Fall 12-3-2016

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Recommended Citation

Contrado, John, "Five Potential Barriers to LMS Usage" (2016). *Instructional Design Capstones Collection*. 14.
http://scholarworks.umb.edu/instruction_capstone/14

A final project presented to the faculty of the Instructional Design Master's Degree Program
University of Massachusetts at Boston

Five Potential Barriers to LMS Usage

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In partial fulfillment for the requirement of the degree
MASTER OF EDUCATION

December 3, 2016

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Abstract

This paper began as a needs assessment investigating low Learning Management System (LMS) usage at a worldwide technology corporation. Subsequently, the company in question underwent a number of personnel changes and decide to forgo the needs assessment. As such, this paper became a review of research literature related to LMS usage barriers, with the intentions of identifying potential causes of low LMS usage in corporate environments. The review of the existing literature identified five major potential barriers to LMS usage. Because of the nature of the process, these are generalized broad barriers that can easily be identified and discovered in diverse scenarios. It posits that all five of the issues need to be resolved before a robust learning environment can be established. Any one barrier is significant enough to create usage issues. Generalized recommendations are made, but a needs assessment should be run before any real-world action is taken to resolve similar issues. Broad barriers consequently generate broad recommendations; any organization seeking to resolve similar issues will need to customize their solutions accordingly.

Keywords: LMS, learning management system, usage, m-learning

Background

This research paper initially started out as a research study. It began with a request for a needs analysis and recommendations pertaining to a particular organization's Learning Management System (LMS) usage statistics. Although the organization had self-contained lesson modules on an LMS, which they felt were useful and relevant to employees, usage statistics were very low, even zero in some cases. Among employees, there was some awareness of the LMS and available modules since the company mandated annual completion of certain training modules. The intention for the needs analysis was to collect data through surveys, interviews, and focus groups. Unfortunately, before any of the data collection could begin, the organization underwent personnel changes, and the needs assessment appeared to lose stakeholder buy-in. Even though this project did not reveal any answer for the aforementioned organization, it did reveal a gap in research for this particular problem of low corporate LMS usage. Consequently, this paper seeks to review research literature dealing with LMS usage in general, and make broad recommendations towards solving usage issues or implementing a new LMS in a workplace.

Introduction

As mentioned in the background, this LMS usage problem was originally to be resolved by data collection methods at the organization dealing with the obstacle. Once it became clear that there would be no access at the particular organization, the aim of this project changed from identifying specific needs within a single organization to identifying generalized needs for the same issue, but on a much larger scale. In other words, instead of collecting data within a single organization for their specific problem, existing research was reviewed to identify common causes of this same issue on a wider scale. Reviewing existing research revealed five main points that are all potential causes of depressed LMS usage. Each cause will be analyzed individually,

and the relevant research examined. Once the research has been reviewed, this paper then attempts to lay out recommendations to avoid or resolve these issues.

It seems logical to start by defining what is meant by a Learning Management System (LMS). This task is not as easy as it may appear, as entire papers have been written on this subject alone. To further complicate matters, a great number of terms are used to describe an LMS or something like it, "As the application of computers to education is awash with acronym-driven, non-standardized terms, it is not surprising that there is often confusion as to which term is appropriate to use" (Watson & Watson, 2007, p. 29). Still, it is important to clarify what is meant by the term LMS in this paper, since much of the research reviewed here will use different terminology to mean similar or the same things. Watson and Watson assert that "LMS has its history in another term, integrated learning system (ILS) which offers functionality beyond instructional content such as management and tracking, personalized instruction, and integration across the system" (Watson & Watson, 2007, p. 28). Catherall uses the term Virtual Learning Environment or VLE, which he claims is virtually synonymous with LMS (Catherall, 2008). He defines VLEs as "…a web-based portal to a variety of communications, content publishing, assessment and related tools" (Catherall, 2008, p. 99). Frequently, when one refers to an LMS they are more likely referring to Catherall's definition, rather than Watson and Watson's. In fact, the Watson and Watson article points that out for itself, "A Google Scholar search of the phrase 'blackboard lms' returned 36 articles identifying Blackboard as an LMS, while the Blackboard company refers to its product as a CMS" (Watson & Watson, 2007, p. 29). "[Blackboard's entire Academic Suite] does not meet the full functionality necessary to be identified as an LMS" (Watson & Watson, 2007). Catherall defines online learning as follows: "Often used to refer to computer-assisted learning in any online, i.e. Internet-based context where the student is able to

access remote learning materials or communication tools via Internet Software. Contemporary

learning systems are almost entirely provided via a 'web browser' client, such as *Internet*

Explorer or *Netscape*, hence the association of 'online learning' with web-based learning

systems (ostensibly delivered via 'web pages')" (Catherall, 2008). This is only a small piece of a

much larger conversation on defining online education and management systems. For the

purposes of this paper, we will limit the definition of an LMS to any organizational online

service meant to provide education and learning to its employees. The causes of usage issues

summarized here, and the recommendations that follow, can be implemented in any online

learning program, or will at least be instructive about ideal functionality.

Research

Awareness

It may seem obvious that the first cause of a usage issue to be addressed would a lack of

awareness on behalf of potential users, but throughout the research it was common to see that

students, faculty, or employees were unaware of training opportunities in general, or of specific

tools available. As part of their investigation into low utilization of LMS library tools by

university faculty and librarians, Leeder and Lonn conducted surveys (Leeder & Lonn, 2014).

One important finding was that "Both users and nonusers frequently reported that they were

unaware of the existence of the LMS library tools and role" (Leeder & Lonn, 2014, p. 648). Even

faculty who utilized the tools on their course websites, claimed to be unaware of them in the

survey responses. "Overall, basic awareness of the LMS library tools and role and their function

proved to be extremely low. The most frequent response about the tools from both users and

nonusers was 'Haven't heard of it,' even among instructors whose course websites had the tools

turned on" (Leeder & Lonn, 2014, p. 652). They go on to recommend greater reporting to

communities about available tools. "Greater institutionwide [*sic*] and departmentwide [*sic*] publicity of the availability and benefits of the tools would likely help increase awareness and usage" (Leeder & Lonn, 2014, p. 652).

In a short article about Ford Motor Company training, David Pollit reports that Ford's training usage was down, with as little as 25% of its available training software licenses being utilized (Pollit, 2005, p. 14). As soon as the programs were advertised to employees, an increase occurred. "The retailer education and training department has noticed spikes in usage following print communications of the courseware's availability to dealer employees… [the company] realizes that internal promotions are critical to driving usage and value from the learning content" (Pollit, 2005, p. 15). Pollit didn't report any numbers, but it's apparent that simply spreading word of availability increased participation and usage in the existing LMS trainings.

Although it is a relatively narrow focus, and mainly concentrates on other usage barriers, the study by Susomrith and Coetzer noticed a lack of knowledge on training policies and supports. "In regard to internal barriers, 13 participants were certain that their organization *did not have an explicit policy* on employee learning and development. Other participants were less certain, reporting that they were unaware of the existence of such a policy. Similarly, 13 participants believed that their organisation [*sic*] did not have a training budget, while others indicated they were unaware of a training budget within their organisations [*sic*]" (Susomrith & Coetzer, 2015, p. 568-569). They also found that the majority of learning in the organization was informal. "For participants in this study, most of their learning activities were of the incidental or informal type, with very little engagement in formal learning" (Susomrith & Coetzer, 2015, p. 571). These findings imply that there is a desire, or at least a need, for some formal training, yet employees are mostly unaware of any training policies. It is reasonable, then, to make the

assumption that most employees are not good advocates of their own learning, and will not likely

seek out organizational supports or tools for it. It is therefore, a necessary responsibility of an

organization to promote awareness about educational tools and opportunities if they expect to see

utilization by workers.

Moses, Ali, and Krauss also found support for providing awareness and positive

perceptions in an LMS environment. "If the encouragement and involvement is there, the

students will be more motivated to use the system, which will increase the involvement of the

students in utilizing the LMS" (Moses, Ali, & Krauss, 2014, p. 90). Their study was focused on

moderators in a university course, but it's reasonable to assume similar responsibilities of a

learning management team in charge of a work place LMS.

Zuvic-Butorac, Nevic, and Nemcanin published a paper detailing the methods they used

to successfully implement an LMS at their Croatian university. The first step in the initial phase

was to raise awareness and educate faculty about the LMS, and its potential benefits.

"Promotional events were organized, comprising of short seminars in the form of guest lectures

on e-learning, performed by members of the Croatian academic community having experience

with online teaching and learning… the attendance was sometimes obligatory for teaching staff"

(Zuvic-Butorac, Nebic, & Nemcanin, 2011, p. 46). As we will see later, this led to the second

step of the first phase, which was essentially gaining widespread buy-in. This promotional

campaign was implemental, since it not only informed faculty of the incoming change, but

framed it in a favorable light, creating positive perceptions.

Although not directly concerned with Learning Management Systems or their usage,

Antón et al. looked at the integration of new technologies by public employees using "…the

Technology Acceptance Model (TAM), the Cognitive Model of Satisfaction (CMS) and the

Satisfaction-loyalty Model (SLM)" (Antón, Camarero, & José, 2014, p. 852). Although not directly related to the topic at hand, it does tangentially suggest an important aspect of awareness that will become a recurring theme in this paper. Antón et al. found that perceptions of a technology directly correlate to employee utilization of that technology. "From the standpoint of the CMS and the SLM, we feel that the greater the satisfaction which employees perceive with the new process or technology, the more positive their attitude towards it will be and the more inclined they will be to use it or adopt it in the future" (Antón, Camarero, & José, 2014, p. 858). "One interesting finding to emerge is that the satisfaction experienced with the new process and the perceived usefulness have a greater impact on use intention than does attitude" (Antón, Camarero, & José, 2014, p. 870). This obviously has implications on the way organizations should be employing awareness about an LMS. The way the system is framed, and its implied intent, is obviously important. "…we feel that public organizations which introduce changes in their processes should strive to engender positive attitudes amongst potential users by demonstrating the quality and efficiency of the new processes" (Antón, Camarero, & José, 2014, p. 871). This is an idea we will circle back to in the atmosphere section of this paper. Another relevant finding was that "…usefulness is also linked with ease of use to determine consumers' attitude toward the new technology system. According to TAM, usefulness is influenced by ease of use, because the easier a technology is to use, the more useful it can be (Davis et al., 1989; Venkatesh and Davis, 2000). We likewise posit that the easier the use of the ICC proves for an individual, the greater the perceived usefulness will be (Chung and Tan, 2004; Wu and Kuo, 2008)" (Antón, Camarero, & José, 2014, p. 858). "Although ease of use does not emerge as a direct determinant of attitude, its importance is evidenced through perceived usefulness: what proves difficult to use is not seen as very useful" (Antón, Camarero, & José, 2014, p. 871). If an

organization is considering implementing a new LMS or LMS tools, then ease-of-use should be among the most important factors to consider. It also implies that any advertising or awareness campaigns should strongly consider a system's ease-of-use as a factor. Offering training and assistance for new systems is one way to raise awareness, and brings us toward our next potential usage issue, usability. The Moses et al. study also found some evidence that backs the idea that with increased perception of usefulness comes increased usage, "Thus, the moderators and students were persuaded to utilize the LMS when they realized the usefulness of the LMS in improving their teaching and learning performance" (Moses, Ali, & Krauss, 2014, p. 97).

Usability & Support

Once an organization's employees are aware of an LMS, they still need to be able to use it. As we saw in Antón et al. "what proves difficult to use is not seen as very useful" (Antón, Camarero, & José, 2014). A needs assessment done at the University of Alabama (UA) and Gadsen State Community College noticed "…the reluctance of faculty to adopt the new [LMS] system and use it to its full capabilities" (Brown, Griffey, Hardin, & Stewart, 2012, p. 2). Using usage statistics, an online survey, and interviews with UA faculty by researchers (Brown, Griffey, Hardin, & Stewart, 2012). One of their major findings of their survey was that faculty didn't seem to have enough training and felt they would use the LMS more if they did. "While it appears that the faculty respondents appear to be using many of the features, 43% indicated that they would use more features if someone were to show them how to use them. Additionally, 35% indicated that they did not have enough time to learn how to use the learning management system for maximum effectiveness" (Brown, Griffey, Hardin, & Stewart, 2012). The researchers who conducted the faculty interviews concluded much the same. "Furthermore, the researchers perceived that faculty members felt that they did not receive the support and training that they

need to be successful at implementing the learning management system into their courses"
(Brown, Griffey, Hardin, & Stewart, 2012, p. 10). "The researchers also observed that faculty did
not utilize the learning management system effectively because of a perceived lack of training
and support. In other words, many faculty members do not use the learning management system
because they feel that there is [no] professional development available to learn its benefits and
functionality" (Brown, Griffey, Hardin, & Stewart, 2012, p. 12). Even though this assessment
deals with faculty at a university rather than employees at a corporation, the general theory still
holds that in order to be successful with LMS systems, support and training is necessary.

Moses, Ali, and Krauss examined the effect of a moderator on students within a
university LMS. One finding of their study was that in addition to moderators being competent
and capable in the LMS, "As the main initiator in the LMS, moderators need to be competent in
the technical aspects in order to add additional features, materials or activities to further improve
the students' learning" (Moses, Ali, & Krauss, 2014, p. 94). They should also provide an initial
introduction and trading to students, "…introductory sessions and learning aids can be provided
to assist the students to become familiar with the unique aspects of the LMS system" (Moses,
Ali, & Krauss, 2014, p. 95). They also found usability and support necessary for students to be
successful "A user-friendly ICT infrastructure is crucial for providing the students with easy
access to the portal" (Moses, Ali, & Krauss, 2014, p. 96).

The Yuen et al. study, which examined the relationship between students at a Hong Kong
University and their CMS, didn't find evidence of a need for training; however, it did identify
issues with the technology that needed to be addressed. "Most students complained about
technological problems with CMS, such as lack of speed and system errors that they
encountered" (Yuen, Fox, Sun, & Deng, 2009, p. 197). "Students also frequently complained

about system errors" (Yuen, Fox, Sun, & Deng, 2009, p. 197). "Students also wanted the CMS to be easy to use so they could find useful tools to help their study" (Yuen, Fox, Sun, & Deng, 2009, p. 198). If the LMS does not function correctly, then it will create frustration with the learner. That frustration could grow exponentially if the student feels issues with the LMS are not being addressed in timely manner. Coming back again to the Antón et al. study, if the LMS is perceived to be useful and easy to use, then it will encourage more positive perceptions about its usefulness and ease-of-use. Having a good, timely training and support available for your LMS will likely head-off any damaging usage problems in the future.

Atmosphere

Another common pitfall that can cause a drop in LMS usage is an environment that is not supportive of learning. The Susomrith and Coetzer paper that looked at training in a small engineering business found that the culture discouraged learning. "The findings suggest that proactive behavior from employees with regard to T&D [training & development] was potentially constrained by prevailing norms within the organizations studied. Although frequently implicit, norms cover several aspects of group behavior, including resource allocation and therefore exert a powerful and consistent influence on group behavior (Ehrhart and Naumann, 2004)" (Susomrith & Coetzer, 2015, p. 570). "The findings suggest that T&D was often initiated by managers rather than employees. Furthermore, the managing director/owner usually made the final decision regarding employee access to T&D, and employees' line managers did not appear to have much influence on these decisions. . . The highly centralised [*sic*] nature of this process is likely to constrain employee behaviour [*sic*] towards formal T&D by providing a clear signal that managerial approval is not granted lightly" (Susomrith & Coetzer, 2015, p. 572). Employees will not be likely to go out of their way to seek formal

learning if management and other employees create an atmosphere that makes it the exception rather than the rule.

In the Yuen et al. study, investigating Hong Kong students, they found some support for the idea that culture and atmosphere play a role in LMS usage. "Students are sensitive to communal involvements in the CMS, and their participation would likely be reinforced by the culture and atmosphere" (Yuen, Fox, Sun, & Deng, 2009, p. 198). This phenomenon is not just limited to peer interaction either, "When teachers were not actively participating in the CMS, and with low use of CMS capabilities, students also felt it was useless to participate in the CMS" (Yuen, Fox, Sun, & Deng, 2009, p. 198). Also, from a social constructivist viewpoint, the ability to communicate with one another via an LMS is an important aspect of learning. The paper found evidence to back this theory, "Students also found CMS helpful in understanding their peers' learning as well as their own learning experience" (Yuen, Fox, Sun, & Deng, 2009, p. 200). "It is important to see how CMS connects the students into a learning community. Communication is not only of help in notifications and transferring information, but it also helps students relate better. Social integration is an important element in the learning process" (Yuen, Fox, Sun, & Deng, 2009, p. 200).

Cheung, Chang, and Lai conducted research that looked at employee intentions to use the World Wide Web (WWW). Although, an LMS is not necessarily part of the World Wide Web, their research has useful implications for LMS usage. For example, they identify three identifiers that can predict whether a worker is likely to use the WWW, the first being "near-term consequences," "Perceived near-term consequences in our research context are defined as the extent to which an individual believes that using the Internet and the WWW can enhance the performance of his/her job. The impacts are on the individual's current job…Studies have

consistently found that this factor is an important determinant of intention and behavior. Thus, we predict that there is a positive relationship between perceived near-term consequences and Internet/WWW usage" (Cheung, Chang, & Lai, 2000, p. 87). The second is "long-term consequences," "In addition to the near-term and more direct impacts on an existing job, knowing how to use a technology also has a longer-term impact on career development. Therefore, the perceived long-term consequences of using information technology represent another dimension of the perceived consequences investigated in this study" (Cheung, Chang, & Lai, 2000, p. 87). Finally, there is "complexity," "Thus, we treat perceived complexity as a perception of a characteristic of the technology being used instead of as a consequence of using the technology. It can be viewed as a belief on whether it is easy or hard to perform the behavior… In general, complexity is found to have a negative impact on the adoption of information technologies" (Cheung, Chang, & Lai, 2000, p. 87). Cheung et al. concludes that in order to increase Internet usage, organizations should encourage creating a supportive atmosphere for learning, "Our results have a number of implications for organizations, which are trying to promote the use of the Internet/WWW for job related activities. First of all, creating a supportive social atmosphere is very important. Supervisors should support and encourage their subordinates in their use of the Internet and the WWW" (Cheung, Chang, & Lai, 2000, p. 95). It should also be evident that these indicators align with the aforementioned issues of awareness, usability, and support. "Besides social support, physical support is also very important. Companies should provide sufficient technical support and easy access to the Internet for their employees. Finally, to help speed the adoption of the Internet/WWW and to increase its use, companies should communicate the positive impacts of using the Internet on an employee's future job prospects. Companies should also provide more learning opportunities for employees

in the form of training courses and experience sharing" (Cheung, Chang, & Lai, 2000, p. 95),

Once again connecting back to Antón et al. they found social support relating to positive

perceptions, "We also find that social factors are the second most important determinant

affecting the use of the Internet/WWW. In addition, we have modified the model to investigate

the effect of social factors on affect and, subsequently, found a significant positive effect. This

means that when the social environment encourage the use of the Internet/WWW, users feel

more positive about using it" (Cheung, Chang, & Lai, 2000, p. 94). It is not unreasonable to

draw parallels between the Internet/WWW that Cheung et al. researched and an LMS system.

While Kristen Giovanis mainly focuses on factors particular to global eLearning

initiatives in her paper, one of her final factors is relevant to any eLearning initiative. "Before

rolling ahead with an eLearning initiative, it's important to create an effective plan and get

appropriate buy-in within an organization. Global stakeholder agreement on technology,

messaging, branding, and goals of the eLearning module is the first planning milestone that will

help organizations create training programs for international learners" (Giovanis, 2015, p. 49).

Having clear objectives and goals for an LMS will help to clarify what is being supported, and

what can be achieved. As we will see in the next paragraph the Ferenandez and Rainey study

found that achieving buy-in throughout an organization is an essential part of implementing

change.

Fernandez and Rainey use existing literature to develop eight factors for successfully

implementing change within a public organization. What is most relevant for us is that four of

those steps essentially involve obtaining buy-in from different sectors, or in different ways.

After, "Ensur[ing] the Need" and "Provid[ing] a Plan" factor 3 is "Build Internal Support for

Change and Overcome Resistance…Managerial leaders must build internal support for change

and reduce resistance to it through widespread participation in the change process and other means" (Fernandez & Rainey, 2006, p. 170). Next, factor 4 is "Ensure Top-Management Support and Commitment…An individual or group within the organization should champion the cause for change. Top-management support and commitment to change play an especially crucial role in success" (Fernandez & Rainey, 2006, p. 171). Factor 5 is simply "Build External Support…Managerial leaders must develop support from political overseers and key external stakeholders" (Fernandez & Rainey, 2006, p. 171). Then, skipping over factor 6, we have factor 7, "Institutionalize Change…Managers and employees must effectively institutionalize and embed change. To make change enduring members of the organization must incorporate the new policies or innovations into their daily routines" (Fernandez & Rainey, 2006, p. 172). For the purposes of this paper, this essentially means everyone at an organization must be on board if new learning practices and tools are to be successfully implemented. If you cannot get buy-in and support from the top down, it will be very unlikely that an LMS will get a great deal of usage at all. This is partly because you need an atmosphere conducive to learning for learning to happen, but also because managerial and executive support is necessary to address other usage issues we will be looking at shortly.

As mentioned in the awareness section of this paper, the Zuvic-Butorac et al. paper explained that the second step of their first phase to implement a university LMS was to gain buy-in. "There were two important outcomes of the first phase: first, the academic community became aware of e-learning as a new way to approach the teaching practice, and second, the University management accepted the long-term policy document towards implementation of e-learning" (Zuvic-Butorac, Nebic, & Nemcanin, 2011, p. 47). This led them into the second phase which setting up the infrastructure needed to move forward. "The next phase included the

organizational and functional setup of the University of Rijeka elearning net (Figure 1), which

was considered to be the main sustainability factor of the process. Activities included setting up

new university bodies (such as faculty e-learning teams and the university Committee for e-

learning), offering a new educational program on e-learning use for teaching staff, and

establishing the University e-learning centre [*sic*] as a central point for e-learning support"

(Zuvic-Butorac, Nebic, & Nemcanin, 2011, p. 47). This is a great example of how awareness and

usability can lead into buy-in, which in turn can create the organizational support to make large

changes or lay important groundwork.

One unique finding from the Nasser et al. research is that parents had a large effect on

students LMS usage, "Students stated that some parents did not allow their children to use the

Internet because they did not trust its content and because they had a poor overall understanding

of parental controls on web browsers. In addition, most students reported that their parents rarely

checked their work on the LMS because they did not know how to, or they felt it was too

challenging for them to learn. In support of the qualitative findings, there was a strong

correlation between parent and student usage in the secondary data" (Nasser, Cherif, &

Romanowski, 2011, p. 53). The argument can be made that in the workplace an LMS-resistant

manager can have the same effect. The study also concluded that students often used the LMS

very little without a teacher requiring them to, "When asked whether they used the LMS, many

students answered that they did not use it often. One student explained that this was due to the

fact that most teachers never asked or required us to use it, since students were not rewarded for

its use—many students may feel it is a resource which they could get through other means—

some teachers put resources [there], but nothing I needed. The fact that students did not use the

LMS does not seem to be due to a lack of knowledge of how to use it. Most students stated that

they had the skills needed to effectively use the LMS" (Nasser, Cherif, & Romanowski, 2011, p.

52). This echoes the previous theory of the resistant manager negatively affecting the employee's

usage. It also leads into our next topic, motivation.

Motivation & Reinforcement

The Nasser et al. study goes on to say "…when teachers built activities in and around the

LMS with a number of benefits and rewards, the students were motivated to use the LMS"

(Nasser, Cherif, & Romanowski, 2011, p. 54). The study makes the recommendation that,

"School policy should hence develop a system of rewards or obligations to motivate the students

to use the LMS and possibly provide refresher courses for teachers to help them understand the

system's features" (Nasser, Cherif, & Romanowski, 2011, p. 54).

In the Moses et al. study researchers found that creating rewards, even simple ones like

encouragement, increased usage and satisfaction of the LMS. "These moderators felt that it is

their responsibility to encourage the students to use the LMS. If the encouragement and

involvement is there, the students will be more motivated to use the system, which will increase

the involvement of the students in utilising [*sic*] the LMS. Hence, the moderators need to be

supportive in encouraging the students to participate in the LMS because this motivates the

students to enhance their performance" (Moses, Ali, & Krauss, 2014, pp. 89-90). "Rewards such

as marks or points made the learners more eager or enthusiastic to participate in the LMS"

(Moses, Ali, & Krauss, 2014, p. 91). "The moderators reported using a lot of positive feedback

when the students gave their opinions in the online forum. They tend to respond positively to

praise and might even become excited when the moderator extols their work. Through this, the

moderators hoped that the students would take the initiate to increase their involvement and

contribution in the LMS, thus leading to an overall enhancement of their performance. Positive

feedback thus became a useful motivational tool employed by the moderators" (Moses, Ali, &

Krauss, 2014, p. 91).

Outside of academia, there is some evidence that motivation is a key to encouraging

employees to utilize learning opportunities presented to them. In the Pollit article Ford Motor

Company is considering certification courses as motivation for employees. "The company is

considering training and development as core to performing their jobs more effectively and

advancing their careers" (Pollit, 2005, p. 15). It stands to reason that if employees are not

externally motivated to use an LMS then they won't. There are steps organizations can take to

introduce forms of motivation.

One of the survey findings for the Leeder and Lonn study felt that a lack of incentives

contributed to a lack of use of the university LMS library tool by faculty. "Both faculty groups

reported a perceived lack of incentives to use the library tools and role" (Leeder & Lonn, 2014,

p. 648). The study recommended spreading awareness of the tool's benefits. "To encourage

faculty participation in trainings, and to address the perceived lack of incentives to use the library

tools, college deans and administrators could be involved in promoting the training and in

communicating their benefits to their faculty" (Leeder & Lonn, 2014, p. 654). This also supports

the point on awareness.

Time Constraints

Most of the research found time restraints to be a significant barrier to LMS usage. In the

Brown et al. needs assessment, they found more than a third of faculty felt they didn't have

enough time to learn to use the LMS. "Additionally, 35% indicated that they did not have enough

time to learn how to use the learning management system for maximum effectiveness" (Brown, Griffey, Hardin, & Stewart, 2012, p. 9). "The qualitative data for usage section of the survey includes several comments about the time constraints in setting up a learning management system. One faculty member commented, 'Time is a major issue. It isn't about interest or being scared to try a new LMS. It is the time associated with learning the system and then implementing it in courses.' Another faculty member commented, 'While time is a factor--it takes a lot of time to set up a course online and learn all the bells and whistles that go along with it--the fear of the unknown hinders me from using the learning management system to its maximum effectiveness'" (Brown, Griffey, Hardin, & Stewart, 2012, p. 10). "Based on observation and interaction with faculty members, the researchers believed that the major reasons why faculty were not using all of the features of the learning management system, or using it at all, was because many faculty complain that they did not feel that they had the time to invest in learning about the learning management system or its features" (Brown, Griffey, Hardin, & Stewart, 2012, p. 10). Along with training and input during the implementation phase, the researchers recommend increasing time for faculty to work with the LMS. "The research indicates that faculty members need additional time, training, and opportunities for input during the implementation process. As a result, the research team advises the following: (a) a slightly longer and more detailed timeline of learning management system implementation (i.e. an entire academic term)…" (Brown, Griffey, Hardin, & Stewart, 2012, p. 13).

The Susomrith and Coetzer study found that time constraints were a major barrier to employees seeking training of any kind. "Participants who did not undertake self-funded education/training cited reasons such as a lack of tangible benefits, no need for additional education/training and existing time commitments" (Susomrith & Coetzer, 2015, p. 568).

"Participants agreed that the most common internal barriers to participation in company-sponsored T&D opportunities were high workloads and the associated lack of time, cost of T&D events, management attitudes toward T&D and the lack of an explicit policy on T&D" (Susomrith & Coetzer, 2015, p. 569). "Employees perceive high workloads and associated time constraints as major barriers to engagement with T&D" (Susomrith & Coetzer, 2015, p. 571).

Nasser et al. found time constraints to be one of the few student-reported barriers in using their school LMS. "Students indicated there were few barriers in terms of the availability of technologies. However, they argued that there was little time at school to use the LMS" (Nasser, Cherif, & Romanowski, 2011, p. 47). Ironically Yuen et al. found that the efficiency of using an LMS was one of the top advantages reported by students who frequently used it. "The top three items that received the highest ratings from students were: enable convenient access to course materials, useful in my study, and saves my time" (Yuen, Fox, Sun, & Deng, 2009, p. 195). In the same study, students who frequently encountered technical issues with the LMS felt it wasted a great deal of time. "…I have to click, click and click to go to the file I want to download again from the beginning [...] I find it very inconvenient and a waste of my time" (Yuen, Fox, Sun, & Deng, 2009, p. 197). This once again relates back to Antón et al. who proposed that "…the satisfaction experienced with the new process and the perceived usefulness have a greater impact on use intention than does attitude" (Antón, Camarero, & José, 2014, p. 870). It might be that perceptions of time constraints affect intentions more than actual time constraints. In any case, if employees feel that they do not have sufficient time to commit to learning, then they will not disburse their time into an LMS.

Recommendations

Every organization will find unique challenges to a problem like increasing LMS usage, and consequently, will need to customize their solution. However; the research supports that at a minimum, all five of the major points addressed in this paper need to be in place for an organization's LMS to see regular and consistent usage. There are a myriad of ways in which these potential barriers can be addressed, and any solution will likely need to be a combination of resolutions. This recommendations section seeks to summarize the main points and make suggestions for possible resolutions.

Spread User Awareness

Making users aware of existing tools for learning is an important first step in promoting an LMS. Leeder and Lonn found that low usage of LMSA library was in part due to low faculty awareness of the tool's existence (Leeder & Lonn, 2014). David Pollit reported that the Ford Motor Company saw a spike in LMS usage once they began advertising the existing of their training software to employees (Pollit, 2005). Susomrith and Coetzer found that a number of employees at a small engineering business were completely unaware of training opportunities or policies (Susomrith & Coetzer, 2015). Zuvic-Butorac et al. used promotional events to spread awareness and educate faculty as to the benefits of an LMS in a university setting (Zuvic-Butorac, Nebic, & Nemcanin, 2011). Moses et al. and Anton et al. both had findings that suggest by framing an LMS in a positive light while raising awareness, you potentially increase intent to use, since perception is linked to intent (Moses, Ali, & Krauss, 2014) (Antón, Camarero, & José, 2014). Having managers encourage usage, promoting usefulness of services, holding promotional events, and training seminars are all ideal ways to raise awareness of an organization's LMS. In some environments where technology or training is met with resistance,

it may be necessary to hold informational seminars that are mandatory. Spreading awareness is a

pretty straightforward proposition, and it appears that taking a diverse approach to spreading

awareness works best. The aim is to enlighten your employees about the LMS, the particular

benefits it can provide to them, and do it in a way that increases positive perception.

Provide Training and Support

Ensuring that users are not only able to use the tools provided to them, but feel

comfortable and even enjoy doing so is another important criteria to seeing significant LMS

usage. In their needs assessment, Brown et al. found a resistance of faculty to utilizing the UA

LMS because they felt they did not have the training or support necessary to successfully do so

(Brown, Griffey, Hardin, & Stewart, 2012). The Moses et al. study found that moderators not

only needed the training and support to effectively run an LMS course, they also needed to be

able to give students support and training for them to be successful as well (Moses, Ali, &

Krauss, 2014). The Yuen et al. study found that even if users are capable with the tools provided,

they still need timely and effective support measures in place, otherwise their experiences can

become frustrated and usage is likely to drop off (Yuen, Fox, Sun, & Deng, 2009). Offering

training is no small task and may be easily overlooked, especially if budget and time concerns

loom large. However, skimping on this front could be worse than doing so with awareness, since

a negative perception will potentially deter intent and usage. Additionally, if you are also

addressing an awareness problem, holding training seminars is an ideal way to kill two birds with

one stone. You will also get the additional benefit of being able to easily demonstrate to

employees how your LMS can benefit and enrich them. If at all possible, it is also recommended

that training be customized to its audience. For example, if you were rolling out the Microsoft

Office Suite instead of an LMS, you would want to prioritize training accountants on Excel, and

Human Resource Managers on Access. All of us can identify with experiences that involve frustration and confusion with technology, but most of us can also identify with the appreciative feeling we get when a professional can clarify or fix those situations. Providing the tool is often not enough, organizations must also be prepared to provide the knowledge to use the tool and invest in a technical support structure.

Create Buy-in and an Encouraging Learning Environment

Once you have employees aware of your LMS, and have given them the skills to use it, you next have to create an environment that is conducive to learning. If an organization expects employees to learn new skills and put them into practice, then both the learning and the skills need to be supported. The Susomrith et al. investigation found that the small engineering business they examined had an atmosphere that deterred employees from seeking formal education opportunities, and even took the decision out of their hands (Susomrith & Coetzer, 2015). Having an active learning environment and LMS will motivate those who aren't already using it to do so. Yuen et al. found that Hong Kong students were affected by not only their peers' attitudes and participation of an LMS, but also instructor and moderator participation (Yuen, Fox, Sun, & Deng, 2009). Providing physical and social support for an LMS, which can teach just-in-time skills and also long-term career development skills, will create greater intentions of utilizing an LMS. Cheung et al. found three identifiers they felt communicated intentions toward using the Internet for training (Cheung, Chang, & Lai, 2000). Giovanis and Fernandez and Rainey both point to the fact that widespread organizational buy-in is essential to cultivating a supportive atmosphere for learning (Giovanis, 2015) (Fernandez & Rainey, 2006). Nasser et al. found that students who had teachers who were not engaged with the LMS were not very engaged themselves (Nasser, Cherif, & Romanowski, 2011). Learning is not an isolated

event; in order for it to be effective in an organization, the workplace must be conducive to it. One of the best ways to achieve that is to include employees and managers in the initial stages of planning for a new LMS, or to gather data about what users would like to see added or changed. By giving everyone input in the process of building the system, users will feel like they have a stake in its success and utilization. In addition, actively avoiding managerial discouragement or prevention will be hugely beneficial in the long run. It's much easier to address small concerns over time, then have to have large interventions later. In their book about training evaluations, Kirkpatrick & Kirkpatrick point out "It becomes obvious that there is little or no chance that training will transfer to job behavior if the climate is preventing or discouraging" (Kirkpatrick & Kirkpatrick, 2006, p. 24). It's not surprising that you would end up with low usage numbers if you have a situation where employees are being discouraged from using new skills they learn on the LMS. Gaining buy-in and striving for a supportive atmosphere are key ways to avoid this pitfall.

Provide Motivation for Users

Now that you potentially have an easy-to-use, well documented LMS, with a work environment that encourages usership, you should begin to think about motivation and reinforcement. Nasser et al. found that when instructors included benefits and rewards in their Learning Management Systems, students were more motivated to participate in them (Nasser, Cherif, & Romanowski, 2011). Nasser et al, found that even simple reinforcements like encouragement by moderators increased satisfaction and usage among students (Nasser, Cherif, & Romanowski, 2011). Pollit reported that Ford Motor Company has intentions to offer training connected with career advancement to further increase their LMS usage (Pollit, 2005). Leeder and Lonn found a lack of incentives a deterring factor to faculty use of LMS library tools, and

recommended addressing the deficiency (Leeder & Lonn, 2014). Motivation is key to any learning, though many of us in higher-education can take motivation somewhat for granted. Grades are built-in motivators for students, college credits or certificates are building blocks for career paths, and for the most part students have made a conscious choice to enroll themselves. Some of these motivators can be replicated in a workplace LMS, for example offering courses that can be converted to college credit, or providing certifications, will provide opportunities for career growth and enrichment. Another way of motivating employees might be to implement a badge system, either digitally or physically. Kim Saxton ran an experiment at Indiana University providing physical badges for a marketing simulation class (Saxton, 2015). The experiment concluded that "…it appears that although the badging itself doesn't result in improved learning, it is a motivating mechanism that encourages students to perform better" (Saxton, 2015, p. 55). And, the implementation of physical badging was relatively easy. "For the relatively low investment in time and effort, badging can provide instructors a way to better motivate students to engage in learning activities" (Saxton, 2015, p. 56). Badging can create healthy competitiveness within the learning culture, though the badges themselves must have perceived value in order to create motivation. Badging is also an ideal option since the badge system can grow and become more complex as the LMS grows. If the organization has successfully created an atmosphere encouraging learning, there are a myriad of different motivators that can be effectively implemented. The important thing to note is that if an organization wants to see continued LMS usage, they need to give their employees motivations to do so.

Make Using the LMS Convenient

You theoretically have an easy to use LMS, which all employees are aware of, are supportive of, and are motivated to use. Finally, you need to make sure it's convenient enough

for them to use. Brown et al. found that time constraints were a major barrier to faculty's

learning and use of their university LMS (Brown, Griffey, Hardin, & Stewart, 2012). Susomrith

et al. found employees in a small business often felt they didn't have enough time between work

responsibilities to seek out formal learning opportunities (Susomrith & Coetzer, 2015). Nasser et

al. found that one of the few barriers to student LMS usage was a lack of time (Nasser, Cherif, &

Romanowski, 2011). It makes perfect sense that if employees don't have the time for learning, it

will take a back seat to more immediate job responsibilities. If an organization is serious about

LMS use and employee enrichment through education, it would be in their interest to offer

educational periods where employees would have the option to take LMS classes once or twice a

week. If the motivations are strong enough, employees may invest their own personal time into

LMS activities and tools. One way to increase convenience is by implementing mobile

technologies that work in concert with an LMS.

Go Mobile!

Mobile learning (m-learning) has the potential to assist in addressing a number of the

barriers identified in this paper. That is not to say it is a magic bullet, it will not solve all of your

problems, but can be at least part of the solution. Keskin and Metcalf looked at the existing

literature and noted that m-learning is a component in a number of corporate training strategies.

Johnson & Johnson utilizes it to foster organization-wide communication. "Employees can

launch corporate learning materials and exercises, get help from HR personnel and collaborate

with colleagues across the globe" (Keskin & Metcalf, 2011, p. 206). Microsoft uses voice

recognition software and audio playback to help their traveling sales professionals get up-to-date

materials and learning. "Sales professionals in particular have a strong need for on-demand,

mobile access to refresher materials on their product line… to allow simple, hands-free access to

sales data, we developed a voice recognition IVR (Interactive Voice Response) system that allows sales professionals to navigate Microsoft's product information library and select audio for listening" (Keskin & Metcalf, 2011, p. 206). DreamCorp utilized m-learning and gamification by creating an Alternate Reality Game (ARG) as a demo for corporate training. "The game involved several challenges on three different tracks: Compliance, Leadership and Flexible Workforce. Players took on the role of employees at fictional company DreamCorp and worked, sometimes alone and sometimes in cooperation with fellow players, to solve puzzles and complete the assigned challenges" (Keskin & Metcalf, 2011, p. 207).

Benedek and Molnar also investigated potential uses of mobile technology and learning, identifying a number of ways to provide "micro-content." "The m-learning framework has been in the construction phase and will be able to manage the following activities: • Centralized knowledge element production • Sequential mobile phone reaching • Feedback between users and content producers • Sending push notification messages (e.g. when new content is embedded into the system) • Personalized check-in • Statistics on activity and result accountability" (Benedek & Molnar, 2014, p. 340). These items alone provide a number of opportunities for increasing usage of an LMS, especially sending push notifications, personalized check-ins, and feedback channels.

Yuhui and Hongxin looked at user preferences pertaining to m-learning on an LMS. An important finding was that nearly half of their survey respondents found mobile learning preferable. "It is worthwhile to note that 41.30% of respondents choice [*sic*] mobile devices to e-learning, which shows the trend of m-learning. M-learning has been accepted by more and more people because of convenience and flexibility" (Yuhui & Hongxin, 2014, p. 188).

Chaiprasurt and Esichaikul specifically compared users with and without mobile tools in an online learning environment. "The paper compares motivation between groups of learners being taught through an online course based on an e-learning system with and without the support of mobile communication tools, respectively" (Chaiprasurt & Esichaikul, 2013, p. 377). They found that the mobile tools were significantly beneficial to learners. "The tools can have a favourable [*sic*] impact on learners' engagement, level of interaction, and completion rate, and improve learning efficiency in the online environment. As the results of the study show a significant effect of m-learning on online learners' motivation, the proposed mobile communication tools are proved to be a valuable extension of online learning for the improvement of motivation" (Chaiprasurt & Esichaikul, 2013).

There is a substantial amount of research backing the advantages of incorporating m-learning with an LMS system. To reiterate, it does not replace traditional PC machines; there are still LMS tasks and learning that are better suited to a traditional form of e-learning. What mobile learning does do, is provide an additional tool for users that can help to make an LMS more convenient, provide motivation, and increase awareness. One caveat is that in order for m-learning to be as effective as possible, it should be included in any training and support plans implemented.

Conclusion

This paper has identified five potential barriers for LMS usage, and made recommendations to avoid or resolve them. The methods used necessitate that both barriers and recommendations be broad and generalized. In any real-world scenario, a needs assessment should always be conducted to identify specific issues. These barriers simply present useful categories for identifying and resolving problems. It is the opinion of this paper that any single

barrier listed is significant enough to create usage issues. The extent of those issues is unclear

though, as is whether any one barrier is more significant than another. Further research could be

conducted to determine those levels, along with investigations into whether additional barriers

exist for usage of Learning Management Systems.

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