



Challenges and opportunities associated with a
university-wide transition to a new learning
management system

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Lokaverkefni til M.Ed.-prófs
Náms- og kennslufræði frá Kennaradeild



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Prentun: Háskólaprent

Forward

This thesis is written for my M.Ed. degree in curriculum and pedagogy, with a focus on information technology and media, from the University of Iceland, the School of Education.

I want to thank Dr. Mathena, vice president of the University of St. Augustine, Dr. Agustsson, director of Online Education, and the University of St. Augustine IRB committee for all their help during this process. Special thanks to my husband for all his encouragement, help, support, and for not giving up on me.

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Ágrip

Áskoranir og tækifæri í tengslum við yfirfærslu heils háskóla í nýtt námsumsjónarkerfi

Í verkefni þessu notast ég við lýsandi tilviksrannsókn til að lýsa yfirfærslu heils háskóla yfir í nýtt námsumsjónarkerfi. Stjórnun, skipulagi og tæknilegum áskorunum tengdum yfirfærslunni verður lýst. Í nokkur ár hafa, niðurstöður úr ánægju könnunum kennara við St. Augustine Háskólann fyrir Heilbrigðisvísindasvið (USAHS) sýnt óánægju með námsumsjónarkerfi háskólans. Aðallega, kvörtuðu kennarar yfir skort á sveigjanleika og stjórnun á efni námskeiða svo og þróun námsefnis. Í kjölfar skoðunar á fjölda valkosta á námsumsjónarkerfum, var ákveðið haustið 2011 að innleiða Jenzabar eRacer námsumsjónarkerfið. Sumarið 2012, var námsumsjónarkerfi USAHS skipti yfir í nýja eRacer kerfið. Við yfirfærsluna voru um 170 námskeið með yfir 10.000 síðum af námsefni og þúsundum prófa og verkefna flutt. Flutningurinn þýddi að einnig þurfti að þjálfa kennara og nemendur í notkun nýja kerfisins. Tilgangur þessarar rannsóknar er að greina ferlið við umskipti yfir í nýtt námsumsjónarkerfis, með vísan í líkön af almennri breytingastjórnun og verkefnastjórnun. Rannsóknin er afturvirk tilviksrannsókn, eða atviksrannsókn, þar sem gögn í formi skjala, kannana og tölvupóstsamskipta frá þeim tíma sem yfirfærslan átti sér stað eru greind. Yfirfærslan sjálf heppnaðist að mestu leyti vel, án þess að uppkæmu villur, truflanir á þjónustu eða seinkun á aðgengi kennara og nemenda í námskeiðin. Helstu vandamál sem upp komu tengdust ekki beint námskerfinu sjálfu eða yfirfærslu námsefnisins, heldur frekar tæknilegum aðstæðum sem tengdust samstillingu kerfisins við gagnagrunna háskólans.

Abstract

Challenges and opportunities associated with a university-wide transition to a new learning management system

This project is a case study about a university-wide transition to a new learning management system (LMS). Organizational and technical challenges associated with this transition are described. For several years, results from faculty satisfaction surveys at the University of St. Augustine for Health Sciences (USAHS) shown dissatisfaction with the university's LMS. Mostly, faculty complained about lack of flexibility and lack of faculty control over course content and development of coursework. Following a review of a number of options, it was decided in the fall of 2011 to purchase the Jenzabar eRacer LMS. In the summer of 2012, USAHS made a university-wide transition to the new LMS. This transition involved the transfer of approximately 170 courses with over 10.000 pages of course content and thousands of tests and assignments. The transfer also involved training of faculty and students in the use of the new LMS. The purpose of this study is to analyze a university-wide transition to a new LMS, with reference to models of general change management and project management. The study employs a retrospective case study approach, employing data from documents, surveys, and email communication. For the most part, the transition itself was successful, without, errors, interruptions of service or delay in course access for faculty or students. The main problems that were experienced did not relate directly to the LMS itself or transfer of course materials, but to technical issues related to synchronization with the databases of the campus management system.

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1 Introduction

In this master's project a university-wide transition to a new learning management system (LMS) will be described. The method used is descriptive case study, focusing on a transition which took place from October 2011 to August 2013. This study focuses on personal, organizational, and technical challenges of a change in online educational delivery and how to efficiently implement institutional change of this kind. Lessons learnt will be reported as well as obstacles to implementation.

The purpose of this study is to analyze, with reference to models of general change management and project management, a university-wide transition to a new LMS. The research question is: What challenges and opportunities were associated with the university-wide transition to a new LMS, from the standpoint of faculty, students, and administration?

1.1 Background

The USAHS is a private university offering graduate programs in the health sciences on its campuses in San Marcos, California, St. Augustine, Florida and Austin, Texas. These programs include doctor of physical therapy (DPT), master of occupational therapy (MOT), and master of orthopedic assistant (MOA) programs which are considered entry-level programs for their respective professions. The university also offers post-professional programs; doctor of education (EdD), transitional doctor of physical therapy (tDPT), transitional doctor of occupational therapy (OTD), and doctor of health science (DHSc) degrees.

The university is accredited by the Western Association of Schools and Colleges (WASC) and the Distance Education and Training Council (DETC), an accrediting agency recognized by The United States Department of Education. Furthermore, the programs in physical therapy and occupational therapy are accredited by their corresponding professional bodies; the physical therapy program by the Commission on Accreditation in Physical Therapy Education (CAPTE) and the occupational therapy program by the Accreditation Council for Occupational Therapy Education (ACOTE).

1.2 Online education at USAHS

USAHS has a long history in distance education. The University's founder, Stanley V. Paris, began in 1966 to offer continuing professional education courses in manual therapy to physical therapists. In 1979, the University was founded in Atlanta, Georgia, originally under the name The Institute of Graduate Health Sciences. In 1991, the Institute moved to St. Augustine, Florida and became the University of St. Augustine in 1997. To begin with, the institute, offered a post-professional graduate degree in physical therapy, through a blend of practical seminars and pen-and-paper based distance education. From 1994, the Institute started offering an entry-level master's degree in physical therapy and from 1996 a master's degree in occupational therapy.

USAHS started offering courses via online education in the year 2000, initially focusing on the post-professional programs; with courses that could be completed fully online with a minimal residency requirement. But, in 2005 course offerings were significantly expanded with the flexible DPT program (Flex) that offered all academic courses online and hands-on classes on weekends. Initially, this program was offered for the St. Augustine campus only, but later also offered on the San Marcos and Austin campuses. The Flex program includes the entire entry-level physical therapy program; with all academic work done online and labs and hands-on experiences offered on weekends on campus. The significance of this development was that it required all entry-level DPT courses to be created as online courses. This turned out to be a considerable challenge since the foundational physical therapy courses, anatomy, physiology, pathology, biomechanics, and more had to be turned into online courses; something that had not been attempted elsewhere in the United States (USA), as far as can be ascertained. Further expansion of online course offerings took place in 2010, when a decision was made that at least 51% of courses offered at the USAHS should be online. This tripled the number of "seats" (students x courses) on the platform.

1.3 The Telematica LMS

The first LMS used by USAHS was developed for the University in the year 2000 by an English company, Telematica, with design input from a committee at the USAHS; a committee that for a couple of years had been planning the introduction of online education to the university. At that time, this LMS included some unique features. The most unique of these was the ability to create entire courses, or elements of courses, automatically by uploading a

set of zipped specifically formatted Word documents to a Word-to-Web converter. This automatic conversion created courses, complete with three-level navigation of course content, assignments, bulletin boards, and tests. Other elements built into the basic design of the platform included student profile, file library, and gradebook. The advantages of this approach were many. One of the main advantages of this approach was consistency. The course navigation was the same for all courses, all course content, as well as bulletin boards, assignments, and tests, had the same look and feel; all the way to the layout, background colors, and fonts.

One result of the approach described above was that the University had tight control over course development and design. The course developers and/or instructors delivered their course materials to the Online Education department as Word documents and all course elements, as well as subsequent changes, were maintained on the University's servers. This created an up-to-date master-copy of every course. All changes to a course had to go through course writer assistant who made the changes and uploaded the Word documents as zip folders that were converted by the Word-to-Web process. These documents were hosted in multiple locations; on a local USAHS network drive, by Telematica in England, and on a server farm in South-America.

The main disadvantages of the design and process of the Telematica LMS was the somewhat antiquated look and feel without a real end-user interface. Furthermore, the design allowed online instructors no direct editing capability of course content, assignments, or tests – with the result that all course changes, apart from minor editing, had to go through the University's Online Education department. But, most importantly, over the years, the stability of the LMS decreased as the number of students increased. The decision in 2011 to transition to a different LMS was largely driven by discontent by faculty and students with the lack of stability of the Telematica LMS.

1.4 The online education department

Staffing for online education was modest. In the fall of 2000, a lead coursewriter was hired and, six months later, a director of online education who also fulfilled other academic and leadership duties. The coursewriter was not an instructional designer or a specialist in online education, but a content-area expert in rehabilitation. Apart from writing course content, coursework, and tests, the coursewriter served numerous different functions, from video-editing and graphical design to development and

troubleshooting the LMS in collaboration with Telematica. He also chose and implemented third-party technology that could be embedded in the LMS, such as concept-mapping, VoiceThread, Wikis, interactive Flash files, and voice-over PowerPoint (VOPPT). In 2008, an assistant coursewriter, the author of this study, was hired to assist with formatting of course materials and to troubleshoot the Word-to-Web conversion process. In 2011, when it was decided to transition to a different LMS, two more staff were hired – neither of them with background in online education or instructional design.

1.5 The transition

For several years, data from faculty satisfaction surveys at the University of St. Augustine for Health Sciences (USAHS) had indicated dissatisfaction with the university's LMS, which was developed in the year 2000 and upgraded in 2004. This displeasure focused on the lack of flexibility and lack of faculty control over course content and the development of coursework. In their course evaluations, students had also reported the LMS unreliability – such as loss of email communications and tests scores not being recorded.

Following a review of several options included; Blackboard, MoodleRooms¹, Desire2Learn², Sakai³, and eRacer it was decided to purchase, the eRacer LMS that was integrated as a part of our campus management system (Jenzabar EX); seamlessly integrated. This would allow registration information to be passed into the LMS and course grades to be passed from the LMS to the registrar's office. In the summer of 2012, USAHS made a university-wide transition to the new LMS. This transition involved the transfer of over 170 courses with over 10,000 pages of course content and thousands of tests and assignments, but also involved training of faculty and students in the use of the new LMS.

1.6 The choice of topic

The research topic was chosen as I, as an employee of the USAHS online education department, have experienced this transition first-hand; first as a coursewriter assistant responsible for assisting faculty and troubleshooting

¹ Joule® Moodlerooms: An enterprise LMS platform; a commercially prepared version of Moodle,

² Desire2Learn: An LMS now best known as Brightspace.

³ Sakai: An open-source educational software platform developed by a community of academic institutions and commercial organizations.

the LMS and later as an online education analyst responsible for evaluating courses, faculty, and the performance of the online education department. Describing this process and the lessons learnt is valuable for purpose of creating a historical record for the university, for evaluating the transition in order to identify successes and failures, and to guide further development of online education and educational technology at the University.

1.7 Problem statement

In the literature, there are few descriptions of university-wide adoptions of a new LMS (Uys, 2010) and none describing such a transition at a health sciences university. This study offers a description of a university-wide adoption of an LMS within the context of a tightly governed, highly-specialized university, with a long tradition of online education with highly structured course content, as well as a tradition of strict control of course development. The findings of this study could guide educators faced with a similar LMS transition.

1.8 Approach

This project employs a case-study approach, using data from data from document reviews and surveys. The data are collected and analyzed it within the frameworks of a change management and project management.

2 Literature background

The following review will briefly address learning theories with reference to online education. I will discuss trends in online education, especially how online education has developed as a result of technological and societal factors. Finally, I will describe the change management and project management models that guide this study.

2.1 Learning theories

Under the influence of cognitivist and social learning theorists, the emphasis in education has been shifting over the last decades from a top-down approach to more learner-centered models. In a review of developments in distance learning, Anderson and Dron discuss distance learning in terms of three sequential pedagogies; cognitive-behaviorist, social constructivist, and connectivist (table 1) (Anderson & Dron, 2011). Each of these three pedagogies of distance education, analyzed by the authors, is characterized by different approaches to learning and assessments;. The authors analyze each of these pedagogies.. Other authors have looked at the development of distance education through the lens of the educational methods used for delivery of learning, from correspondence courses to mass media and, eventually, interactive web technologies. While this is not the approach taken by Anderson and Dron, they acknowledge that technologies have certainly influenced the development of educational models.

In the cognitive-behaviorist model, learning is defined as the attainment of new behavior. This model has been associated with storing and recalling facts and concepts and it has been associated with training rather than education. This model, in spite of predating modern instructional technology actually lends itself to structured instructional designs and interventions; including computer-assisted instruction. The cognitive presence in the cognitive-behaviorist model rests on structured learning experiences, based on clear instructional objectives. Social presence is not the strength of this approach which sees learning primarily as an individual process. In distance education based on this approach, teaching presence is conveyed through printed text, although presence can be improved by a conversational writing style and, more recently, by recorded audio and graphics. This approach, characteristic of first generation distance learning, has some advantages related to scalability and student freedom. But while it provides a solid

structure with a clear path to specific learning goals, it obviously has limitations when it comes to social and cognitive presence (Anderson & Dron, 2011).

Social constructivist pedagogy based on Piaget's idea of personal construction of knowledge, but its roots are in the work of Vygotsky and Dewey who emphasized the social nature of knowledge, along with personal construction of knowledge in the mind of the student. According to this pedagogy, instructors no longer merely transmit knowledge. The constructivist model emphasizes dialogue and social construction of knowledge, along with an emphasis on the scaffolding of knowledge. This view is echoed in the work of contemporary theorists that emphasize that the ability to use information requires being able to assimilate new concepts into existing knowledge models, (Novak & Canas, 2006, 2008) which, in turn, requires that the information is perceived as meaningful (Paul & Elder, 2005). Accordingly, what we already know partly determines what we can additionally learn (Novak & Canas, 2006). Learning is seen as an active process that integrates new knowledge with existing knowledge; placing an emphasis on discussion, validation, and real-world application, but also on the students' capacity to assess their own learning. This approach represents a student-centered environment that shifts the locus of control away from the instructor, who assumes the role of a guide rather than a "sage-on-the-stage." Although social constructivist pedagogy dates to the beginning of the 20th century, it did not become prevalent in distance education until technology made it possible to have many-to-many communication, in the form of, for example, discussion boards or blogs. The cognitive presence, according to this model, assumes that students are active; working on real-world problems. It emphasizes student-to-student and student-to-instructor interactions. Social presence and interaction are the key characteristic of constructivist pedagogy. These can be accomplished through synchronous and asynchronous collaboration and, more recently, facilitated through mobile communications and web-based applications designed for social interaction. In the social constructivist approach, teaching presence is characterized by the instructor as a guide and partner; with the instructor and course content no longer central in the learning process. This approach has been credited with elevating distance learning above basic knowledge transmission and with increasing the richness of class interaction. While this approach may have less structure than the behaviorist approach, it makes up for it in dialogue and its ability to progress the student from one state of knowledge to the next. However, Anderson and Dron acknowledge that it is more difficult to implement than the behaviorist approach. The focus on

human interactions and teaching presence limits scalability and this may be associated with more instructional costs. Furthermore, the creation of suitable, authentic assessment is more difficult than in the behaviorist model (Anderson & Dron, 2011).

Connectivist pedagogy can be seen as the offspring of the networked information age. According to this approach, learning consists of building networks of information and resources for the solution of real-world problems; connections that are flexible enough to be applied not only to current problems, but the problems that might arise. Thus, learning is certainly not about storing and recalling information, but finding and applying knowledge when needed. In the connectivist model, cognitive presence is based on the students' ability to tap into powerful networks and use them, which fosters a sense of self-efficacy. The "products" of the studies are open, continuously changing, but persistent. There is a lively cognitive presence. However, this presence is not instructor-mediated, but takes place through interactions on networks – such as in blogs. Learning aligns itself with social media; based as much upon the creation of content as its consumption. Thus collective "knowledge" is built through students' activities. Social presence is central in connectivist pedagogy, but it is a presence different from activities in constructivist learning where there are expectations of participation within a given time frame. The interactions can take place through comments on Twitter, Voicethreads or in the construction of Wikis. Teaching presence is more loosely defined than in the other two models and consist of defining paths to learning without the instructor being solely responsible for defining or assigning content. The instructor can be seen as teaching by example; through own contributions and, if applicable, construction of learning artifacts and by demonstrating the capacity to make connections. The highly tech-savvy students of today may end up teaching the instructors. The weaknesses of the connectivist approach may, strangely enough, lie in a lack of connection. Used in a formal course setting, this approach requires much participation on the behalf of the moderator, in order to keep the network alive. If this is not done, students may end up feeling lost and confused. But there are other limitations to the connectivist approach as a learning strategy. Currently, it may be at odds with the more formal and traditional courses the student is taking. Furthermore, while connectivism may be seen as a theory of the generation of knowledge, it may be hard to translate into ways of teaching and learning (Anderson & Dron, 2011).

Table 2: Summary of Distance Education Pedagogies

Generation of distance education pedagogy	Technology	Learning activities	Learner granularity	Content granularity	Evaluation	Teacher role	Scalability
Cognitive-behaviorism	Mass Media: Print, TV, radio, one-to-one communication	Read and watch	Individual	Fine: scripted and designed from the ground up	Recall	Content creator, sage on the stage	High
Constructivism	Conferencing (audio, video, and Web) many-to-many communication	Discuss, create, construct	Group	Medium: scaffolded and arranged, teacher-guided	Synthesize essays	Discussion leader, guide on the side	Low
Connectivism	Web 2.0: Social networks, aggregation & recommender system	Explore, connect, create, and evaluate	Network	Coarse: mainly at object and person level, self-created	Artifact creation	Critical friend, co-traveler	Medium

(Anderson & Dron, 2011)

Anderson and Dron conclude that none of the learning pedagogies described provides all the answers and while they are different, each one is built on its predecessors, rather than replacing them. These approaches have evolved along with the technologies that make them possible and as new possibilities opened up, it became possible to explore different learning processes and emphasize different types of knowledge and knowledge contexts. The authors stress that while the participants in the learning process remain the same; instructor, student, and content; the different approaches result in different relationships among these three. In constructivism the emphasis is on student–student interaction and in connectivism the emphasis is on student–content relationship (Anderson & Dron, 2011).

Of the three pedagogies discussed above, it could be argued that the constructivist approach has had the greatest influence on online education. It shifted the responsibility for learning from the instructor to the student and made interactivity an integral part of learning (Crawford, 2001) while promoting higher order thinking as; “content thinking, critical thinking, and creative thinking”. Accordingly, student engagement is now considered a fundamental element in education. Instructional strategies reflect this, as seen in the increased emphasis on courses where learning is not a teacher-directed activity but more a collaborative undertaking (Paul & Elder, 2005).

2.2 Online education and its development

In his book, *Seven Futures of American Education*, John Sener discusses some of the changes that have taken place, are taking place, and will likely take place in American education (Sener, 2012). Online education can according

to Sener be considered mainstream and has transitioned from a position of inferiority to parity; from oddity to novelty. Sener downplays the idea that the movement towards online education is driven by educators. He emphasizes that society has long since moved into cyberspace; education has been cyberized mostly because society has been cyberized and education is now “irretrievably dependent on digital technologies” – a form of cybercymbiosis (Sener, 2012)(p.2).

2.2.1 Societal changes driving changes in education

There is a healthy dose of skepticism surrounding online education. The history of education contains a long list of hypes that did not pan out; radio, television, and multimedia were all supposed to transform education but have little to show for it (Sener, 2012). So, while it is obvious that education has been cyberized, it is no clear that cyberization drives the change in education. Well, education without some digital tools is now near unthinkable, but perhaps the most enduring influence of cyberization is more general – extending beyond education - having to do with the general sharing of knowledge. The main changes in education are not the result of educational initiatives but result from changes in the nature of knowledge, which, thanks to digital technologies, has been redistributed from the few to the masses (Sener, 2012). It no longer resides in the minds of the wise; disseminated to the privileged few in classrooms with limited seating capacity, or in libraries with geographically fixed locations. This is powerfully stated in a blog post on reddit.com: "If someone from the 1950s suddenly appeared today, what would be the most difficult thing to explain to them about today?" Answer: "I possess a device, in my pocket, that is capable of accessing the entirety of information known to man. I use it to look at pictures of cats and get in arguments with strangers."

Not only is knowledge more accessible than ever before, knowledge production no longer takes place just on university campuses. It is produced by companies, government agencies, and non-profit organizations (Sener, 2012)(p. 16). Knowledge does not reside in isolated silos. It is distributed and connected. Individuals can, by networking in cyberspace, accomplish tasks that are unthinkable for any single person and do so on a broad scope with diversity of options (Sener, 2012)(p. 22). The most valuable skill is no longer being able to memorize knowledge, but to know where to look for it and how to work with others on advancing knowledge.

The growth on available information is never-ending, which may mean that the need to access new information and part with the old is greater than

ever before. This, in turn, means that the habit of life-long learning is more important than ever before. In the words of the futurist Alvin Toffler, “The illiterate of the 21st century will not be those who can’t read and write. They will be those who can’t learn, unlearn, and relearn (Howell, Williams, & Lindsay, 2003).

It is difficult to overstate the influence of this change and it is difficult to understand how this could affect education going forward. For one, the mainstay of education for hundreds of years, memorization of facts, is today more or less a useless activity. It would seem that Bruner, Ausubel, and Vygotsky were spot on. Their ideas are more relevant today than ever. With access to facts readily available, students should focus on application, analysis, and synthesis – the organization of knowledge from different sources. The general shift is from content mastery to content utilization. All of this, according to Bloom, exemplifies higher-order learning. A likely net effect is to change the teacher from a “sage on the stage” into the “guide on the side– into a knowledge ambassador or role model (Sener, 2012)(p. 15). This shift in the role of the teacher, the changed nature of knowledge, and the increased value of life-long learning would seem to be a good fit for online education.

2.2.2 Nature of online education

Could we say the nature of online education is to build bridges between the technologies we have and the knowledge and education that already exist? Today Online Education is no longer conceived as a tool or a way to simply deliver material by (through) the Internet. Most often online course designers, coursewriters, and instructors work continually to make e-learning not only available for bigger audience but to offer more quality courses with new technology that can present learning materials in multiply ways, via video, audio, concept-maps, bulletin-boards to name a few, which suits more diverse students. Beetham and Sharpe (2007) statement reflects this trend: “Practitioners continue to seek guidance on pedagogically sound, learner-focused and available learning activities, and learning contexts are increasingly rich in electronic and mobile technologies.” We see this in the increasing use of mobile phones and tablets within higher education. (Beetham & Sharpe, 2007) (p. 28).

2.2.3 Trends in online education

Numerous reasons have been cited for the recent growth in online education. Allen and Seaman point out that online education provides

educational access to previously underserved populations and reaches nontraditional students; including older adults returning to school (Allen & Seaman, 2013). Furthermore, online education is well suited to the technologically adept millennial generation that comprises the majority of students in colleges and universities (Alsop, 2008)(p.28). Alternatively, the growth of online education may be explained by the rapidly growing presence of the internet in society as a whole.

The growth of online education is particularly evident in academia. For several years, academic growth in the US has consisted almost exclusively of increase in online education. Increase in enrollment in colleges and universities has been slowing over the last decade and in 2012 there was for the first time a decline in enrollment numbers. However, the number of students taking online courses has continually grown. In the US, the number of students in higher education taking online classes is estimated at 3 million, or 14%, in fully online programs (Boothroyd, 2012) and another 30% that take at least one online class (Allen & Seaman, 2013). Online enrollment, as a percentage of total academic enrollment, has grown from 9.6% in 2002 to 32% in 2011 (table 2). In addition to fully online courses or blended learning, many instructors use some features of the LMS to supplement their on-campus courses. For all of these purposes, 99% of colleges and universities in the US have an LMS in place (Dahlstrom, Brooks, & Bichsel, 2014).

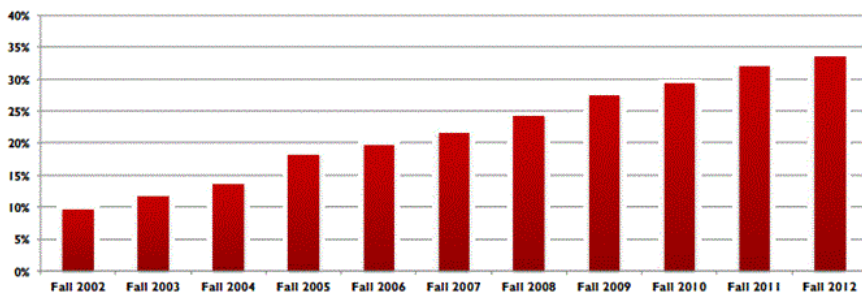


Figure 3: Online Enrollment as a Percent of Total enrollment: Fall 2002 – Fall 2012 (Allen & Seaman, 2013)

The profile of students in online education has been changing. Initially, the pioneers in online learning were private colleges and universities, but in 2013, 45% of those in fully online programs attended a public university, 35% for-profit institutions, and approximately 20% of students a private college or university. What academic programs employ online education? Based on data from schools that offer at least one program fully online, online

education has been utilized across the spectrum of academic curricula, but the greatest use of online education has been in the field of business, followed by health-related professions; other disciplines trailing well behind (Clinefelter & Magda, 2013).

Several authors have discussed the reasons for the popularity of online education, and pointed to flexibility and convenience. However, sustained growth in online education is not possible without good educational outcomes. In a meta-analysis of more than 1000 studies from 1996 to 2008, contrasting learning outcomes for online learning to on-campus learning, Means et al. found that on average, online students performed better than those receiving on-campus instruction and the best outcomes were found for blended learning, mixing elements of online and on-campus instruction. (Means, Toyama, Murphy, Bakia, & Jones, 2009).

2.3 Learning management systems; functions and user satisfaction

The introduction of online learning in higher education created expectations for pedagogical changes, better development of student learning abilities, decreased attrition rates, and greater satisfaction of faculty (Naveh, Tubin, & Pliskin, 2012). Whether simply an implementation of online learning can achieve all this may be difficult to assess. Furthermore, researchers do not agree whether it should really be the goal when implementing online learning to change teaching and learning processes or whether it should simply serve existing pedagogy.

2.3.1 Learning management systems

While the history of computers in education dates back to the 1950s, the learning management system (LMS), in the form we currently know it, dates back to the early 1990s (Watson & Watson, 2012). The LMS is a key ingredient at almost every level of online education. An LMS can be defined as a server-based software system for managing and delivering online learning, especially asynchronous learning, via a web browser (Berking & Gallagher, 2011). Some authors still adhere to the distinction between course management systems (CMS) and LMS, with CMS is primarily used in online or blended learning for course materials, tracking student performance, and managing their assignments and grades, but an LMS used to register students and manage online education on an institutions-wide basis (Watson & Watson, 2012). Due to nature of the LMSs discussed in this study, this distinction will not be made and the term LMS will be used for the

system that handles all aspects of the learning process from delivery of course content, tracking student learning, and collecting on the learning progress of; at the organizational and individuals level (Szabo & Flesher, 2002).

There are standards of interoperability that supposedly allow LMSs to interchange course content, assignments, and navigation structure. The sharable content object reference model (SCORM) was developed to allow such interoperability and later IMS Global Learning Consortium developed standards that addressed the shortcomings of SCORM; an approach called Common Cartridge. Using these standards allows automated migration of courses from one LMS to another that shares the same standards of interoperability, at considerable cost savings (Beetham & Sharpe, 2007).

2.3.2 Student and faculty satisfaction with LMS

The worldwide LMS industry is projected to grow to \$7.8 billion by 2018 (figure 2) (Dahlstrom & Brooks, 2014). Given these number, it is hardly surprising that there is fierce competition and the popularity and perceived usefulness of an LMS is of significant importance. Many factors can influence student and faculty satisfaction or dissatisfaction with LMS performance. In an interview study by Naveh, et al., five critical success factors for LMS implementation were most commonly mentioned: 1) Content completeness, whether which learning materials and messages were available in full, was mentioned by 90% of interviewees. 2) Content currency, whether relevant learning materials were posted in a timely manner, was mentioned by 65%. 3-4) Ease of navigation and ease of access were mentioned by 55%. 5) Finally, the responsiveness of course faculty was mentioned by 45% of interviewees. In a review of data from over 75,000 students, Dahlstrom et al. found the greatest student satisfaction with the basic features of the LMS, but the lowest satisfaction for features related to student engagement and collaboration.



Figure 4 The estimated growth of LMS industry by 2018 (Wyles, 2015)

In a review by Dahlstrom and Brook (2014) of survey data from 17,451 faculty members at 151 institutions, 74% of faculty stated the LMS is a very useful tool to enhance teaching and 71% considered very useful tool to enhance student learning (Dahlstrom & Brooks, 2014). These numbers closely correspond to our faculty perceptions. When looking at overall faculty satisfaction with our LMS, 3% said they were very dissatisfied, 11% were dissatisfied, 26% were neutral, 51%, were satisfied, and 8% very satisfied.

Faculty motivation to make more use of instructional technology differed according to the level of the institution, but at the master's and doctoral levels in private universities, faculty would adopt technology if the following three criteria were met; in order of importance: 1) There is clear evidence that students would benefit. 2) There is a) clear understanding of what technologies are relevant to teaching and b) faculty get time off to redesign courses. 3) There is confidence that the technology would work as planned (Dahlstrom & Brooks, 2014).

In the same review by Dahlstrom and Brook for Educause, information technology in higher education, training in LMS use was considered inadequate by both faculty and students. Although 99% of institutions offered LMS training, 57% of faculty said they could be better instructors given more skill in using the LMS and 26% expressed dissatisfaction with their initial training. It is of note that levels of satisfaction were consistent for initial and ongoing training. Two-thirds of those who were dissatisfied, or satisfied, with their initial training gave the same rating for ongoing training. The majority of students also felt underprepared.

2.3.3 Choosing an LMS

When choosing an LMS, the institution must take into account a wide variety of considerations. While it is essential to define requirements for choosing the LMS, it may also be helpful to evaluate the existing system and where it falls short. Most authors emphasize the need to obtain the opinions of all stakeholders; faculty, administrative staff, and students (Berking & Gallagher, 2011). In evaluating the prospective products, many use rubrics that contrast the pros and cons of the different solutions. Such rubrics may offer guidelines to evaluate overall design and layout, ease of integrating existing courses, content authoring tools, methods for creating s groups within the courses, availability of course tools (such as collaboration), learning analytics, textbook publisher support, scalability, and available support services.

2.4 Change and change management

Major technological shifts have characterized the last few decades and this, among other, has led most societies to change in unpredictable ways. While change in itself is nothing new, what characterizes the last couple of decades is the ever-increasing pace of change, fuelled mostly by continuous advances in computer technology, as predicted by Moore already in 1965 (Moore, 1998).

2.4.1 The Challenge of Change

In keeping with this vision of ever-faster changes, Sener (2012) predicts that a large proportion of current college students will need training for jobs which have not yet been invented (Sener, 2012). Online education, with its flexibility, scalability, and ability to meet the needs of non-traditional learners and to make continuing education readily available, could play a key role in this development.

Changes are often viewed as unsettling and many people fail to cope simply because changes are happening too fast. Consequently, changes are often characterized as being disruptive. Christensen and Overdorf (2000) distinguish between sustaining and disruptive innovations in the following manner: Sustaining innovations meet the demands of current users or employees; they improve existing processes and are typically driven by established industry leaders. On the other hand, disruptive innovations happen suddenly and unexpectedly and are most often driven by “new” organizations, introducing new technologies that the “establishment” has not asked for, such as was the case with the personal computer. Disruptive

innovations typically are so sweeping and happen so rarely that companies do not have processes in place to deal with them (Christensen & Overdorf, 2000). Computer-based learning and/or online education is disruptive as it replaces the standard mode of instructor-led teaching with a new learner-centered model (Barrett, 2012).

Several authors have addressed the challenges associated with implementing educational innovation in colleges and universities and have concluded that positive organizational culture and commitment to learning are key elements in facilitating implementation of new education technology (Surry, Grubb, Ensminger, & Ouimette, 2009). On the other hand, lack of clear direction regarding design and delivery of online education, absent strategic plans, and high academic workloads are seen as barriers to implementation (Brich & Burnett, 2009).

2.4.2 Models of Change

Numerous authors have discussed models of change. Although some books on change deal with personal change; from Spencer Johnson's *Who Moved my Cheese* to Elisabeth Kubler-Ross's *On Death and Dying*, most of the literature on change management comes from the fields of business and management. Change management has been defined as the process of managing the human side of change in order to achieve the required business outcome, using organizational tools that can help individuals make successful transitions (Creasey, 2007). In this study, the widely accepted model for general change management put forth by John Kotter will be used to guide data analysis (Kotter, 2007)(p. 99 -101).

A central theme in Kotter's work is that the change process takes time and it involves a series of steps that must be followed. Those steps must not be sacrificed for the sake of speed, as this would result in failure. Kotter discussed change in terms of the following eight steps.

Step 1; establish a sense of urgency: For change to take place, all stakeholders must really want it. Therefore it is essential to develop a sense of urgency and an understanding of the need for change. This will motivate the team to get started working on needed changes. It is not sufficient to just provide information about the current status of affairs and what the company wants to accomplish. According to Kotter, to motivate people, it is essential to have an honest discussion; identify threats, develop future scenarios, and examine opportunities.

Step 2; create a guiding coalition: To convince all stakeholders in the organization that change is needed and doable, it is necessary to recruit

people whose skills lie in leadership, not just management, and to obtain visible support from powerful individuals within the organization. This coalition, which continues to build urgency around the need for change, needs to have the political clout within the organization and the staying power to support the changes for the extended duration of the process.

Step 3; create a vision and strategy for change: According to Kotter, the key quality of a vision is that it links together all the elements of the planned change in a statement that people can easily grasp and remember. The vision statement must be compact enough to be articulated in no more than five minutes. The vision helps members of the team understand what they are being asked to do and why. When the stakeholders can easily grasp what the organization is trying to achieve, then the directives they are given are more comprehensible.

Step 4; communicate the change vision: According to Kotter, it is essential to continuously communicate the vision. In any organization, the message has strong competition from other daily communications within the company, so the vision needs to be communicated frequently and powerfully, as well as being embedded as often as possible in related communication. So the vision is not just communicated at special meetings called for that purpose, but talked about at every opportunity that arises, as well as being used on a daily basis to guide decisions and solve problems. But most importantly; people in leadership and management must demonstrate the kind of behavior expected from others.

Step 5; empowering broad-based action: Even if a vision has been created and communicated and staff within the organization is ready to start working on achieving the changes, there may still be elements, processes, or structures within the organization that get in the way of change. People in leadership must remove obstacles in order to empower employees to implement the change and move forward. An important element in this process is to recognize and reward the people that facilitate change. Often the resistance to change comes from individuals who do not understand the change vision. Information may be all that is needed. In other cases, there may be people within the organization who actively resist change; these must be confronted or removed.

Step 6; generating short-term wins: Success is a powerful motivator. Providing stakeholders with a sense of success at an early stage in the change process may favorably alter perceptions about the change. For this, it is necessary to create short-term goals; not just the overarching long-term goal. The change leadership team may want to choose smaller targets that

are achievable, with little possibility of failure. Each perceived "win" can further motivate employees.

Step 7; consolidating gains and producing more change: Each step in the change process allows the change leadership to analyze what was done correctly and what was not, as well as building on what went right and continue along that path. According to Kotter, many change projects fail because victory is declared too early. While short-term wins can serve to motivate stakeholders and are the beginning of what needs to be achieved, declaring victory too early may have the result that further work on change may be abandoned.

Step 8; anchoring new approaches in the culture: Anchoring the new approaches means further developing and maintaining the changes that were implemented to make them the *modus operandi* of the organization. In other words, the vision that drove the change must be visible in the daily operations of the organization.

2.5 Project management

The transition from the one LMS to another, with organizational and technical challenges, is an undertaking that can be discussed within the framework of project management. A project is a unique, discrete activity with specific expectations and a limited time frame – an activity that goes beyond the normal day-to-day operations of an organization. A project usually involves a team of individuals and possibly staff that are not regular members of the team.

Project management has certain ingredients in common with management in general. Lewis said: "It has been customary to say that project management is the planning, scheduling and controlling of project activities to achieve performance, cost and time objective for a given scope of work while using resources efficiently and effectively." (Lewis, 1995)(p.5).

This statement can be summarized further with three words: good, fast and cheap. These words form the project triangle. If one side of the triangle is changed the other sides will necessarily change. Decreasing the time allocated to the project might increase costs or negatively affect the quality of the end product, so the "fast" in this case means that is more difficult to meet the objectives of "cheap" or "good." Typically however, one of the requirements will have most influence on the project.

The major phases in managing a project have been defined variously, but can be discussed under the following headings: 1) Project mission and

strategy, 2) project implementation and planning, 3) project evaluation and control, 4) project organization and conclusion.

2.5.1 Project mission and strategy

Problem statement

The problem statement takes us to state what needs to be done. Lewis (1995) says: “For our purposes, a problem is a gap between where you are and where you want to be.”(Lewis, 1995)(p.4). A problem is defined as open when it is hard to foresee its scope or there is no correct solution, as when inventing new products, but defined as close-ended when its scope is foreseeable and there is a correct solution. A transition from one LMS to another should be defined as a close-ended problem.

Mission statement

A project mission statement represents a global view of the project, its purpose and the approach. All project objectives should be addressed and prioritized in the mission statement. A good mission statement can be a point of reference for all decisions regarding the project and may focus the team on the task at hand. This statement should be brief, concise and complete. It is essential that this statement represents the consensus of all stakeholders.

Project assumptions

At the outset of a project, many assumptions must be made, including whether the project team will depend on the work of others outside the team. An example of this, in the case of a transition from one LMS to another, is the collaboration of Online Education with the Information Technology (IT) team, which may be essential for success. The extent to which the cooperation of IT is needed must be established early on. It is, furthermore, important to establish early on how Online Education and IT communicate and where the boundaries of power and responsibilities lie.

Project strategy

Once the problem has been identified and a mission statement written, the project manager must devise the project strategy. This is essential to prevent short-term thinking. The strategy is specific to the project; its selection depending on the complexity and duration of the project. For a short-duration, straightforward project, this may be a single-phase strategy. Strategies for long or complex projects may require breaking the project up into distinct sub-projects.

Risk analysis and contingency planning

Risk analysis is used to identify risks and develop strategies for dealing with them. A complete and detailed project plan may guide tasks that are foreseeable, but risk analysis and contingency planning attempts to assess what could go wrong. Although it sounds counterintuitive to have to plan for what is not supposed to happen, it would be unwise to expect nothing to go wrong. Risks can be “known” and “unknown;” with frequently occurring problems classified as known risks. While one cannot plan for unknown risks, allowing a certain margin for delays and cost overruns can lessen the impact of unknown risks. Some general principles can be applied to risk evaluation. For example, longer projects carry more risk and the same can be said of lack of experience with a given project. High complexity of projects, lack of executive-level support, inflexible deadlines, and inadequate time allocated for projects are also factors that can increase risk.

2.5.2 Project implementation planning

In order to control a project, it is essential to plan its implementation. The first part of that process is laying out the project requirements – a clear statement of what the project’s deliverable are. Not doing that is like traveling without a map. Central to the implementation plan is a list of tasks and descriptions of these tasks. This task description, which serves, among other, to decrease the number of surprise elements, includes a description of what is to be done, who will do it, and when it will start and finish. If the tasks depend on other tasks being completed, these dependencies must be listed.

Network representations

It can be valuable to present tasks, timelines, and dependencies graphically. This can be accomplished by Gantt-charts where task breakdown and progress are depicted on a bar chart; preferably in a manner that demonstrates the interrelationship between activities and the people working on them. This is possible with modern project management software such as Microsoft Project (®TM Microsoft Corporation, 2013).

The Gantt-charts demonstrates the inter-relationship of tasks, dates, and resources; how the various tasks of a project are dependent on each other. For example, the start of one task may depend on the finish of another. Alternatively, the finish of one task may depend on the start of another.

A critical tasks and critical paths

Some tasks are of the nature that they cannot be delayed without affecting the project finish date. These are called critical tasks. A task is defined as critical when it must start or finish on a given date. The task is no

longer critical when it has been completed and no longer affects the completion date. Strung together, certain tasks make up a project's critical path; the longest string of activities essential to complete a project; thus defining the finish date of the project. There may be many strings of task dependencies through a project plan, however, the string finishing last is the project's critical path. Knowing the critical path of the project is vital to determine which tasks affect the project's finish date and shortening the duration of critical path tasks is the only of pushing the project finish date forward.

Constraints

"Project constraints" is a term used for limitations on how a task can be planned. The major ones are the deadline date, resources (including budget and manpower), and scope. A change in one of these constraints usually affects the other two. Decreasing project duration may increase the budget or manpower needs and potentially reduce the scope of the project. Constraints can be flexible, moderately flexible, or inflexible. Examples of flexible constraints are tasks that may be completed as soon as possible; moderately flexible constraints restrict a task from starting or finishing before or after a certain date; inflexible constraints restrict a task to a set date taking priority over other task dependencies.

Resources

The term "resource" may refer to manpower, equipment, and material resources. Adding resources to a project typically shortens the project time plan, but this may not always be the case, for example when a task may require special skills, such that only one person can work on it. Obviously, more resources also require more personnel management and meetings.

2.5.3 Project evaluation and control

A key element in project evaluation and control is the baseline - created after completion of the project plan. The baseline provides a standard against which to measure progress; offering a reference point against which updated information can be compared. If the updated information consistently differs from the baseline, this indicates either that the original plan was inaccurate or that changes have occurred in the implementation or nature of the project.

Project control - actions taken to steer the project onto its correct course after evaluation of the work - depends on the ability to evaluate the project's

status and compare it to the original project plan. There are limited number of actions that may be used for control and it is important to keep in mind that control actions are done usually “after the fact”. So, if a task runs over schedule, corrective actions may be limited to re-scheduling the following task. A project manager must decide on the level of detail to which project is controlled, but Lewis points out that too much control may waste time and destroy team morale.

2.5.4 Project organization and conclusion

The project conclusion is often referred to as the post-mortem. For project conclusion, the team gathers information from measurement tools, status reports, and post-project discussions and meetings. This is an important stage, as it here that the project management team analyzes the success and failures of the project, which can be used for planning or training for future projects, or recurring projects. Through examining the lessons learned from the project, the team can decide what can be done to improve future projects.

3 Method

In this project I used the case study approach, employing data from reviews of documents, email communication, and surveys. I collected data and analyzed it within the conceptual framework of a change management and project management; using data from various documents and surveys. Document review is like historical research; concerned with asking questions and finding answers from documents. The advantages of document review as a research methodology for this study was that data was available locally. Furthermore, this method is unobtrusive and represents data that is minimally influenced by personal feelings or opinions (Bowen, 2009) and (Kohlbacher, 2006). A key element in this kind of research is a thorough coverage of possible documents with emphasis on identifying all relevant records in a manner that is purposeful and ethical.

The disadvantages of document review typically relate to the great number of records. This makes selection of records difficult, possibly biased, and probably incomplete. Furthermore, like historical research, one cannot claim to report on the whole set of possible data; what is researched is what has been preserved. Then there is the question of whether those writing documents or emails are truthful; if they all experience same events in the same different manner.

Surveys are commonly used to gather information from a population. The value of surveys lies in the ability to research topics that require self-reports of knowledge, opinions, or satisfaction (Bennett et al., 2011). Surveys consist of a set of questions that are constructed to collect answers from the survey population. A well-constructed survey presumably allows generalization of findings to the population at large, which is the very purpose of survey research.

For the last two decades, online surveys have become increasingly popular. There are several advantages associated with conducting surveys online (Rienties, 2014). Among the advantages is quicker turn-around, which provides institutions with a more rapid feedback. It has also been found that most students find it easier to respond to open-ended question by typing than writing by hand and students have been found to provide longer answers and more thoughtful comments online. The disadvantages of online surveys may actually relate to their successful administration. These surveys are so frequently used that response rate may suffer as a consequence.

3.1 Materials

The context of the study was the University of St. Augustine for Health Sciences (USAHS) with campuses in St. Augustine, Florida, San Marcos, California, and Austin, Texas. Documents, emails, and surveys from October 2011 to August 2013 were reviewed. This timeframe corresponds to the period from the initial decision making process to the point in time where transition of all courses to the new LMS was completed, and up to the time of the first major update to the LMS.

3.1.1 Document Review

The documents reviewed included minutes from meetings, the USAHS faculty handbook, student handbook, USAHS history and mission statement, documents submitted to accreditation agencies, and educational materials produced by the online education department as a part of the transition. The emails reviewed represent communication with superiors, faculty, and coworkers. In order to limit the number of emails reviewed, only emails from for the fall of 2011, fall of 2012, and fall of 2013 are reviewed, with a focus on notifications of technical difficulties and help requests.

3.1.2 Surveys

The surveys reviewed included a) annual student satisfaction surveys for on-campus students in the entry-level physical therapy and occupational therapy programs and at-distance students in the post professional physical therapy and occupational therapy programs b) Students' end-of-course evaluations for five randomly chosen courses in the entry-level programs and five from the post-professional programs. These surveys have been administered up to ten years and have not been altered during the time period under review. c) Annual faculty satisfaction surveys. In each case, surveys were reviewed from before adopting the new LMS, immediately after adopting it, and a year later; for the fall of 2011, fall of 2012, and fall of 2013.

3.2 Research ethics

Permissions to collect data was sought and provided from USAHS management committee, institutional review board (IRB), and director of online education. Data security and subject anonymity were protected by stripping direct quotes of identifying features prior to presentation.

All computerized data was maintained on the same password-protected computer and backed up on a daily basis to a secure web site. Research data will be retained for a minimum of 24 months from the conclusion of the study. After that, the data will be destroyed. Data on personal computers will be deleted and the computers' recycle bin subsequently emptied. Data backed up to a secure Web site will be closed and the Web site account subsequently closed following the conclusion of the study. The surveyor web site will, furthermore, be closed at the conclusion of the study.

3.3 Procedure and data analysis

Data from the documents, emails, and textual responses to the open-ended questions on the surveys reviewed were analyzed with reference to a conceptual framework of change management (Kotter, 2012) and project management (Lewis, 1995).

While using a conceptual framework may be considered a limiting influence undermining analysis, the negative influences are countered by the guidance offered by a framework, as the researcher is not tempted to analyze data that do not relate to the research questions (Baxter & Jack, 2008).

The analysis addresses reasons for replacing the LMS, illustrate the institutional context and stakeholders, and explain the decision making process for selecting an LMS. The analysis furthermore, attempts to show the institutional impact, in terms of inter-departmental collaboration, staffing needs, and changes in technical infrastructure, as well as faculty and staff training and the dissemination of information to faculty and students. The research report is narrative in nature, but will still address each proposition made to ensure that the research question is addressed in a systematic manner.

3.4 Dependability and trustworthiness

The validity and reliability of the study, or dependability and trustworthiness according to the language of qualitative studies, is enhanced by breadth of data sources used and meticulous analysis. Using various data sources (data triangulation) increases the dependability of the study (Johnson, Long, & White, 2001). In the research report, enough detail is provided so that readers can assess the dependability and trustworthiness of the study. Member checking was employed, where interviewees are asked to verify the researchers' interpretations (Lincoln & Guba, 1990). The online education department's instructional designer and director of online education were asked to do a peer review.

4 Results

This chapter presents the transition from the Telematica LMS to the Jenzabar eRacer LMS, based on the analysis and interpretation of the data obtained from the documents, emails, and surveys reviewed. This discussion starts with the decision to make the change to a new LMS. Subsequently, the migration of courses from the Telematica to the Jenzabar eRacer LMS are described, as well as the training of faculty.

4.1 The process

The decision, in spring 2011, to transition to a different LMS was largely driven by discontent by faculty and students with the lack of stability of the Telematica LMS. It had been evident for a while to both faculty and administration that USAHS needed a new LMS. Eventually, the decision to make the move was made by the president of USAHS and the director of Online Education who was also the University's vice president. The director of Online Education initially headed the project, but in late autumn 2011 the lead coursewriter was placed over the project.

4.1.1 The choice of LMS

A committee of three was appointed to study what LMS programs were available and would be best suited to the University. The steering committee consisted of the director of online education, the lead coursewriter, and the coursewriter assistant. In the beginning, the committee held weekly meetings. In the selection phase, the selection criteria was established in order to shortlist LMS to investigate. Selection criteria identify and define the particular needs to successfully find the right system the University required. Selection criteria determine selection techniques. The description of the selection criteria should be able to answer this questions: Will the system; integrate with Jenzabar EX, potential for mobile learning, is it compatible with SCORM or IMS standard, has it test analysis, will it play FLASH videos, has it conferencing tools order to qualify? . The selection criteria represent the critical aspects of the system and provide a consistent standard (rubrics) that the LMS can be assessed against. Early in the process, it was decided to reduce the number of LMS that were examined down to four LMS's that all team members agreed on. The four LMS's were Jenzabar eRacer, Blackboard, Desire2Learn, and MoodleRooms. Blackboard and Desire2Learn were soon

eliminated because of the associated costs, but at the same time an updated version of the Telematica LMS was added to the mix.

On October 25th 2011, the Online Education department held a focus group meeting with faculty simultaneously on the St. Augustine and San Marcos campuses. Faculty were presented with a test run of three different online education platforms; an updated Telematica LMS, MoodleRooms, and eRacer. The selection criteria that had been used to narrow down the choices were explained to faculty. The LMS had to be able to integrate with Jenzabar EX campus management system, should have the potential for mobile learning on iPhone and Android, be compatible with either SCORM or the IMS standards for transferability of content, have robust testing security features, including browser lock down, have test item analysis, FLASH compliance for videos, and a conferencing tool. Of the options presented, faculty were most favorable towards the eRacer LMS.

The decision to go with the eRacer, which was not the selection committee favorite choice for LMS, from the standpoint of functionality, was driven by the fact the University had used the Jenzabar campus management system for over 10 years and this LMS would be seamlessly integrated. Further advantages of adopting this system was included that the IT department as well as the Registrar office and Finance were all familiar with it. The enrollment of students would automatically populate the courses student enrolled them self's in by Jenzabar, and last but not least course grades would automatically be transferred to registration and save both faculty and registrars few steps.

4.1.2 Migration of course content and coursework to the Jenzabar eRacer LMS

The initial plan was to migrate the courses, complete with course content, coursework, and bulletin board assignments, to eRacer in three stages: a) For the 2012 summer term, migrate nine courses that had the highest enrollments numbers, as a pilot project in order to identify difficulties associated with the migration process and/or errors. b) For fall 2012, migrate the remaining approximately 150 courses, with the exception of 12 courses that do not have fixed start and end dates (continuous enrollment courses). c) For spring 2013, migrate the remaining last 12 continuous enrollment courses. The lead coursewriter was put in charge of this migration of courses.

It was evident from the start of this process that the course migration process could not be automated. The Telematica LMS was compatible with the SCORM standard for interoperability, but Jenzabar eRacer with IMS

Common Cartridge. Thus, the approximately 170 courses had to be “manually” transferred. This number must be qualified; the number 170 refers to all courses and sections. In approximately half of cases, there were two identical or near- identical sections of the same course. Where that was the case, it was enough to transfer course materials to one course and copy that course over to other section of the course; sometimes with minimal modifications.

This transfer involved copying and pasting all text, graphical elements, bulletin boards, and assignments. Videos, instead of playing via streaming that was native to the Telematica LMS, had to be embedded using a specific embed code that referred to our document server. The one aspect of the transfer that could be automated to a degree was the transfer of examinations. The coursewriter assistant was able to automate this by making changes to the test word documents and exporting them using ExamView 8.1 [Copyright © 2011, Informer Technologies, Inc.].

As stated earlier, a master copy of every course was saved in the form of Word documents maintained on a USAHS server. It is an indication of the magnitude of the course content, that the content, assignments, and tests were approximately 20 GB excluding videos. This called for additional manpower; two more staff was hired for this purpose. It took three people close to a year to manually copy all the courses from the Telematica LMS to the eRacer LMS.

4.1.3 Faculty training

In February 15, 2012, six months prior to general implementation of the LMS, Jenzabar headquarters sent a trainer to the St. Augustine campus to work with faculty. This was part of the University’s agreement with Jenzabar headquarters and the stated goal was to “provide detailed eRacer end-user training for faculty in a workshop environment” and to work with the online department staff and administrative staff. Three training sessions were offered to faculty, over two days; in order to reach as many as possible. The turnout was very disappointing. No more than ten of the 55 resident faculty showed up in the three sessions combined. Preparation on the behalf of Jenzabar did not include providing for faculty to be able to work in the LMS, so the training mostly took on the format of show-and-tell. Similar, sessions were offered on the San Marcos campus with similarly low faculty turnout. At this time the Austin campus was not open yet. Following this experience, the lead course writer and course writer assistant took over the training of faculty.

To accomplish the training, the director of online education recommended a train-the-trainers approach, by which a few faculty members that were considered technologically savvy, were tasked with assisting their peers in learning to use the LMS. The coursewriter assistant searched for the faculty most competent for the mentoring task and chose four well-developed courses with suitable candidates were available in at least one of the sections of the course. None of these trainers had used the eRacer LMS before, but all were willing to try the new LMS and to train others. The trainers were trained one-on-one, face to face and all four of them together. After the training, the trainer grouped up with three or four of their fellow faculty and trained them with the assistant of the online department staff, using tutorials created by the online department.

For adjunct faculty at-a-distance, several “GoToMeeting” webinars were offered. In the beginning, three to five adjuncts were trained together; each having a “sandbox” version (as opposite to “production,” or real, courses) of their own course to play around in. This approach was successful; many of these small groups kept working together throughout the first term. All faculty were eventually offered the same way of training in small-group GoToMeeting webinars. Later, when faculty started working in their own courses in the production environment, GoToMeeting was used for two on hour sessions of one-on-one training with faculty in there own course and the same approach has since been used for all newly hired faculty both campus based and online.. Subsequent developments for ongoing training have been offered via faculty retreats and with dissemination of information and tutorials on the Online Education department web page.

4.1.4 Collaboration with IT

When using the Telematica LMS, the Online Education department had no interactions with the IT department, relating to the LMS. All requests related to troubleshooting errors and improving functions were between Online Education and Telematica. No information was passed between Telematica and Jenzabar EX; students had to be manually enrolled in courses and faculty had to go away from the LMS to Jenzabar EX to submit grades. With the migration to Jenzabar eRacer this, and many other things, changed. Student enrollment in eRacer was automatically accomplished as soon as the student signed up for their courses and grades were submitted with one command from the course gradebook to the registrar’s office. Additionally, eRacer was now hosted on the University’s server and subject to any interruptions in

server availability USAHS web site downtime. Furthermore, the eRacer LMS now shared many functions with the databases underlying in Jenzabar EX.

It was soon evident that the shared services created their own set of problems. It was never clear that Online Education would have a dedicated resource on the IT team to assist with problems in courses and we the online education staff often found ourselves waiting while IT solved problems related to different functions, such as Finance or Registration. This frequently created friction. USAHS was Telematica's biggest client and the threat of non-payment was used on more than one occasion, but we had no similar leverage with our own IT team. As a part of the campus management system, eRacer was also affected by errors in a much bigger database structure and was, for example, affected by updates and changes that did not necessarily have anything to do with eRacer.

4.2 Change Management

The transition to eRacer was not planned around a model of change management or project management and no one on the Online Education team was consciously following these models. However, these models are used here to guide analysis of the transition process; starting with Kotter's model of change management.

Step 1: Create Urgency

According to Kotter (2012), the first step in change management is to create a sense of urgency. From the standpoint of the Online Education department, creating a sense of urgency was not difficult. Faculty had shown their frustration with the Telematica LMS in surveys for a long time. This frustration mainly related to their lack of ability to add course content or tests. Furthermore, issues with reliability had discredited the LMS to point of no return for both faculty and students. Thus, when the announcement was made that USAHS was looking into a different LMS, the general sentiment was that of wanting to make the move to just about any LMS. This may have adversely affected the process of choosing a new LMS.

Step 2: Form a Powerful Coalition

In a small institution where all faculty or members of staff can easily reach academic directors, paths of communication are short. The director of Online Education was also serving as the vice president of the USAHS and director of post professional education; therefore a big user of online courses and part of our team. The lead coursewriter, and coursewriter assistant worked on plan to introduce the idea of a new LMS that the majority of faculty would welcome. The president and CEO came to that position from directorship of

the Flex program; the biggest user of online courses. It is safe to say that once the decision was made to move to Jenzabar eRacer, all major players were on board.

Step 3: Create a Vision for Change

The rationale for change was easy to sell, given the positive attitude of faculty, administration, and leadership. The reality was that the University was growing at a rapid rate. Given that the weaknesses of the Telematica LMS had really first manifested themselves with the growth in seat numbers on the platform, it was evident that going forward we needed a new LMS that could sustain further expansion of online education. The vision for change was one where growth of the University and more robust and better integrated LMS went hand-in-hand.

Step 4: Communicating the Vision

Communication about a vision for the change was not a prominent part of this process, but in reality a lack of such communication did not dampen the general enthusiasm for the change. It cannot be said that communication was really planned; a more appropriate description is to say that it happened through faculty meetings, emails, and newsletters.

Step 5: Remove Obstacles

Once the University's contract with Telematica was terminated, no obstacles to the change were encountered. Technical obstacles related to delays in finding adequate server space to meet the increasing "traffic" and a secure server location, as well as having server redundancy and security protocols. It was evident the first time that the University experienced server downtime, that, no processes were in place to automatically notify the IT department of the fact. Similarly, it became evident that there was no plan in place to back up, on a regular basis, the tremendous addition of data on the Jenzabar system. This had never been a problem in the Telematica platform since all course content, tests, and assignments existed in the format of up-to-date zip folders on Telematica's and an identical version on the University's servers.

Step 6: Create Short-Term Wins

Faculty felt from the beginning that moving from the Telematica LMS was a big win, after numerous complaints year-after-year. Thus, it was welcome news when the rumor of new LMS got started. This could be considered an example of a short-term win. Another short-term win was a sandbox course that the Online Education department created for faculty to become familiar with eRacer; it was easy to navigate and faculty could log in and play.

Step 7: Build on the Change

It would not be accurate to say that the Online Education department had been deliberate in building on experience. Since the changes took place during a short period of time, without the majority of faculty involved in the process, changes were established based on what went well.

Step 8: Anchor the Changes in Corporate Culture

It was easy to get faculty onboard with the changes from the old LMS to the new. As soon all courses had been implemented in the eRacer LMS, faculty and staff were exited to start to work in the new LMS. Training and hand holding for the first month helped enforcing the changes and corporate the changes in our culture.

4.3 Project management

What follows is a discussion of findings within the framework of project management.

Project mission and strategy

The mission statement was as follows: "The University of St. Augustine's Department of Online Education will transfer the university's current course offerings from the Telematica LMS system to Jenzabar LMS system; eRacer, in a manner that entails minimal disruption of service and at the same time serves as an opportunity to improve online education and instructional design." It is of interest that this mission statement does not address faculty or student training. The following discussions will reflect the mission as stated above; the other elements of this transition will be addressed in Discussion.

Project implementation planning

In preparation of the transfer, it was time to increase the manpower in the Online Education department. A self-taught video technician who had worked in a 50% position came onboard full-time. Additionally, an administrative assistant from a different department was hired as online instructional assistant, although her educational background in technical education was only partly relevant to the task. The coursewriter assistant formulated an implementation plan with list of task descriptions, noting any project constraints relating to the timeline. Each of the team members was assigned to a set of tasks that best suited their abilities. The coursewriter assistant was charged with converting online tests to a format that could be employed in the eRacer LMS, while the other two employees worked on copying and pasting course content. It was decided that both the tests and

the course content would be copied from the Word master copies of the courses; not from the Telematica LMS to eRacer.

Project evaluation and control

As time was key element in this project, the lead coursewriter who managed the project held weekly meetings with the team to verify the status of the project. In these meetings, the progression of the project was compared to schedule and the schedule corrected as needed. During this process, some tasks were re-allocated as the strengths and weaknesses of each team member became evident. Following the conversion of the majority of the tests, the coursewriter assistant was assigned to some of the more complicated courses. Furthermore, the duties of the instructional assistant and the video technician were split in such a manner that the instructional assistant was put in charge of creating the structure of courses while the video technician was assigned to two well demarcated duties; copying into text frames and creating and troubleshooting embed codes pointing to our document server.

Project organization and conclusion

Apart from the migration of courses and training of faculty, it was necessary to set up channels of communication and collaboration with the IT department. With the Telematica LMS, no such interactions had been needed, but with eRacer there were numerous areas where the online education and IT departments intersected. Numerous decisions had to be made up front – prior to full implementation of the eRacer LMS. This related, for example, to procedures for setting start and end dates for courses, methods for enrolling students in different types of classes, and reporting of problems that could be assumed to relate to the databases that were common to both the eRacer and the Jenzabar campus management system. This collaboration became the responsibility of the lead coursewriter.

Overall, the project can be seen as a success. Each phase of the transfer took place within the dedicated timeframe. Furthermore, I was unable to find in the materials used for this study, any complaint from faculty about errors, as a result of the transfer of courses.

4.4 The transition from the point of view of students and faculty

There were only a few examples of direct communication from faculty to the Online Education Department regarding the transition and even fewer from students. Therefore, the discussion of the transition from the point of view

of students and faculty will be based on faculty and student satisfaction surveys that are sent out each fall. In the following discussion, the surveys from fall 2011, fall 2012, and fall 2013 will be used. This should provide some insight into student and faculty satisfaction or dissatisfaction with the eRacer LMS.

4.4.1 Student Satisfaction Surveys

Every year the university sends out Satisfaction Survey to students in all our programs.

Fall of 2011

The fall of 2011 was the last term USAHs used the Telematica LMS. Student satisfaction surveys from different programs shows wide range of responses. Great differences were found between students in the fully online programs; the Flex and post professional programs, as compared to the on-campus entry-level programs with fully online or blended courses. The latter were typically less favorable. In the post professional programs, tDPT, tOTD, EdD, and DHSc, 150 students replied to the student satisfaction survey in the fall of 2011. Most of the students, or 62.7%, had been in the program for more than two years, but 15.3% students had been less than a year. Of these students, 73.4% were very satisfied with the Telematica LMS and 18.2% somewhat satisfied.

And furthermore, 95.7%, of the post professional students were happy with the orientation to the online learning and the portal.

A few comments were made about the LMS, however, most of the comments students entered under the heading “LMS” actually did not relate to the LMS, but to issues relating to stability of the LMS server. Students, for example, complained that they did not receive prior notifications of server downtime. One student commented: “Platform messages should be able to be automatically forwarded to your email.”

The 49 Flex students that replied to the fall 2011 survey rated the LMS fairly favorably. Sixty-five percent of students said they were very satisfied or somewhat satisfied with the LMS. Most of those who commented said the LMS was user friendly and fairly easy to navigate. While over 90% of students were satisfied with their orientation to the LMS, several students complained that the orientation to the LMS had not been timely. “No one really explained how to use the online learning and platform,” one student complained.

In contrast to the Flex students, of the 171 on-campus students that replied to the 2011 students satisfaction survey, 45.6% said they were very satisfied or somewhat satisfied with the Telematica LMS and 74.6% were very satisfied or somewhat satisfied with the orientation to the online learning platform.

Fall of 2012

In fall 2012, all courses had been moved over to the eRacer LMS; the fall survey was conducted right after full implementation. In this survey, 57.3% of the 163 Flex students that responded were very satisfied or somewhat satisfied with the eRacer platform and 73.5% satisfied with the orientation to online learning and platform. There were the occasional negative comments such as: "Your (sic) already screwed, you bought a useless Jenzabar product. Get your money back if you can. Go to the old one." Another student said: "It seems very outdated." Even though 73.5% of students were satisfied with the orientation to the platform, a few commented that they needed more instructions regarding the new online platform.

Of the 115 post professional students that responded to the survey, 88.0% were very satisfied or somewhat satisfied with the orientation to the online learning platform, but unfortunately the questions about the eRacer platform were not available; had been removed from the survey. However, some insight can be gathered from comments and questions about course and seminars registration and other relating to the questions: "What has been the most difficult or trying experience at USAHS so far" and "Rate your level of satisfaction on registration: Students implicated the new platform and made comments such as: "I wish that when the new learning management system was unfolded (the online teaching platform) that we had been given a heads up and some foundational information with regards to navigating it". Another comment "The online platform had some issues that I think are still being worked on (test taking, format issues etc.)."

Of the on-campus entry level students, 201 replied to the survey and 66.9% rated their level of satisfaction with the eRacer platform as very satisfied or somewhat satisfied. Most students were happy with the orientation to online learning, or 80.4%. The on-campus student comments on the eRacer LMS ranged from: "The new platform works well and is great cohesive meeting ground for coursework" to "Get it to work! The eRacer platform/ email services have been terrible." The last comment indicates confusion as to which functions are a part of LMS. The Telematica LMS had its own email platform that, while it sent notifications to the University email

system, was a self-contained system where all communication inside a course could be tracked. In contrast, the eRacer LMS, while it allowed sending comments to the instructor from various functions inside the LMS, such as bulletin boards and coursework page, these comments were sent to the instructor's @usa.edu account and replies to these emails would go to the student's @usa.edu account. There was no inbox or outbox inside the LMS. One student commented: "I also found the eRacer platform a little bit more difficult to use than the previously used platforms." Another student offered an alternative LMS solution: "The MyUSA portal and eRacer platform is awkward and unintuitive with many design flaws. Blackboard is a much better system. I wish aspects of it were adopted if not total switch".

Fall of 2013

The fall 2013 surveys were conducted after the first whole year of using the eRacer LMS. The post professional students seemed happy with eRacer. Of the 40 students that replied to the survey, 92.3% stated they were very satisfied or somewhat satisfied and only 7.69% somewhat dissatisfied. The outcome for the orientation to online learning and platform was similar; 84.61% were either very satisfied or somewhat satisfied, while only 15.38% were somewhat dissatisfied. Student comments differed. One student said: "The platform changed since I started and I appreciated the webinars and video guidance which were very helpful. I find the new system much more useful." But, another student said: "I find the platform has gotten more confusing. It is hard to find posts to respond to them. I have to do a word search for that specific post from having read it in my email."

FLEX program student satisfaction surveys showed differences between campuses. Of the Florida FLEX students, over 70% were very or somewhat-satisfied with the eLearning platform, only 50% of California Flex students were somewhat satisfied. Post professional student showed that over 90% were very or somewhat satisfied with the LMS and 85% with the orientation in the fall of 2013.

On the question on orientation to the online learning, 70.96% of the Florida students were very- or somewhat satisfied with the orientation to online learning, while only 44.44% of the California students were.

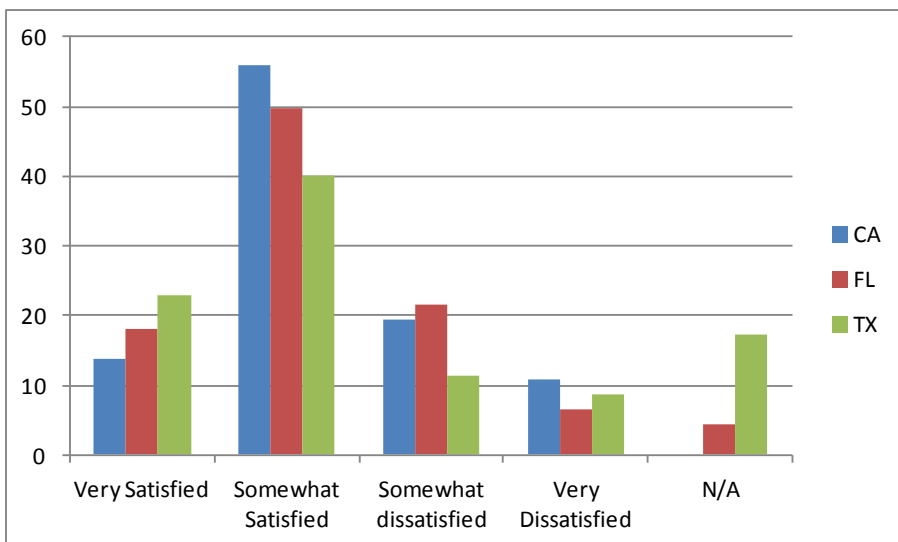


Figure 5. Student satisfaction survey 2013.

4.4.2 Faculty Satisfaction Surveys

Like students, faculty members are asked to complete satisfaction survey every fall. Here, surveys from all three campuses will be combined

Fall of 2011

Unfortunately, the questions on the yearly faculty satisfaction survey for the fall 2011 survey differed from those in 2012 and subsequently. In the fall of 2011, faculty dissatisfaction was evident. Forty percent of faculty agreed or strongly agreed that they were satisfied with the Telematica LMS; 60% disagreed or strongly disagreed. Numerous comments on the Telematica LMS were made related to this statement; comments that expressed frustration by faculty. Many of these comments were quite lengthy; only part of one will be included here.

The platform was the biggest problem. It is very slow, consistently gives me error messages, and has frequent posting problems. The platform does not know how to number questions, difficulty in getting the quizzes to register. A random

posting appeared in course notices from a completely different course.

This comment highlights the increasing unreliability that plagued the Telematica LMS and gives insight into the near-constant state of crisis management under which the Online Education department worked in order to make the LMS work.

At this time the university, by the request from DETC, had to deliver 51% or more of all courses offered at the university, online. After the first semester of blended learning for on campus courses, on campus faculty was asked to take special survey to see overall experience with the blended learning. Of those who took the survey, 60% rated their experience positive; however the biggest problem stated by the faculty was the Telematica platform.

Fall of 2012

There were 46 replies to the faculty satisfaction survey for 2012; 27 from Florida, 13 from California, and 6 from Texas. The majority of the respondents (34) were teaching in the DPT program; including new faculty that had little or no experience of the previous Telematica LMS (23.9% of respondents). Only one question on the 2012 survey related to the LMS: "To what degree are you satisfied with the online platform?" Forty-three percent of faculty stated they were very satisfied or somewhat satisfied with the eRacer platform, 34.1% of faculty were neutral on this question. One faculty member commented: "I find MyUSA to be somewhat friendly, BUT, it has lots of technological issues. I use it A LOT for my courses, and I frequently get kicked off. I will update something and the next day, it is gone. Students try to submit things and it only takes part of their submission. I just spent HOURS updating a lecture that I had done in Word already, so I SHOULD have been able to just cut and paste it. Unfortunately, 5 hours later, I thought I was done. When I came back today, it only took about 1/2 of my changes. I've filled out a tech help ticket, but this is VERY FRUSTRATING. I really feel like we got stuck with an inferior product (although not quite as bad as Telematica)"

The above comment exemplifies the difficulties associated with trying to assess faculty satisfaction with the eRacer LMS. Here, a large part of the frustration may be caused by lack of server reliability. Most comments, however, were positive, ranging from "I am happy with the new platform" to "the new platform is a vast improvement!"

Fall of 2013

Again faculty response rate to the satisfaction survey was not very high; only 43 replied. At the time I got a hold of the survey, the results had been summarized. However, judging by comments, it seems faculty did not feel that there was sufficient support for the eRacer LMS. A couple of comments will be provided: “New faculty should have an orientation process that allows them to be trained on eRacer, etc.” and “Much of my use of the portal has been self-guided. I believe that I could utilize the technology better with additional education on the platform and its capabilities.”

4.4.3 Faculty Survey for implementing Blackboard

Again, for the fall 2015 the USAHS was faced with replacing the LMS. This time around, the decision was made by the leadership of Laureate International Universities that bought USAHS in the fall of 2013. The rationale was that all of their universities should have the same LMS as the biggest university within the Laureate group, Walden. In preparation for this transition, a survey was sent to 233 faculties in the early spring 2015, in order to gain insights that could prevent us from repeating previous mistakes. One question asked if instructors had used Blackboard. Thirty-three of the 71 that answered this question had used Blackboard as faculty and 37 of 73 that answered, had used it as students. This information gave us insight into what form of training would be needed if we were to switch to a different LMS again.

The last six questions in the survey asked faculty about the lessons we could learn from the move from the Telematica LMS to eRacer. Only 40 instructors answered the questions. This can probably be attributed to the fact that, part of the faculty that did not respond, had not been onboard with the University or had not been teaching online at the time. The six statements were:

1. Faculty were involved in the decision making about choosing LMS.
2. There was adequate communication regarding the transition, before it took place.
3. There was adequate communication during the transition.
4. There was adequate faculty training.
5. The training provided by Jenzabar was useful.
6. There was enough faculty support from the Online Education department during the transition.

The answer options were;

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

For most of the questions regarding the transfer to eRacer, faculty chose Neutral as seen in figure 5. Still, the feedback accompanying the survey is valuable to guide the transition from eRacer to Blackboard that lies ahead.

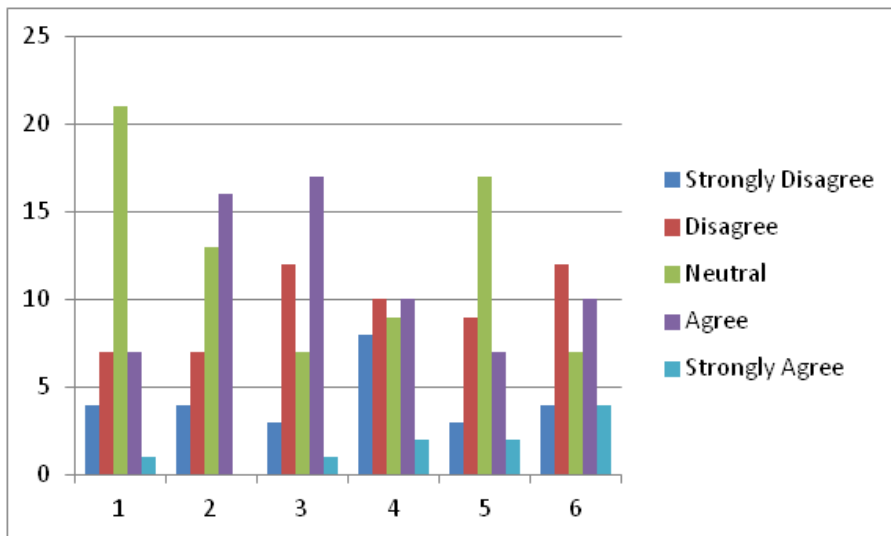


Figure 6 Lesson learned; moving from Telematica to eRacer LMS:

Still, the feedback accompanying the survey is valuable to guide the transition from eRacer to Blackboard that lies ahead in the fall 2015 where all first term and first taught new course (18) will be taught in Blackboard and all other courses (274) university wide will move in January 2016.

Here are some valuable comments from faculty:

- Adequate training and communication during the transition.
- I would like to have training via ELMs instead of relying on a "faculty trainer" - the faculty trainers were not available when I needed them and at times were trouble shooting on their own - they didn't have concrete answers.
- Communication.
- Rolling it out with few classes first.
- Information and training.

5 Summary and discussion

The decision to replace the LMS was largely driven by faculty and student discontent with the Telematica LMS and there was significant support behind the decision to migrate. However, it could be argued that the choice of an LMS to replace Telematica was not thoughtfully executed.

5.1 The choice of LMS

Only five systems were considered. This may be considered a shortcoming, best explained by the lack of manpower needed to do a more inclusive search. Of those five, Blackboard and Desire2Learn were eliminated from consideration almost from the beginning, due to the high costs associated. In retrospect, the high costs should have been obvious from the beginning; eliminating these two systems prior to engaging in any comparisons. This left the following systems to consider: A proposed updated version of the Telematica LMS, eRacer, and MoodleRooms. Given the poor reputation of Telematica amongst faculty, the updated version of Telematica was a non-starter; really leaving only MoodleRooms and eRacer to consider. As it turned out, faculty were most favorable towards the eRacer LMS, while the steering committee favored MoodleRooms. The executive decision to go with eRacer was largely driven by its ability to seamlessly integrate with Jenzabar the EX campus management system which the university had used for over 10 years.

The selection criteria for a new LMS specified that the LMS should be able to integrate with Jenzabar EX campus management system, should have a mobile platform, and be compatible with either SCORM or IMS Common Cartridge for transferability of content. As it turned out, the eRacer LMS did not meet all the specifications. In spite of promises to the contrary; there was no built in conference tool and no options for mobile learning. The specifications that the new LMS have either SCORM or IMS Common Cartridge compatibility demonstrates an error in on behalf of the steering committee. Since the Telematica LMS was SCORM compliant, SCORM compatibility was really all that mattered. The eRacer LMS was not SCORM compliant, while both Moodle and Blackboard were and this created problems while migrating the courses, since that process that could not be automated. So, it would seem that the selection process did not follow its

own guidelines. However, as Berking & Gallagher point out, while it is important to check the LMS against specific requirements, another approach could be to evaluate the existing LMS and see if the proposed new LMS addresses the shortcomings of the old one (Berking & Gallagher, 2011). Given that eRacer was a fully integrated part of the Jenzabar EX, which faculty were already familiar with, and that faculty were primarily interested in the ability to edit course content and assignments, it is easy why faculty preferred eRacer.

Choosing eRacer resulted in closer ties with the university's IT department, since the LMS was just a function within the campus management system. This necessitated collaboration that had not existed before. As it turned out, the collaboration was not adequately structured. For example, the Online Education department never had a dedicated contact person on the IT team and requests for assistance were simply put in queue with Jenzabar EX problems, such as registration and finance. The LMS, now hosted on the university's server, experienced far more frequent server interruptions than we had experienced with Telematica. Furthermore, eRacer was now subject to problems in the Jenzabar EX databases; problems that in most cases did not reside within the eRacer part of Jenzabar. This increased frequency of interruptions could explain lower post-transition satisfaction by the "heaviest" users of the LMS; the Flex students (see below under Transition from the point of view of students).

5.2 Change management and project management

When discussing the LMS transition, it is necessary to disclose that the transition process was not guided by or structured around models of change management and project management. These models are only applied in retrospect. They will be discussed here briefly. It is evident that the first three steps according to Kotter's model, creating urgency, forming a coalition, and creating a vision, were easily accomplished. The willingness of faculty and administrators to move away from the Telematica LMS made faculty buy-in easy. The fact that the university president came to that position from directing the Flex program, well understanding the importance of a reliable and flexible LMS, and the director of Online Education who was also the University's vice president of academic operations, ensured that the transition had the support of the governance. The vision of an LMS that could handle the growth in number of online students and also support academic freedom for faculty through greater ability to modify course content and assignments was an easy sell.

In retrospect, communication to students and faculty was the weakest link of this process. This could be explained with reference to the humble beginnings of the university. In a university small enough that information was easily disseminated in faculty meetings or by walking over to the office of a colleague, the need for a formal communication plan was not evident. One manifestation of this undisciplined approach to communication could be seen in the inadequate eRacer training. When it became evident that the training session were poorly attended, not enough pressure was put on faculty to make up for the sessions they did not attend. As a result, the Online Education staff had to spend time working with faculty on a one-on-one basis after the start of courses; something that could have been partly avoided.

When discussing the transition in terms of project management, it is noteworthy that most of the work was mostly performed by people without training in online education or instructional technology. Thus, one of the challenges during the transition was to identify what each team member could contribute and to divide the work up according to personal abilities, rather than recognized sub-specialties, such as instructional design. Here, personal abilities not only refer to technical skill and knowledge, but also to adaptability and tolerance for ambiguity. Thus, only certain members of the team were found to be able to deal with tasks where the parameters were uncertain; regardless of their other abilities. All of this made greater demands on the project manager to ensure collaboration between team members.

In review, the main failure in terms of project management relates to project evaluation and control. No tracking or ticket systems was implemented. A tracking system, where users submit tickets with requests or relating to problems, would have allowed record-keeping of what went wrong, assisted with allocation of manpower to solve problems, and to keep track of the time-to-solution. This shortcoming is evident in this study which suffers from lack of reliable, systematically collected information on the transition and must instead rely on emails and available documents. Again, the small scope of the university, short paths of communication, and proximity of key players in the transition is probably to blame for the decision not to systematically track this information.

5.3 Transition from the point of view of students

For several years, it was known that students in the fully online programs, the Flex and post professional, had a more favorable attitude towards online education than the entry-level on-campus students. In the last student

survey done before the transition (fall 2011), these differences may have been reflected in students' attitude towards the Telematica LMS. Sixty-five percent of the Flex students said they were very satisfied or somewhat satisfied with the LMS and so did 91.6% of the post-professional students. In contrast, 45.6% of the entry-level on-campus students said they were very satisfied or somewhat satisfied with the LMS.

Contrary to what the Online Education team had expected, in the fall 2012 survey, student satisfaction with the LMS was lower than before the transition. According to Naveh, et al., the critical success factors for LMS implementation have to do with content completeness, content currency, ease of navigation, and access (Naveh et al., 2012). According to that, our transition should have been a success. All course content, tests, and assignments were identical to what they had been in the Telematica platform and the navigation not that different. Another interesting trend was noted following the eRacer implementation. The Flex students had been favorably disposed towards online learning now showed the least satisfaction. In the fall 2012 survey, 57.3% of the Flex students responded were very satisfied or somewhat satisfied with the eRacer platform, while 66.9% of the entry-level on-campus student were. This was a reversal from all previous surveys.

6 Conclusion

It could be argued that prior to this university-wide transition from the Telematica to the eRacer LMS, the search for a replacement-LMS was not thorough or inclusive enough. However, the transition itself can be seen as a success. All timelines were met. Neither faculty nor students experienced that courses were not ready at the start of the terms. The transfer of course elements; content, tests, and assignments was free of errors and no complaints were recorded about missing course elements. Both faculty and students expressed satisfaction with similarity in look and feel of the old and the new LMS; they did not feel they were lost in the new system but could easily find their way around. The problems that arose were mostly technically related; like lack of bandwidth or failure of underlying databases and servers. The lessons that were learnt and can be put to use for the next LMS transition, relate to the need for better communication and more thorough faculty training.

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