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EXPLOITING TECHNOLOGY TRENDS FOR PHARMACEUTICAL EDUCATION

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Abstract

Objectives: Technology is part of almost every aspect of our lives. It has become an important tool for business, medicine and pharmaceutical education. Mobile technology has made some amazing breakthroughs in the past 10 years, and more higher pharmacy education institutions are incorporating mobile access in their programs, 1. The purpose of the study is to discuss the usefulness of technology trends for pharmaceutical education.

Methods: descriptive analysis and review method is used to discuss the importance of technology in the realm of pharmaceutical education.

Result: the discussion and analysis showed that there are many advantages and benefits of exploiting technology in pharmaceutical education.

Conclusion: it could be concluded that technology can play a big role in advancing pharmaceutical education and students can develop their skills and knowledge by employing different technology trends for their pharmaceutical education.

Key words: technology , trends ,pharmaceutical education.

Introduction

As more people access the internet through their mobile devices medical educators are recognizing the need for mobile applications. These devices include smart phones and laptops. Walk into almost any college classroom and you'll see students with laptops in use. Instructors and students are using these devices to keep up on their studies, engage in real time chat rooms, and share files. For the online pharmaceutical student, mobile access means being more connected to their fellow students and instructors Online classes, distance learning and integration of online curriculum in the classroom setting is an important trend to be aware of. More colleges and universities are recognizing the opportunities online learning presents their students and their school. Today's pharmaceutical

students are more goal orientated and don't want to sit in a lecture hall. They want to be hands on and get their degrees quickly. Online learning lets pharmaceutical students progress at their own pace and gives them valuable technology skills they can use in the real world ,1.

References to educational technology, learning technologies, and instructional technology pervade professional journals and magazines throughout education. Yet no single, acceptable definition for these terms serves the field, and there is uncertainty even about the origins of the terms ,2. Educational technology historian Paul Saettler (1990) says that the earliest reference to educational technology seems to have been made by radio instruction pioneer W W Charters in 1948, and instructional technology was first used by audiovisual expert James Finn in 1963. Even in those early days, definitions of these terms focused on more than just devices and materials. Saettler notes that a 1970 Commission on Instructional Technology defined it as both "the media born of the communication revolution which can be used for instructional purposes. " (p. 6) and "a systematic way of designing, carrying out, and evaluating the total process of learning and teaching. " (p. 6),3.

Materials and methods: analytical review of the literature is being utilized to identify the key technology trends and issues regarding their benefits to the field of pharmacy and pharmaceutical studies to reach the result.

Technology and pharmaceutical education:

Computer technology is a prime example of technology in general. Technology refers to any process or product that has been invented to assist humans in adapting to their natural, constructed, and social environments,4 .They added Computers have certainly changed the way people do science, handle personal affairs, and run businesses, and they have the potential to change the way schooling takes place. Technology promises a variety of potential benefits for pharmaceutical education ,5:

- Through computers and related technologies, pharmaceutical students can gain instant access to a wide array of available media. Texts, images, sounds, and movies can be readily accessed, manipulated, and placed in appropriate form to support learning.
- Educational technology provides for great interactivity. Pharmaceutical students can mold presentations to fit their own tastes, and explore ideas from many different perspectives.
- Educational technology allows science teachers and students to go beyond static presentations to dynamic simulations and models of attributes, processes, and relationships that can be used to understand and test theories.

- Pervasively networked computers provide a universal library, offering global information resources to individuals.

In science classes, the use of educational technology can demonstrate the course of technological progress, enrich instructional presentations, encourage students to become more active explorers of their environment, and significantly enhance curiosity and motivation. Using educational technology enables students to practice science and technology in ways similar to professionals in the field, leading to a deeper understanding of concepts and improved thinking and problem-solving capabilities,⁴.

Online technology advances are changing the way pharmacy students gain knowledge, as colleges and training programs move away from being the main funnel of knowledge.

Beyond the normal anxieties associated with enrolling in pharmaceutical continuing education programs, many adults are concerned about future trends in pharmacy education. Their apprehension is focused on how technological tools will impact the way pharmaceutical education is delivered. To expand on this, their unease is centered on the way online tools are used to make it easier to earn a college degree or complete professional training.

To this end, the future trends in pharmaceutical education are changing to meet the 21st Century adult learner by offering increased e-learning or online learning opportunities. This trend is designed to support both a global and mobile society,⁵.Wetzel also argued that pharmaceutical education is being influenced by the pressure to integrate mobile computing devices, electronic textbooks, and open content or open courseware in college courses.

Three new technologies are going mainstream on college campuses that will influence the way college courses are taught and students learn . These changes are influenced by pharmaceutical students who expect to be able to use modern technology tools to work, learn, and study whenever and wherever they want. They demand these changes because they live in an increasingly busy world where they must balance demands from home, work, and school.

Current trends in new technologies are affecting the practice of teaching, learning, and collaboration in college courses. This is primarily due to the impact of the Internet, which allows pharmaceutical students to access their college courses and materials from anywhere. Students only need a web browser and no longer need to purchase productivity software and data packages that are stored on servers around the Internet,⁵.

Anna Weinstein presented some point of views on the issue of technology in higher education as follows: The Internet and online technologies and programs, Curtis Bonk says, open up the world of learning and exploration into opportunities that didn't exist a decade ago. "Teachers should be embracing this," he says. "It's really very exciting!"

One of the exciting aspects of the new open world is the idea that students can communicate online—create online communities of learning. Online learning is distinguished from distance education, according to Garrison, in that it is typically not self-directed and it is typically interactive.

Ron Owston, Professor of Education and Director of the Institute for Research on Learning Technologies (IRLT) at York University in Canada, explains that though most undergraduate students are looking for technology in education, they do not want a fully online learning experience. “They want to meet their professors and fellow students,” Owston says. “What seems to be appealing to students is this idea of blended courses—where there is a fair amount of technology in the course but they still have some face-to-face contact.”

Blended learning is an educational environment that has taken off in the past decade, and this is something, Owston says, that recent research shows is very effective. “It gives students flexibility and allows them to work whenever they want to—at 2:00 in the morning if they want.” Blended learning courses utilize online discussion groups, video conferences, and other Web technologies to engage students in interactive learning that can be done from just about anywhere.

The University of Central Florida has strategically implemented blended learning into its institutional practice. “They’re really the leader in terms of an institutional strategy,” Owston says. “They’ve found that students by far and large tend to prefer this. And it’s cut down on capitol—they’re able to make better use of existing resources.” Owston explains that a survey he conducted of Canadian faculty shows that teachers also find the blended learning approach satisfying. “In fact, they found that they were able to get to know the students better because they had more opportunity to read their writing,” Owston says,⁶

Wetzel, 2010 stated that Most learners who participate in online learning are happy with the freedom they enjoy. They no longer have to commute to school after work or sit in drab classrooms that do little to inspire them. Online learning supports them by encompassing all forms of web-based tools. Many universities and colleges have embraced this method of teaching as they reach out to their traditional and non-traditional students. Wetzel discussed The following teaching and learning strategies which were developed to support online learning or e-learning and could be applied for pharmaceutical learners:

- *Web-Based* – these are online courses provided in either real-time or the course information is stored on a website or course management system that pharmaceutical students can access 24 hours a day and seven days a week, year round.

- *Integrated Distance Learning* – this is a real-time course in which pharmaceutical students interact with other course participants live, for example web conferencing or video conferencing.

Mobile Learning – supports pharmaceutical learners who desire to participate in courses at their local book store, coffee shop, or other location using their smart phone or laptop

How the major benefits of online learning impact pharmaceutical learners is expressed by:

- *Access* – reaching all social economic populations of young and adults who cannot attend on-campus classes for a variety of reasons such as living too far from a campus, courses not offered by local college, childcare, or lack of reliable transportation.
- *Opportunities* – provides around-the-clock access to young and adult learners, especially for those who are considered lifelong learners and seek convenience in learning.
- *Adaptable* – web-based technologies have the ability to quickly evolve as they meet the demands of young and adult learners.

There are two web-based technology methods of delivery for online pharmaceutical learning courses; those that require students to be online the same time as others and those that do not. Some of these technologies can be used in simultaneous collaboration or at different times.

Pharmaceutical education e-learning strategies that require all participants to be online at the same time include:

- *Web-Based Communication* – one example is Skype, where a person clicks on button, image, or text to hold a real-time conversation with someone else using Voice-over-Internet-Protocol (VoIP).
- *Video Conferencing* – allows all participants in a course to see and hear each other in real-time.
- *Webinar* – traditionally referred to as web conferencing, all pharmaceutical students in a course participate from their computer or portable device in real-time.
- *Text Messaging* – course participants communicate with other pharmaceutical students and instructor to share information and contribute to discussions.
- *Google Docs* – allows pharmaceutical students to work with other students in real-time on collaborative presentations, documents, or databases.

Pharmaceutical education e-learning strategies that do not require all participants to be online at the same time include:

- *Twitter* – pharmaceutical students can communicate and share information with others in a course by providing links to their work, websites, videos, webinars, and other course related information.
- *Forums* – pharmaceutical students contribute to discussion threads related to course topics.
- *E-mail* – pharmaceutical students communicate with classmates and instructors sharing their views about course topics, along with attaching documents and providing links to relevant materials.
- *Blogs* – pharmaceutical students read course materials and leave comments regarding their views of the discussion topic.
- *Webinar Database* – provides pharmaceutical students opportunity to view web conferences they missed using their computer or portable device.
- *Google Docs* – allows pharmaceutical students to work with other students in non-real-time to develop a collaborative presentation, document, or database,5.

Mobile Learning: Using Portable Devices

Mobile pharmaceutical learning happens when an adult learner is not limited to a fixed or predetermined location.

Adult learners take advantage of the online learning opportunities using portable technologies.

The value of pharmaceutical mobile learning includes:

- *Light Weight Devices* – for example PDAs, cell phones with cameras, laptops, tablet computers, and smart phones.
- *Learning Support* – this is provided by podcasts, videos, e-books, web-based tools, and webinars. These portable tools also allow adult learners to share information gathered with classmates and instructors.
- *Discontented Learners* – provides the ability to reach young adults who live in an extremely mobile environment and are seeking alternatives for continuing their education.
- *Lifelong Learners* – allows them to use their portable devices to support their learning through quick access to web-based resources such as dictionaries, e-books, and reference materials ,6.

Discussion: There are a number of ways that technology can enhance service and pharmaceutical learning programs while conserving program resources:

Program management

For example, databases can help program staff to track pharmaceutical student placements, community partner contact information and the academic calendar.

Community partner participation

For example, a well-publicized web site can describe the pharmaceutical learning programs, provide easy access to forms for registering a community project and highlight stories of positive community partner experiences.

Curricular tools

For example, online modules and case studies can enhance classroom and community-based learning.

Community service

Meaningful community service doesn't necessarily have to involve regular or ongoing face-to-face contact between pharmaceutical student and community partner. For example, after meeting with community students in a web design course with a service-learning component

Reflection

For example, electronic discussion groups can enable pharmaceutical students across different service-learning sites to regularly communicate, share their experiences and respond to reflective questions posed by faculty and one another.

Program evaluation

For example, online surveys can enable pharmaceutical students and community partners to respond to questions about their experiences and the impact of the program. Databases can facilitate the tracking and storage of program evaluation information. One goal of service pharmaceutical learning is to *create* community, therefore some skeptics question the use of technology in service-learning. They focus on the potential for alienation and disconnectedness that can result from over-reliance or sole reliance on high technology. Technology will certainly never be able to replace human interaction and exchange, which is at the core of pharmaceutical service-learning experiences and essential to the development of trust between campus and community. These face-to-face exchanges are critical to sustaining service-learning partnerships. In fact, "community" and "technology" should not be considered mutually exclusive events—one may be used to enhance the other. Certain sub-populations, such as shy and introverted individuals, may actually be more inclined to participate in a "virtual" community than a "physical" community. Technology can engage pharmaceutical learners with communities in a dynamic relationship ,7.

Conclusion: Widespread use of technology is changing the way we work, learn, and communicate—even the way we carry out our regular, daily activities. In higher pharmaceutical education, technology has had a dramatic impact on teaching and learning, including service-learning experiences. Service-learning classes and activities can be

participants. With their ready access to new technologies, higher pharmaceutical educational institutions are well-positioned to take advantage of rapid changes in the field ,7.

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