notes were taken. As a result, students are able to noticeably improve the potency of their class notes.

ACTIONS

The competitive landscape is not monolithic and considerable opportunities remain

While the market for educational technology is fairly mature, vendors will still find interesting opportunities for growth. The increasingly sophisticated approach, by institutions, to the adoption and use of technology opens the door for new delivery models, enterprise-wide installations and innovative partnerships across multiple vendors and initiatives. Although some vendors may already have considerable market share, maintaining this position will be difficult as institutions look for flexibility and control. The growing popularity and acceptance of open source LMS solutions is a clear example of this trend. Offering attractive benefits, such as better control over development and integration, institutions will be keen to adopt open source. Yet, the burden of maintaining these applications will prompt many institutions to enter into service-level agreements (SLAs) with commercial vendors to support their open source LMS. In order to realize benefit from this developing trend, vendors, particularly those outside of the LMS space, should investment in the development of partnerships and capabilities in order to provide support services for open source applications.

Reporting and analytics functionality represents an attractive area for growth

As the demand for increased institutional accountability is unlikely to abate anytime soon, reporting and analytics will continue its progression towards becoming a permanent fixture on the list of features and functionality for educational technology. Historically, reporting capabilities have been used primarily by departments of institutional research and existed outside the core IT infrastructure. Rising accountability policies and demands is driving access to institutional data to a larger set of stakeholders, including faculty, staff and administrators. While indicators of institutional effectiveness have typically centered on more clear-cut input and output measures, such as acceptance and graduation rates, new measures that focus on instructional effectiveness and learning outcomes are gaining momentum. Datamonitor advises vendors to develop more robust reporting and analytics capabilities in order to capitalize on the institutional need to meet these accountability demands. However, it is also important to note that the competitive landscape for reporting tools, specifically those for measuring learning outcomes, will become fierce over the next decade as an alphabet soup of solutions vie to be the primary location for measuring instructional effectiveness.

Lecture capture solutions will become an important extension of the LMS

Lecture capture solutions are quickly making an imprint on the technology landscape in higher education. As institutions increasingly adopt these solutions, they are likely to see lecture capture as a natural extension of their LMS solution. Offering the ability to expand existing content and provide additional pedagogical tools for fully online and hybrid courses, lecture capture is a natural extension of the LMS. The YouTube generation of students is growing up with online video and will find captured lectures in a video format to be an important part of any educational experience. As higher education institutions will find a total online learning solution to be particularly attractive, Datamonitor advises both lecture capture and LMS solution providers to seek out more substantive partnerships or even acquisitions in order to ensure to seamless integration between the two solution areas.

APPENDIX

Abbreviations

APIs - Application Programming Interfaces

AV – Audio Visual

BI – Business Intelligence

CMS – Course Management System

ERP – Enterprise Resource Planning

LMS – Learning Management System

SIS – Student Information System

SLA – Service Level Agreement

VLE – Virtual Learning Environment

Further reading

Capturing the Global Market for Educational Technology (BFTC1431, June 2007)

Global Spending on Learning Management Solutions to 2012 (DMTC1647)

IT Security in the Education Market (DMTC1699, December 2006)

The New Landscape for Educational Technology (BFTC1428, November 2006)

Expanding Accessibility to Technology in Education Institutions (DMTC1342, September 2006)

Effectively Managing & Leveraging Data in Education Institutions (DMTC1340, August 2006)

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