Assignment 1: Learning Environment Evaluation Rubric:

Higher Education Institution

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Scenario

Rem College (RC) is a fairly new higher education institution established for around two years. They are growing at a fast pace, but they currently only offer in-person courses. Due to the limited physical space, they have had to limit course offerings and the number of students in each course. RC would like to offer some online courses in the near future in order to accommodate this growing student population. As security and privacy are of the utmost importance for RC, they are mainly interested in implementing a Learning Management System (LMS) to provide a secure and centralized platform for learning. Although they do not have a large budget, RC is willing to invest for their long-term growth. The learning experience at RC is focused on collaboration and accessibility to empower students. These online course offerings will also allow RC to open applications to international students, resulting in a need to choose a strong LMS to connect students worldwide.

Theoretical Framework

Implementing Learning Management System (LMS) has succeeded in some places but failed partly or entirely in others (Alshammari et al., 2016). According to Osterweil et al. (2015), the reason is that many consumers of digital tools fail to consider various influential factors when adopting a particular technology. Choosing an appropriate digital technology based on authoritative theories is essential for improving the quality of education in general. Therefore, we developed the rubric (see Appendix) inspired by Bates' (2014) SECTIONS model and Dumont et al.'s (2010) 7 Principles of Learning, then analyzed selected LMSs based on the rubric, combined with our own learning and teaching experiences.

LMS Functionality Review and Rationale

After a strict screening process based on system functionality, RC shortlisted two LMSs, Canvas and Moodle, for final comparison and analysis. Overall, Moodle is the optimal LMS that meets the requirements and needs of RC.

Affordances

RC wants an LMS that has strong affordances in development, as Bates (2014) mentioned, which covers factors of time and cost. While these costs in both time and money may seem insignificant or similar, as Mpungose and Khoza (2022) showed, they can differ, and both Canvas and Moodle have their strengths and weaknesses. As Seluakumaran (2011) stated, many other institutions have adopted open-source applications for LMSs to save on a licensing fee, and one of the most well-known is Moodle. Moodle seemed not to be a burden on time in setting up the LMS, nor did it cost a lot of additional resources. With the same concurrence as Seluakumaran, Li (2019) noticed with Canvas that teachers and designers were not overly constricted nor burdened with material development at the tertiary level of education, as they would tend to recycle materials when integrating them into this LMS. However, this burden of time with Canvas did not seem as light of a burden as it was with Moodle. From these readings, Canvas is a sufficient LMS, but Moodle is a stronger LMS regarding affordances.

Interaction and Collaboration

Moodle provides a more interactive learning environment than Canvas. RC wants to facilitate students' interaction with learning materials. Technology-based instruction generally has limited ability to promote higher-order learning skills of learners without supplementary human intervention. Nevertheless, with well-designed and sufficient resources,

computer-managed teaching can provide high-quality learner interaction with learning resources, leading to increased learning (Bates, 2014). RC also wants to offer meaningful student-teacher interaction, which is essential for developing the ability to analyze, synthesize and think critically (Bates, 2014). Moreover, Dumont et al. (2010) mentioned that "the organization of learning should be highly social" (p.6). High-quality student cooperation is proven to be clearly beneficial for learners' academic, behavioural, and emotional outcomes (Dumont et al., 2010).

Although without enough built-in tools, both LMSs allow the integration of outside resources (i.e., H5P) to provide sufficient interactive content for students. Both LMSs enable teacher-student communication via email, announcements, discussion forums, assignment submission pages, and group communication spaces. As for social learning, except for the groups, forums, and chats available for both LMSs, Moodle provides an additional wiki page where everyone in the course can edit together (*Activities – MoodleDocs*, n.d.).

Accessibility

RC requires an LMS that is convenient and affordable to access for all students. Difficulty in access is a specific problem with using technology-based learning tools in some countries; therefore, whether a technology is culturally appropriate is critical to consider (Bates, 2014; Osterweil et al., 2015). Moreover, a well-structured, easy-to-navigate, and intuitively designed platform is RC's optimal choice to facilitate learners' learning goals. It is also important for the server to be reliable with high-speed access to ensure a high-quality user experience for learners (Bates, 2014).

Both LMSs provide assistive technology (screen readers, text translation tools, and alternative input devices) for people with disabilities. Moodle offers more language options and is available in most countries. Both LMSs have a user-friendly interface design, arrange learning

content intuitively, and provide detailed content management instructions for users. Moodle and Canvas are reliable systems with over 15 years of foundation and many users. However, based on the real-time data from Downdetector (a reliable online service outage detector), Canvas' server is less stable than Moodle's (*Status overview*, n.d.).

Openness, Security, and Privacy

Moodle offers a more secure learning space for RC. Both Canvas and Moodle are cloud-hosted, provide a privacy notice, and deploy SSL and TLS for encryption. While learners and educators are granted their accounts with personalized log-in details, they can only manage and modify with materials in one's accounts. Canvas complies with SANS' CIS Critical Security Controls, and Moodle is regulated by the California Consumer Privacy Act 2018 (CCPA). Both storage spaces are up to 5GB, which allows users to store and collect multimodal assignments, materials, and activities, including video presentation submissions, quizzes, videos, and infographics in both LMS. While both share features in a similar vein, Moodle is a better choice for RC because of more compliance with regulations. Ali and Zafar (2017) contend that "robust and wholesome institutional security policies that emphasize privacy" can be enhanced by "comprehensive implementation of regulations" (p.3). Moodle complies with the EU's General Data Protection Regulation 2016/679 (GDPR) and UK General Data Protection Regulation (UK GDPR) (Moodle, 2023), while Canvas is only in compliance with the first regulation. In addition, Moodle developed features to meet GDPR compliance needs, such as tracking users' consents and maintaining a data registry. These features are useful for educators in RC when they aim to collect data and ask for consent from diverse students. Overall, Moodle provides better openness, security, and privacy.

Technical Support Requirements

RC would seek adequate support since they have never implemented an LMS before. When faculty members feel more confident in using an LMS and receive enough technical support, they perceive positive outcomes associated with using the LMS (Zheng et al., 2018). As RC would transition some faculty members to teaching these online courses, they would want to make them comfortable and familiar with using the LMS. Moodle offers many different comprehensive plans with various levels of technical support. Their Moodle-certified partners allow customers to receive more technical support with an added price point, saving the institution time setting up the system and maintaining it in the long run. Canvas also provides a similar tiered support system, but rather than having external partners, they provide their own in-house support. Both platforms offer a comprehensive technical support network with many online resources and community pages for users to help one another, helping administrators troubleshoot their LMS if they want to resolve the problem independently. With the growing use of mobile devices, RC would benefit from choosing an LMS compatible with different mobile and electronic devices to increase accessibility for their students. Moodle and Canvas are compatible with most devices and offer a mobile app for users to access the LMS seamlessly. Additionally, both platforms allow for flexible configurations and easy maintenance, giving RC opportunities to continually improve the online learning experience for its growing student population.

Assessment

Effective assessment strategies are imperative in the educational context. “The learning environment needs to be very clear about what is expected, what learners are doing, and why” (Dumont et al., 2010, p. 7). Assessment is an integral part of teaching and learning; therefore, it

is essential to understand how Canvas and Moodle provide these opportunities for students and instructors. Both platforms provide multiple assessment forms; however, “Moodle has more options for tests” (Khaster & Khaster, 2022, p. 191). Both platforms allow for multiple types of files to be submitted for assessment. “Learners differ in many ways fundamental to learning,” therefore, it is essential for RC to have the possible forms of assessment to meet the diverse needs of their growing population through the selection of an LMS (Dumont et al., 2010, p.7). Moodle provides this over Canvas.

Dumont et al. (2010) present the idea that “there is a strong emphasis on formative feedback to support learning” (p. 7). Bates (2014) shares that providing a “human voice and face” is important to help motivate students. In Moodle, RC instructors would have the opportunity to record text, file, or media feedback for their students (Khaster & Khaster, 2022). By allowing multiple forms of feedback, Moodle would support RC students in their “assessment for learning” (Dumont et al., 2010, p. 7). Because RC is hopeful to provide online courses shortly, it is imperative that students can receive the same opportunities for assessment and feedback through their selected LMS that their in-person colleagues would receive on campus.

Limitations

As with the selection and implementation of any LMS, RC will need to consider the limitations of Moodle. Moodle requires students to be able to use and navigate technology (Ghislandi et al., 2008). When considering their instructors, RC should note that Moodle can be “difficult for beginner technicians to install and use” (Al-Ajan & Zedan, 2008, p. 60). Because RC is currently an in-person campus, they may not have needed to rely so heavily on an LMS before. When implementing online course options, RC will need to account for the technical

support element that may be required now using Moodle. Both instructors and students will likely need access to this support, especially with the initial implementation of Moodle.

Sustainability

RC should emphasize the sustainability of its practicality, resources, and accessibility. From the perspective of cultivating learning and teaching practices, enhancing user experience and satisfaction is one of the key strategies to sustain the implementation of Moodle for RC. Klobas and McGill (2010, as cited in Khairudin et al., 2016) contend that the number of learning benefits from Moodle positively correlates with student involvement, information quality, and instructors' engagement. The interplay of teaching content delivery, students' initiatives, and instructor's remarks are intertwined, motivating learners to participate in discussions and continue using Moodle regularly. In addition to strengthening user experience, RC should maintain high user satisfaction by ensuring usability, flexibility, and accessibility of Moodle's implementation (Warid et al., 2022).

Furthermore, maximizing resources supports sustainability. RC should provide technical support, arrange staff training, and encourage peer support (Warid et al., 2022) for the current staff. RC should continuously upgrade the technical skills of its staff (Keyes, 2005) and offer an adequate amount of high-quality training (Wainwright et al., 2007). Lastly, promoting the accessibility of teaching materials also contributes to sustainability. An asynchronous mode of delivery with no geographical restrictions facilitates the learning experience, creating a feasible communicative channel between learners and instructions. Therefore, RC should envision the sustainability of practicality, resources, and accessibility for the future.

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Appendix

Functionality Rubric for LMS

Criteria		Weak	Sufficient	Strong
Affordances	**Development**	Takes a high amount of time and/or needs a significant amount of funding to produce, clear copyright and make materials for instructors and designers.	Takes a moderate amount of time and/or needs some funding to produce, clear copyright and make materials for instructors and designers.	Takes a minor amount of time and/or needs a less significant amount of funding to produce, clear copyright and make materials for instructors and designers.
Interaction and Collaboration	**With materials**	Lack of resources to facilitate students' interaction with learning materials	Limited resources to support interactive courses	Good design and adequate resources to provide high levels of student interaction with the learning materials
	Student and Teacher	Lack of resources to support student-teacher interaction	Limited ways for student-teacher interaction	Feedback system, discussion forums (one-on-one or open), and online chat are available to facilitate higher-order learning outcomes.
	Social Learning	Does not support social learning	Limited support of social learning	Supports meaningful group discussion, teamwork, and group learning and coaching
Accessibility	**Access**	Can be accessed in some countries. Provided with some languages. Limited access for learners with disabilities	Can be accessed in some countries. Provided with most languages. Textual or audio options are available.	Can be accessed in most countries. Provided with most languages. Full access for learners with disabilities
	Content Organization	Interface design is not well structured. Content is not arranged intuitively.	Interface design is appealing. Most of the content is easy to navigate	Interface design is well structured. Content is arranged intuitively and easy to access in various ways.
	Reliability	The platform is newly founded (within three years). The server is not reliable. Frequent server failure	The platform is somewhat established (three to five years). The server is reliable. Rarely have server failures.	The platform is well-established (more than five years). The server is reliable, with high-speed access.
Openness, Security & Privacy	**Period of Validity**	All course information is automatically lost after 30 days. Users have limited, 1-4 GB, storage. Site administrators cannot set a schedule of automated course backups for the whole site.	Some information can remain in the user's domain, but some data is automatically lost after 90 days. Users have 5-10 GB storage. Site administrators can set automated course backups for some content on the site.	All course information can remain in the user's domain. No automatic deletion of data is allowed. Users have unlimited storage. Site administrators can set automated course backups for all content on the site.
	Security Features	User data is not safeguarded with encryption or identity for access management. Users can access data in different accounts. SSL (Secure Sockets Layer) and TLS (Transport Layer Security) for encryption are unavailable.	User data is somewhat safeguarded with encryption and/or identity for access management. Some data can be accessed by other users. SSL (Secure Sockets Layer) or TLS (Transport Layer Security) for encryption are available.	User data is well safeguarded with encryption and personal identity to access and manage the data. Only users can access data in their own accounts. Both SSL (Secure Sockets Layer) and TLS (Transport Layer Security) for encryption are available.

	Cloud-based Services and Privacy	The platform does not provide a privacy notice related to personal data processes, cloud service, or legislation adoption.	The platform provides cloud service and a privacy notice somewhat related to personal data processes and/or legislation adoption. It announces the way to collect personal data and the number of legislation, but the definition of personal data is not stated, and/or the kinds of legislation are not specified.	The platform provides cloud service and an excellent privacy notice related to personal data processes and legislation adoption. The definition of personal data is well stated, and the pivotal legislation is well specified.
Technical Support Requirements	**Technical Support**	Offers no direct technical support and limited contact methods. The LMS provider has a slow response rate and can respond to some inquiries.	May offer some direct technical support and can be contacted during business hours. They can be contacted through multiple mediums (phone, email, or online chat). The LMS provider has an adequate response rate and can respond to most inquiries.	Offers direct technical support and a wide range of contact times. The user can choose to contact the provider through phone, email, or online chat. The LMS provider has a quick response rate and can clearly respond to all inquiries.
	Set-up process/ Maintenance	The platform is difficult to set up and implement. It requires users to create new accounts and does not link with the institution. The platform is not flexible in its configuration and requires many updates after installation.	The platform is relatively easy to set up and implement. Users may need to create new sign-in accounts, and there are some links with the institution. The platform can accommodate some configurations (logos, user profiles, notifications). The platform may have some updates after installation.	The platform is easy to set up and implement. It offers a single sign-on system that links with the institution. The platform is flexible in its configuration and easy to maintain.
	Compatibility	The platform is only compatible with some types of devices and can be accessed through a few browsers. The platform offers no app version.	The platform is compatible with most devices (mobile phones, tablets, laptops) and can be accessed through most browsers. The platform offers an app version that works on some devices.	The platform is compatible with all devices and can be accessed through different browsers. The platform offers an app version that can be used seamlessly on mobile devices and tablets.
Assessment	**Assignment Submission**	No option for assignment submission to instructor is present in platform, meaning students will need to submit assignments either in person or through another platform.	Assignment submission is possible. However, it is difficult for students and/or instructors to navigate, and only certain file types are accepted. Different assessment methods (i.e., quizzes vs. papers) may not all be possible.	Assignment submission is easily accessed by both instructor and student. All file types are accepted, and multiple types of assessment are possible and logical.
	Grading & Feedback	Platform does not allow for the release of grades and feedback.	Ability to release grades and feedback is possible through one method only (i.e., text comments).	Ability to release grades and feedback in multiple ways (i.e., text comments, audio clips, rubric indicators, etc.)