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| RRL | TITLE/AUTHOR | FINDINGS | SYNTHESIS |
| RRL 1 | TITLE: **INVESTIGATION ON SECURITY IN LMS MOODLE**  AUTHOR: **Sheo Kumar & Kamlesh Dutta** | There are many security issues like as authentication, availability, confidentiality and integrity attacks is investigated under this work and specially an authentication attack from the above issues is carried out throughout the paper. Further, in authentication the session attack and design attack problems are rectified by using SSL (secure socket layer) and login with Captcha implementation respectively.  SSL (Secure Sockets Layer) is the solution to avoid session hijacking problem. SSL is the standard security technology for establishing an encrypted link between a web server and a browser. Moodle already has a choice for using SSL over certain critical actions. However such method cannot avoid session hijacking and user name prediction. In order to avoid such attacks, the entire site must create SSL connections with its clients.SSL (Secure Sockets Layer)link ensures that all data passed between the web server and browsers remain private and integral. | SSL is recommended to prevent session hijacking. SSL is a popular security technology that encrypts web server-browser connections to protect data. Moodle, a popular LMS, offers SSL for critical actions, but not enough to prevent session hijacking and username prediction. To protect against these vulnerabilities, the entire site should use SSL. |
| RRL 2 | TITEL: **Enhancing Data Security of Cloud Based LMS**  AUTHOR: **Paramita Chatterjee et al.**  DATE**: MARCH 18, 2023** | The cloud-based elearning is a step forward for traditional LMSs since it uses cloud computing infrastructure. The services provided by these companies can affect the educational system thanks to new technology advances such as smart phones, expert systems, and cloud computing. This proposed paradigm offers a feasible solution to the efciency and security issues. Confidentiality and security integrity are two of the most basic cloud concerns. The amount of the data sent concerns the user’s personal information. Cloud storage issues are addressed using cryptography and steganography techniques. Cryptography is one of the most extensively used and well-known methods for information security on a network. Additionally, the minimal cost of installation and the adaptability with which it can be altered to meet changing needs are two of the most compelling arguments for using cryptography for security.  The recommended security technique achieves data security, enhanced security, low delay, verifcation, and secrecy criteria. | The integration of smartphones, expert systems, and cloud computing enhances the educational experience.This approach effectively addresses the efficiency and security of cloud based e-learning. |
| RRL 3 | TITLE:**Online students’ LMS activities and their effect on engagement, information literacy and academic performance**  AUTHOR: **Ümmühan Avcı & Esin Ergün**  DATE: **JUNE 29,2019** | The current study found that students with high participation had both high engagement and high performance. It can, therefore, be put forward that high levels of student participation can lead to effective learning. Designing online learning environments to help students interact (i.e. creating digital interactive tutorial videos) can enhance student participation and foster effective learning (Zhang, Zhou, Briggs, & Nunamaker, 2006). Technology and interface characteristics influence student interaction and participation (Vonderwell & Zachariah, 2005). Venugopal and Jain (2015) suggested providing a supportive technologybased learning environment by utilising various features available on most LMSs, which in turn positively impacts student engagement in the online learning scenario. Within the scope of the current study, asynchronous LMS activities such as interactive quizzes and digital instructional videos were included for the purpose of facilitating student interaction. These tools enable students to participate in their courses in different ways. Accordingly, it is of crucial importance to use online learning environment designs that foster student participation and interaction. Such designs enhance student interaction within the LMS system, which also promotes student engagement. Students with high levels of engagement are more likely to achieve high levels of learning. Closely monitoring student participation and participation patterns can help instructors to determine students’ needs and then to support their learning accordingly. | The current study shows that high student participation improves engagement and performance, suggesting that active learning is essential. Online learning environments should encourage student participation with digital interactive tutorial videos. Technology and interface features help students interact (Vonderwell & Zachariah, 2005), and using most LMS features can boost engagement (Venugopal & Jain, 2015). Interactive quizzes and instructional videos help students engage asynchronously. Thus, online learning environments must encourage participation and interaction to boost student engagement and learning outcomes. Monitor participation patterns to help instructors identify and meet student needs. |
| RRL 4 | TITLE: **EXAMINING THE EFFECT OF LEARNING MANAGEMENT SYSTEM QUALITY AND PERCEIVED USEFULNESS ON STUDENT’S SATISFACTION**  AUTHOR: **FIRAS SALEEM HADDAD**  DATE: **DECEMBER 18, 2018** | The assessment of LMS can assure the positive effect and effective implementation of distance learning courses. Accordingly, the important factors impacting the satisfaction of distance learners were ascertained and they are as detailed as follows: 4 independent variables (information quality, service quality, perceived usefulness, and system quality), and 2 dependent variables: net benefit and user satisfaction. Applicable data were obtained from distance learners using the survey method. Learner’s perceptions of the effect of LMS particularly with respect to their benefits and satisfaction level were then analyzedAdditionally, the regression analysis evidenced the significant impact of the proposed factors on user satisfaction. In specific, system quality has the strongest significant impact on student satisfaction in term of LMS quality. It is also crucial to monitor the quality of LMS considering that its usage in universities is more widespread than ever nowadays. | The assessment of Learning Management Systems (LMS) interprets that evaluating these systems is crucial for the effective implementation of distance learning courses. This data indicates that the important factors impacting distance learners' satisfaction include four independent variables: information quality, service quality, perceived usefulness, and system quality, along with two dependent variables: net benefit and user satisfaction.  In particular, system quality has the greatest impact on student LMS quality satisfaction. |
| RRL 5 | TITLE: **The Effect of LMS Characteristics on Students’ LMS Adoption**  AUTHOR: **Seiyathu Mohammathu Murshithaa and Ruwan Wickramarachchi**  DATE: **2015** | In this respect, three aspects of qualities namely, system quality, information quality and service quality of LMS were investigated in this study. The extant literature on IS has consistently emphasized the importance of system quality, information quality and service quality. A system can be evaluated in terms of system, information, and service quality; these characteristics affect the subsequent use or intention to use and user satisfaction (DeLone & McLean, 2003). System quality focuses on the outcome of the interaction between the user and the system. Attribute of system quality include perceived ease of use, help option available, fast, user friendly, security and responsive. This study discovered that system quality explains 18.8% variation of Students‘ LMS adoption. Because the students believe that their system quality features such as perceived ease of use, help option available, fast, user friendly, security and responsive were well versed with their LMS and this motivate them to adopt it. Hence, respondents had indicated that the LMS they adopt fulfilled the system quality that they expect, and thus has a significant influence on their adoption of LMS. uality that they expect, and thus has a significant influence on their adoption of LMS. Information quality enhances learners‘ perceived ease of use of LMS. If the information provided by LMS is of good quality, easy to understand, accurate, and complete, learners may believe LMS is easy overall. Respondents of this study have agreed that the information quality is gladdening, and positively inclined towards creating an environment for LMS adoption. Among the three LMS characteristics, this information quality scores the highest rating from respondents. Thus information quality explains 42.5% variations on students‘ LMS adoption. | System quality is user-system interaction effectiveness. System quality includes perceived usability, help options, speed, user-friendliness, security, and responsiveness. This study found that system quality explains 18.8% of student LMS adoption. Students adopted their LMS because it met their quality expectations.  Information quality impacts LMS usability. If the LMS provides clear, accurate, and complete information, learners will find it easier to use. High information quality satisfaction influenced the study's respondents' LMS adoption. Survey respondents rated information quality the highest of the three LMS characteristics and explained 42.5% of student LMS adoption. |