Enhancing the Education Experience

ABSTRACT

This white paper shows how changing technology in the information age can be coupled with traditional education capabilities to bring about an enhanced education and learning experience. A vehicle called the Learning Matrix (tLM) is the focal point of this enhancement. By understanding and addressing the principles at play in the education experience, tLM provides the mechanism to improve the learning environment in an effective and efficient manner for both learners and educators.

INTRODUCTION

For some time now, Information Technology (IT) has had, and is having, a remarkable impact on businesses; at a corporate or organizational level and on individuals; within business organizations or in their personal lives.

Over the past few years, technology has changed, improved and reengineered virtually every business function and process, and now e-learning is reshaping how people within organizations are trained and developed.[i] Business expects to find similar technology advances in the education and training environments. Even though education has not yet met this challenge to the degree that private industry has, many in education recognize the need to modify the education approach by incorporating and taking advantage of advancing technologies. The need to adapt is due to the growing and changing demand of business and learner needs and their expectations. But, the approach must improve the education process and experience by harnessing changing technology without disrupting basic education principles and losing existing instructional information and knowledge. The Learning Matrix is the vehicle that will enable the evolution of education by merging innovative technology capabilities with existing educational expertise, creating more effective learning environments and opportunities.

Clinecta

As the employee pushed back from her PC, a wave of frustration and relief swept over her. After three hours of e-Learning, she asked herself, "How could anyone ask me to go through this?"

Let's backup six hours to when she arrived at work. Sometime during the first hour, her manager told her she must take a mandatory class and exam before the end of the day. "It should not take too long, a couple or hours or so", he said. She rearranged her schedule and began the class. During the introduction to the class she learned that once she started the class, she would have to finish it in one session. There were no provisions for stopping and restarting if she stopped before completion. If she did not complete the class in its entirety, she would have to start over again at the beginning. For two-and-a-half hours she took the class, with no break. After she completed the class and a short break, she took the online exam. She passed the exam and her score was recorded. But when she reviewed her transcript, she realized that although her exam score was archived, there was no record of her taking the mandatory class.

Unfortunately this experience, or variations of it, is too familiar. In today's information age with rapidly changing business and technology situations, employees often receive less than professional and less than effective training instruction and experiences. At best learners are inundated with facts and data quickly overloading their ability to process and retain the desired knowledge. As a result, their impacted employees have a level of disgust and frustration with work related learning or training. This jeopardizes the outcome and benefit that the training was designed to achieve.

BACKGROUND

Education

Learning, or the acquisition and application of knowledge or skills, has always been a part of the human experience. For millennia, apprenticeship (one-on-one transfer of skills and knowledge) was the most common form of learning. As the need for more skilled and knowledgeable persons grew, apprenticing was augmented with a one-to-many approach. This evolved into teaching institutions (colleges or universities) where knowledgeable "teachers" educated the learners. Progressing through the ages these institutions became monolithic, focusing on teaching, research and service[ii] often for only a designated geographic area. Their source of information was housed in a library. The teachers (faculty) dictated what was taught, how it was taught, when and where it was taught. Students had to travel to the institution and progress through a sequential, pyramid curriculum and bureaucratic processes to earn their degree. Students were taught in classrooms, read assigned texts, did research in the library, wrote papers, solved problems, performed experiments and took exams. Before the advent of modern technology, teachers and students had to be at the same place at the same time for learning to occur.

Information Technology

Information technology has redefined our ability to gather and disseminate data. The advances in telecommunication and computer capabilities allow unimaginable volumes of information and knowledge to be shared globally, at minimum cost and almost instantaneously. The introduction of multi media, advanced processing techniques, and high-speed networks have heralded an era of increasing technological change moving us from the Information Age to the Knowledge Age. The impact of this change influences our daily lives on a social, economic, corporate and individual level – from the ability to access information on obscure subjects on the world-wide-web to the 500 channel digital programs that are available via satellite dishes. Individuals now have instant access to information, services and each other. Businesses now have the ability to control inventories and their manufacturing and distribution processes all because of the advancement of technology solutions. The ultimate reason that technology has been incorporated by business to this extent is to improve customer satisfaction and to reduce the cost of making their organization globally competitive.

People

Today individuals are exposed to a level of digital enhanced video automation that was unheard of just a decade ago. The world-wide-web with easy and low cost access via powerful personal computers provides almost unlimited access to global information. Sophisticated games not only allow one-on-one competition with the computer but they support many players from multiple locations. Simultaneous communication via phone, email and instant messaging means more and more individuals are comfortable with, and expect multi media experiences with instant gratification and reward. Thus, individuals of all demographics have established a set of expectations that are based upon their individual preferences and experiences.

Younger generations more readily embrace technology's advances, often becoming more comfortable and knowledgeable than many of their elders. Businesses recognize that their survival requires improved performance and profitability both of which are directly impacted by the education, training, and skill sets of individual employees. These employees are the ones who have experienced innovative technology at an early age and expect to experience it both in education and business.

Business

By tailoring marketing and sales programs toward individuals to provide unique customer recognition experiences throughout product or service delivery, businesses today are investing more and more in technology that makes their customers' experience superior with a focus toward increasing customer purchases, satisfaction and loyalty. Business is focusing on the technologies that also increase employee productivity and provide bottom line value. As a result of this focus, the information age has created the "knowledge worker". Employee training and certification examinations are becoming a necessity for successful competition for valued positions, because certifications and adherence to standards are expected within a business' internal operations as well as its dealings with customers, suppliers and partners.

IMPACT

Interaction

For the last few years, many in the education industry have been suggesting that change from the traditional paradigm to a more learner-centric perspective must occur. This is due to a number of indicators, but mainly as a response to the decrease in student enrollments and more importantly, the changing landscape of learner needs and expectations. Indeed, some are finding indicators that a shift is already occurring in the models for teaching and learning in the information age.[iii] Studies indicate that certification and training for certification exams are becoming increasingly important to IT businesses. Those changes focus on three of the famous W's: "Who" is teaching and learning, "What" is learned, "Where" it is learned. In addition, businesses are recognizing that learning within their organizations has objectives beyond education; they are aimed at corporate improvements.[iv] Hence, business has identified the fourth W, "Why". Business often turns to the education industry to provide the training and education that it requires. If traditional education cannot meet their needs, business will turn inward or to other businesses to fulfill their education, training or certification requirements. The fifth and sixth W's, "When" and "how" are addressed in combination and are a direct result of the first four W's. The nature of the subject matter that is to be taught greatly influences the parameters for how and when. Learning and applying basic facts can be accomplished with presentations that can be delivered anytime or anyplace over the inter, intra-net without direct instructor involvement. However, education that addresses management, leadership or technical application of skills could require an interactive, teacher facilitated group environment that would set the parameters regarding when and how, and perhaps even where, the education experience would occur.

Equation

Technology's capabilities, business needs, people's technology experiences and expectations, and how traditional educators respond to changing technology are all intermixed in a complex equation. The overall impact is to provide the opportunity for enhancing the education and learning environments, vehicles, and experiences.
The reality of today's economy is that institutions of higher education and the business world are experiencing less mature students, who are technically savvy and who have expectations of using advanced tools as part of their education and work activities. In addition, there are a growing number of older students returning to educational institutions demanding training on the newer technologies and practice on the associated tools. Thus, today's education challenge spans the spectrum of older more traditional instructor led sequential teaching to the expectations of multi-sensual, information access at anytime from anyplace training. To address that spectrum, the principles-at-play, or characteristics must be understood.

Characteristics

Today's younger generation and those entering colleges and universities are making up a growing percentage of business employees that have personal technology experiences and expectations characterized by the following:

- short attention spans
- instant communication and reward
- multi-sensory stimulation
- immediate interactive responses.

They have a "plug and play" attitude coupled with a desire to experiment and explore on their own. The older generation has more traditional expectations: personal instruction using simple, non-intimidating technology. In between generations accept more state-of-the-art technology and are interested in exploring it in both traditional and non-traditional ways, with direct personal assistance.

SOLUTION

Requirements

Any vehicle that attempts to address the 6 "W" equation must recognize and handle the aforementioned characteristics. Bridging the gaps over the entire characteristic spectrum can be addressed by a learning and content management system that allows educators, knowledge managers and providers of education, training, and certification to build libraries of optimized content that are organized, segmented and indexed. The core of this system is a database that holds information to be delivered while tracking and storing performance information upon delivery. It "warehouses" what is to be learned – content and it "monitors" how well it was comprehended – performance. The nature of this system and what it delivers is:

- optimized by appealing to multiple senses when delivering content
- organized by recognizing the concepts underlying the information
- segmented by structuring the conceptual information in units that promote focused attention and retention
- indexed by providing a method to identify and combine segments into whole curricula.

This learning system must support a level of interaction appropriate for material content and provide a mechanism to store, link and present questions relevant to the concepts being presented. The presentation sequence and variations thereof, must allow for as much self-directed learning by the student as possible within the conceptually segmented content. Thus, the student, within reasonable bounds, selects the pace and sequence of what and when concepts are learned. The system must provide appropriate tracking and reporting mechanisms to support the student's progress and performance. Also, it must monitor and report on the effectiveness of the content delivery, allowing for improvements in an expeditious manner.

Answer

The Learning Matrix, with content management capability, provides a learning tool and solution that enhances education and optimizes organizational learning and growth. It creates, launches, automates, manages, and measures virtually any type of courseware from creation through delivery while supporting content and delivery improvements. Specifically it:

- Establishes a centralized knowledge repository for course content and student performance information allowing maximum use of an institution's available intellectual property that reduces and even eliminates duplication of effort.
- Organizes, indexes, stores, and tracks learning content by department, curriculum, course, owner, version, and each lesson unit that comprises a specific course.
- Handles appropriate teaching materials such as:
  - Lesson Plans
  - Presentations w/ Speakers Notes/Scripts
  - Multimedia - audio, video
  - Homework/Handouts
  - Activities/Exercises
  - Pre and Post Tests
  - Other intellectual assets.
- Segments subject content into concept level learning units to promote incremental knowledge delivery for the purpose of increasing comprehension and retention capacity
- Uses multi-media to appeal to multi-sensory needs and expectations of learners
- Provides the ability of instructors to easily create, edit, and deliver comprehensive multi-media courses
- Allows easy and efficient updates and maintenance of course information
- Incorporates automated e-mail notification options
- Creates and manages individual learning plans
- Enables self-paced virtual learning, 24/7, based on learner needs
- Incorporates web-based certifications, assessments and examinations
- Tracks, measures and reports student progression and performance
- Tracks, monitors and reports content and delivery effectiveness

The Learning Matrix provides more than just a framework and a basic ability to launch, track and report prepackaged courseware. It is designed to provide flexibility in a structured manner. It adds valued benefits to those involved in and responsible for the training completion and content and learner management and support. The integration of this solution into education processes and environments desiring to meet the changing training and education needs of the 21st century provides:

- Indexed, stored, and modular content
- Content creation, retrieval and reutilization
- Consistent content delivery
- Customized learner features and focus

Providing global, anytime access, to content and content help in a self-directed, self-paced, and on-demand learning environment, allows students to take ownership of their education. Ease of content creation, storage and retrieval improve productivity of instructors, allowing an increased focus on student learning. Administration experiences resource utilization and enrollment growth without corresponding facility or facility expansion, along with a corresponding reduction in training related travel costs.

CONCLUSION

More than a tool, the Learning Matrix is the mechanism that improves the learning environment, for both learners and educators. It is a system solution that understands and addresses the principles at work in that learning environment. It couples traditional education capabilities with the technology of the information age to enhance the education and learning experience.

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End Notes

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