



Evaluation of Web-based Learning and Its Implications

*Manjula Selvam, M. Ramachandran, Prabakaran Nanjundan, Malarvizhi Mani

REST Labs, Kaveripattinam, Krishnagiri, Tamil Nadu, India

*Corresponding author Email: manjulaselvam2016@gmail.com

Abstract. Web based Learning often Also known as online learning or e-learning. Because it includes online course content. Because it is online Includes course content. All of the live lectures Possible through the Internet. Web-based course such as printed course materials can also provide static pages. Not involving active learning among students Traditional learning to be improved. So, in the twenty-first century, In the learning environment Development of Internet Technology Has become a core need of every student. One of the learning contexts of the teaching and learning process Web-based learning environment to meet needs. The students in this study are web-based Address learning needs; Characteristics of the learning environment its purpose is to identify.

Keywords: Web-based learning, E-learning, Online interaction, Web-based learning environment, Web-based learning management system.

1. Introduction

Web-based learning also known as e-learning. It will be used to provide a wide range of solutions that improve the instruction process Refers to Internet technologies. WBL Online and Integrates knowledge management properties. WBL environment an interactive network system; only teaching and learning can improve the quality of activities. Supports virtual classroom includes various functions. Distance education in Malaysia was similar to that of the University of London in the 1980s it started with external degrees awarded by universities established from the United Kingdom [1]. Outside campus following this Performances by the University of Chainman Malaysia (USM). Internet access and lack of access in Malaysia The use of WBL was low in the 1980s. Second, there was an even stronger preference for face-to-face routine learning. In the 1990s, public universities were recorded students Encountered difficulties in enrollment. The proliferation of tertiary education is alternatively revolutionary Brought the educational environment. Further raising awareness about For life For learning higher education services Led to an increase in demand. Context Higher Education Ideal for companies Competes with the WBL The cost was low and prompted to explore [2]. Therefore, the WBL is from universities that offer outdoor programs it has become an instructional distribution system wanting to graduate to the number of working adults. Web-based courses such as printed course materials can also provide static pages [3]. Internet-based for teaching resources that extend beyond the traditional classroom the instruction provides unparalleled access. It enables open, flexible and distributable learning experiences, Provides opportunities for engaging, interactive and effective instruction. Web-based learning is about undertaking various learning activities will use the Internet as an instructional tool indicates the type of learning. This means (1) curriculum and learning Implemented online without meeting face to face with the instructor. Online learning or (2) the instructor is a hybrid form that meets the student halfway through. Curriculum requirements and depending on the needs, online time and half time in the classroom. There may be web-based learning integrated into a curriculum; whether it is a complete curriculum or may complement traditional courses. Social interaction in online learning, students shares their ideas Allows different subjects to share with each other. Student-led online discussions generally provoke deeper understanding; definitely offer interesting personal applications of ideas and theories [4]. However, these terms are subtle, but as a result imply different opinions.

2. Web-based learning

Recently, web-based learning more focus on education, because it's for students Provides more information access and without time and distance limits Provides more opportunities to work with colleagues. However, web-based the environment will give students more flexibility to learn at the same time, students accustomed to traditional teaching are web-based Research shows that learning can lead to problems [5]. Therefore, how learning promotes motivation and in a web-based learning environment Researchers are trying to understand how learning facilitates behaviors. [6] Social Cognitive Theory Successful self-regulated learners are more motivated, Use the best learning strategies and respond most appropriately to contextual requests. Social cognition of self-control Overview Education plays a very important role in learning. An important theory mentioned is the social cognitive theory. According to Wang and Lin, Possible between these impacts Authors authorizing contacts, Environmental impacts to facilitate student learning, Can handle student feedback and learning behaviors. As Pandora points out, Personal, Behavioral and Environmental The comparative importance of impacts Different activities and different situations will vary. Implications of this influence Web-based learning to be further explored. For a web-based learning environment Self-efficacy (individual) to understand their implications in the social cognitive model. This review learns strategies Explores role, perception (behavior), performance and perception (environment). [7] Self-efficacy in conceptual behavior and learning strategies to have a positive impact, in the performance of Conceptual Behavior

and Learning Strategies to make a significant impact, in self-efficacy performance to have a significant impact, getting more ideas should have a positive impact on the self. [8]

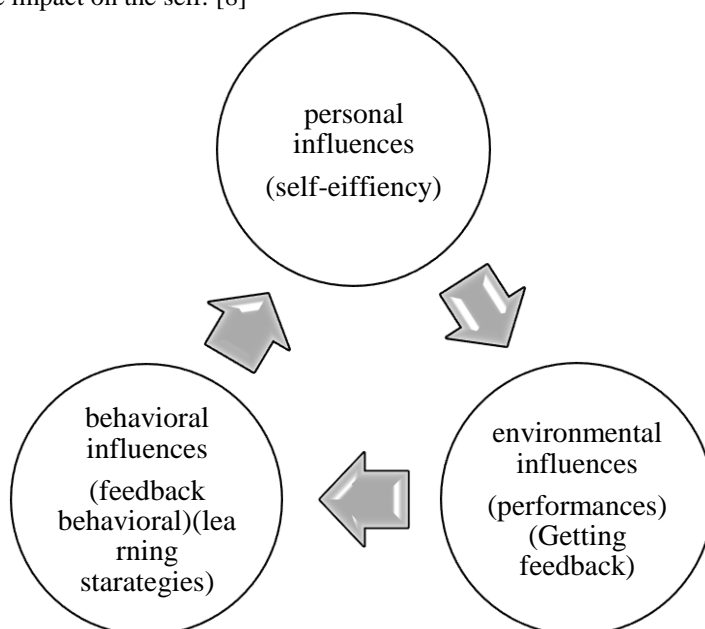


FIGURE 1. Individualization of Social cognitive model, Behavioral and environmental impacts.

In web-based learning applications, Key functions of test components evaluating the user, providing information about user performance, encouraging the user and focusing on User interaction with the computer. Test results for the purpose of evaluating quality and user the opinion differs from the assessment that the main goal is to register [9]. In web-based applications there are several key issues in the feedback. First, there is the problem with feedback representation. This is to provide feedback explicitly widely argued in favor of, But what should be included in the feedback and There are very few ideas about what kind of system do you want. Naturally, the feedback is the user's tasks and must correspond to individual characteristics. In a web-based learning system Mandarin tested the Performance of different types of feedback; of computer-based, online feedback He also assessed the educational impact of offering different levels. The results of this study are computer-based feedback Shows no impact Student learning, But students at the same time are knowledge-responsive and responsive-contingency computer based Reported unique preferences for feedback. This allows students to be direct and clear about the correctness of their answer allowed to determine the ideas that would like to be reported [10].

3. E-learning

E-learning management in your organization Determine what the software (called "courseware") is. Provides non-content curriculum tools (With student registration, security, automation and personalized ideas Quizzes, online interaction With instructors and other learners, Learner Participation Tools) Web CT (Web CT Inc., Lynnfield, Mass) and Blackboard (Blackboard Inc., Washington, DC) The most widely used curriculum systems, But there are many more. [11] Hand in hand with web design Creating content is useful is the key to e-learning. Lecture notes on the webpage or existing Copying the text of the syllabus General practice. Such products, called "software", they are quick and easy to make, but even if they act as warehouses, rarely useful for real learning. Existing content can be used as a basis for online curriculum, but will require significant change. The most effective websites to improve learning without reflecting traditional methods with the capabilities and flexibility of the Internet Creative integration of content. [12] Research sample UTAUT for study Based on and has five constructions. A framework for the original UTAUT Modified by Addition. For real use of e-learning system by users Purpose of continuous use of self-efficacy and e-learning method various studies have found that is important determinants. In this study, the actual application of the e-learning method and the purpose of the continuous application Are included as measures for the sustainable use of e-learning. Purpose of continuous use of e-learning method the research model assumes that it is affected by actual use; it facilitates effort expectation, self-efficacy, performance expectation, social influence and conditions. [13] Standardization is also an important criterion to consider. Standardized e-learning model, which allows you to interact with others, Can also provide learners with multiple integrated resources for sharing. For example, the shared content reference model (SCORM), an International and global e-learning model, For communication on learning sites Provides standardized products, Therefore, it can be reused in a shared framework Promotes learning content. [14]. For packaging, sharing and browsing To use the general design, Different distance learning systems Keith also pointed out that the transfer mechanism needs to be installed. E-learning materials To make it usable in different countries, Developed Teaching Materials Markup Language (DMML), it used international curriculum and local curriculum features. Also, items can be easily reconnected, Can be served and reused. [15] To develop self-actualization, activity, learning and new knowledge among students Author who will be the Admitting Assistant, Improve personal communication in the e-learning environment using BPL. As these skills develop into Meta cognitive skills, because it helps nurses adapt better to medical systems. This process utilizes constructive and humane learning principles. [16]

4. Online interaction

Communication is an important component of any learning process. However, not every interaction does not lead to increased learning. In the intellectual development of communication when making a direct impact of the learner, that connection makes sense [17]. The precise meaning of meaningful interactions, Based on the development of specific learning environments strongly related to learning principles. Meaningful based on the theory of learning known as social creativity The primary purpose of this study is in terms of learning Is to redefine online communications. Analyzing relationships through this theoretical framework improving Quality of web-based learning environments can provide the required design principles. [18] In the context of web-based learning environments, Researchers and designers (Sometimes identical individuals) get their attention from learner content Have changed the level of contact between learner-learner communication and its quality [19]. Despite the improvements, the aim is to improve the learning performance of online communications more and better research is needed. The nature of interactions in different learning contexts, It is defined in different Of participants in a specific learning opportunity Ways based on the level of involvement, A university course or corporate training program. Depends on the nature of the contacts on the circumstances in which they are directly or indirectly involved [20]. Despite the media used for teaching, the communication for teachers in the online environment is better between students. Educators of web-based courses and researchers agree. Therefore, fostering communication opportunities is an important component Useful web-based course. Checkering for good training in undergraduate education And Cummins published seven principles. For good training in education these seven principles are based on each is a central thematic relationship. Improving face / student interaction, involvement and collaboration in these practices, Engage in active learning and provide quick feedback, Emphasize the time allotted for a task, Communicating high expectations And value for diversity. Good teaching principles in distance education Reflects the principles used in the traditional classroom. [21] In a specific and predetermined way Communicating with purpose will enhance the learner's knowledge. [22]

5. Web-based learning environment

The future research and training another problem, is how students learn Web-based learning environments how individual differences can be determined. Cognitive and personality variables, Studies on academic ability and attitude, multimedia comprehension skills and transparency Show that with web-based learning environments learning performance is significantly related. In addition, about web-based learning performance Of Xu Pang and Choi the study provided insight into the role of self-efficacy. However, personal differences in learning strategies and styles to date, Learner's goals and motivational attitude and in web-based learning environments Meta-cognitive skills of learners there is little research on how learning contributes to differences. Of course, these issues deserve further investigation. [23], Web-based learning environments a relatively new medium for learning, further students will vary depending on their interest in such learning. Cognitive and vulnerable activity of an individual's interest in certain activities or topics, Makes a strong impact on perseverance and effort. However, the interest in web-based learning is real whether WBLE is related to student behavior has not been explored. The scope of the present study, the impact of experiential emotions, interest in the subject topic and web-based Learning is about evaluating collaborative and non-cooperative behavior in the WBLE. [24] By providing relevant ideas in web-based learning contexts, Students check their answers, Evaluate their progress, Contribute to learning by allowing the cause of errors to be identified. Feedback will be helpful. Educational researchers and web-based the learning environment is challenging for designers, Individual students on their learning path Is to determine what concept is appropriate in different moments. [25]

6. Web-based learning management system

Learning Management Systems (LMSs), today, facilitate web-based learning, Basic software platform and administrators that support flexible and cost-effective teaching And improving the portability and mobility of learning resources (IEEE LTSC (Learning Technology Standards Committee) 2003; Question and Trial Functional Training Objectives, Learning Management Systems Online Learning Materials, Communication and collaborators For creation and distribution Providing integrated services. Management of instructional systems and many. LMS is for educational and training purposes widely used, because they are advertised as modern learning technology: They control the time and move the learning space, they provide excellent flexibility. Support enhanced communication between teachers and learners, also they provide resources conservation and reuse in one place. [26] Web-Based LMS, Useful, to meet certain requirements and for fast and education related education and training Requirements by companies and instructional designers widely accepted web applications. According to (ADL 2006), LMS "initiates learning content," Monitor the progress of learners, Software that automates training event management sorting learning materials and through services that express students' talents ". [27] With the development of learning technologies, learning management systems have become an integral part of the education sector. Most universities in the United States and Instructor teaching activities of colleges and adopted LMS to support student learning processes. One of the most important features of LMS, without the restrictions of time or distance. Following the increased growth of the Internet, around the world the concept of LMS is widely used in various higher education institutions. Discuss the content of the lesson for LMS instructors and learners, Posting and responding to each other, Helps maintain students' learning tracks and helps manage learning activities in an online environment. [28] Computers and

Internet related Technologies have been used for educational purposes for some time. Supports the administration of teaching and learning activities Such as creating companies Current efforts are spread around the world. By skills that support Such as the teaching and learning process there are many categories systems that are generally differentiated [29]. According to Nichani, Kaplan Leiserson and the most common types are: Learning Management System (LMS), Content Management System (CMS) And the Learning and Content Management System (LCMS). In general, managing and saving the student learning process, LMS provides resources for tracking and manipulating related data; CMS provides resources for creating, managing and publishing web content [30]. An LCMS integrates certain functions of the LMS with the CMS. LMS and LCMS offer operational capabilities, but they differ in their main purpose: The primary application of LCMS is content management and LMS learning performance learning, Includes management of learning needs, learning plans and planning.

7. Conclusion

Communication is a useful web-based environment is an important component. As a result, the design of web-based courses and behavioral instructors should be aware of the different types of interactions. In web-based applications there are several key issues in the feedback. Discuss the content of the lesson for LMS instructors and learners, Posting and responding to each other, Helps maintain students' learning tracks and helps manage learning activities in an online environment. Further students will vary depending on their interest in such learning. Cognitive and vulnerable activity of an individual's interest in certain activities or topics, Makes a strong impact on perseverance and effort. However, the interest in web-based learning is real whether WBLE is related to student behavior has not been explored. In this study, the actual application of the e-learning method and the purpose of the continuous application Are included as measures for the sustainable use of e-learning. Purpose of continuous use of e-learning method the research model assumes that it is affected by actual use, It facilitates effort expectation, self-efficacy, performance expectation, social influence and conditions.

References

- [1]. Poon, Wai-Ching, Kevin Lock-Teng Low, and David Gun-Fie Yong. "A study of Web-based learning (WBL) environment in Malaysia." *International Journal of Educational Management* (2004).
- [2]. Chandra, Vinesh, and James J. Watters. "Re-thinking physics teaching with web-based learning." *Computers & Education* 58, no. 1 (2012): 631-640.
- [3]. Attack, Lynda, and James Rankin. "A descriptive study of registered nurses' experiences with web-based learning." *Journal of Advanced Nursing* 40, no. 4 (2002): 457-465.
- [4]. Kumar Pandey, Rakesh, Shrey Aggarwal, Griesha Nath, Anil Kumar, and Behzad Vaferi. "Metaheuristic algorithm integrated neural networks for well-test analyses of petroleum reservoirs." *Scientific Reports* 12, no. 1 (2022): 1-16.
- [5]. Chen, Chih-Ming. "Intelligent web-based learning system with personalized learning path guidance." *Computers & Education* 51, no. 2 (2008): 787-814.
- [6]. Chaudhari, Rakesh, Asha Ingle, and Kanak Kalita. "Experimental Investigation of Correlation of Grain Size and Mechanical Properties in 304 Stainless Steel." *Materials Focus* 5, no. 5 (2016): 440-445.
- [7]. Koundal, Deepika, and Bhisham Sharma. "Advanced neutrosophic set-based ultrasound image analysis." In *Neutrosophic set in medical image analysis*, pp. 51-73. Academic Press, 2019.
- [8]. Dheenadhayalan, V. "Impact of E-Commerce on the Changes in Consumer's Buying Behaviour in Malappuram District." *Annals of the Romanian Society for Cell Biology* (2021): 3441-3452.
- [9]. Wang, Shu-Ling, and Pei-Yi Wu. "The role of feedback and self-efficacy on web-based learning: The social cognitive perspective." *Computers & Education* 51, no. 4 (2008): 1589-1598.
- [10]. Vasilyeva, Ekaterina, Seppo Puuronen, Mykola Pechenizkiy, and Pekka Rasanen. "Feedback adaptation in web-based learning systems." *International Journal of Continuing Engineering Education and Life Long Learning* 17, no. 4/5 (2007): 337.
- [11]. Bhalla, Kanika, Deepika Koundal, Bhisham Sharma, Yu-Chen Hu, and Atef Zaguia. "A fuzzy convolutional neural network for enhancing multi-focus image fusion." *Journal of Visual Communication and Image Representation* 84 (2022): 103485.
- [12]. Chiu, Chao-Min, Szu-Yuan Sun, Pei-Chen Sun, and Teresa L. Ju. "An empirical analysis of the antecedents of web-based learning continuance." *Computers & Education* 49, no. 4 (2007): 1224-1245.
- [13]. Dheenadhayalan, V., and R. Shanmuga Priya. "Influencing Factors on Purchase Decision of Women Two-Wheeler Users." *Annals of the Romanian Society for Cell Biology* (2021): 3430-3440.
- [14]. Chiu, Chao-Min, and Eric TG Wang. "Understanding Web-based learning continuance intention: The role of subjective task value." *Information & management* 45, no. 3 (2008): 194-201.
- [15]. Talwar, Akshit, Alka Chaudhary, and Anil Kumar. "Encryption Policies of Social Media Apps and Its Effect on User's Privacy." In *2022 10th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO)*, pp. 1-4. IEEE, 2022.
- [16]. Bajaj, Karan, Bhisham Sharma, and Raman Singh. "Implementation analysis of IoT-based offloading frameworks on cloud/edge computing for sensor generated big data." *Complex & Intelligent Systems* 8, no. 5 (2022): 3641-3658.
- [17]. Patil, Niteen, M. R. Patil, Rakesh Chaudhari, and Praveen Kumar Loharkar. "Investigation on the Machining of Inconel-718 Using EDM." In *Recent Advances in Smart Manufacturing and Materials*, pp. 129-136. Springer, Singapore, 2021.

- [18]. Cook, David A. "Web-based learning: pros, cons and controversies." *Clinical medicine* 7, no. 1 (2007): 37.
- [19]. Cook, David A., and Denise M. Dupras. "A practical guide to developing effective web-based learning." *Journal of general internal medicine* 19, no. 6 (2004): 698-707.
- [20]. Dheenadhayalan, V., and R. Devianbarasi. "Relationship between liquidity and profitability-a case study of NPKRR cooperative sugar mill ltd." *Indian Cooperative Review* 47, no. 1 (2009): 39-46.
- [21]. Lwoga, Edda Tandi, and Mercy Komba. "Antecedents of continued usage intentions of web-based learning management system in Tanzania." *Education+ training* (2015).
- [22]. Tibadia, Rajkumar, Koustubh Patwardhan, Dhruvil Patel, Dinesh Shinde, and Rakesh Chaudhari. "Optimisation of drilling parameters for minimum circularity error in FRP composite." *International Journal of Materials Engineering Innovation* 10, no. 4 (2019): 271-285.
- [23]. Hsu, Cheng-Mei, Yu-Chu Yeh, and Jen Yen. "Development of design criteria and evaluation scale for web-based learning platforms." *International Journal of Industrial Ergonomics* 39, no. 1 (2009): 90-95.
- [24]. Bangroo, Rashika, Utsav Gupta, Roshan Sah, and Anil Kumar. "Cryptocurrency Price Prediction using Machine Learning Algorithm." In *2022 10th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO)*, pp. 1-4. IEEE, 2022.
- [25]. Crawford, Tonia R. "Using problem-based learning in web-based components of nurse education." *Nurse education in practice* 11, no. 2 (2011): 124-130.
- [26]. Garg, Sheetal, Raman Singh, Mohammad S. Obaidat, Vinod Kumar Bhalla, and Bhisham Sharma. "Statistical vertical reduction-based data abridging technique for big network traffic dataset." *International Journal of Communication Systems* 33, no. 4 (2020): e4249.
- [27]. Shahare, Padmakar, Manisha Jaiswal, Deepshikha Kalra, Vishal Srivastava, Rani Susmitha, and V. Dheenadhayalan. "Implementation of Innovative Strategies on Entrepreneurship Business as a Driver for Economic Development Among Emerging Economic." *Korea Review of International Studies* 15, no. 34 (2022).
- [28]. Radovan, Marko, and Mojca Perdih. "Developing guidelines for evaluating the adaptation of accessible web-based learning materials." *International Review of Research in Open and Distributed Learning* 17, no. 4 (2016): 166-181.
- [29]. Rathor, Ketan, Sushant Lenka, Kartik A. Pandya, B. S. Gokulakrishna, Susheel Sriram Ananthan, and Zoheib Tufail Khan. "A Detailed View on industrial Safety and Health Analytics using Machine Learning Hybrid Ensemble Techniques." In *2022 International Conference on Edge Computing and Applications (ICECAA)*, pp. 1166-1169. IEEE, 2022.
- [30]. Chaudhari, Rakesh, and Asha Ingle. "Finite Element Analysis of Dissimilar Metal Weld of SA335 P11 and SA312 TP304 Formed By Transition Grading Technique." *Materials Today: Proceedings* 5, no. 2 (2018): 7972-7980.
- [31]. Akojwar, Sudhir G., and Pravin R. Kshirsagar. "Performance evolution of optimization techniques for mathematical benchmark functions." *International Journal of Computers* 1 (2016).
- [32]. Thurmond, Veronica A. "Defining interaction and strategies to enhance interactions in Web-based courses." *Nurse educator* 28, no. 5 (2003): 237-241.
- [33]. Nautiyal, Aditi, and Amit Kumar Mishra. "Machine learning approach for intelligent prediction of petroleum upstream stuck pipe challenge in oil and gas industry." *Environment, Development and Sustainability* (2022): 1-27.
- [34]. Woo, Younghee, and Thomas C. Reeves. "Meaningful interaction in web-based learning: A social constructivist interpretation." *The Internet and higher education* 10, no. 1 (2007): 15-25.
- [35]. Siraj, Madiha, Anmol Sethi, Anil Kumar, and Priyanka Dahiya. "Haptic Feedback System for Differently Able Using Their Inputs." In *2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO)*, pp. 1-4. IEEE, 2021.
- [36]. Sabry, Khaled, and Lynne Baldwin. "Web-based learning interaction and learning styles." *British Journal of Educational Technology* 34, no. 4 (2003): 443-454.
- [37]. Senkevich, Sergey, Vadim Bolshev, Ekaterina Ilchenko, Prasun Chakrabarti, Michał Jasiński, Zbigniew Leonowicz, and Mikhail Chaplygin. "Elastic Damping Mechanism Optimization by Indefinite Lagrange Multipliers." *IEEE Access* 9 (2021): 71784-71804.
- [38]. ChanLin, Lih-Juan. "Applying motivational analysis in a Web-based course." *Innovations in Education and Teaching International* 46, no. 1 (2009): 91-103.
- [39]. Kshirsagar, Pravin R., Anil N. Rakhonde, and Pranav Chippalkatti. "MRI image based brain tumor detection using machine learning." *Test Engineering and Management* 81 (2020): 3672-3680.
- [40]. Psaromiligkos, Yannis, Maria Orfanidou, Christos Kytageas, and Evmorfia Zafiri. "Mining log data for the analysis of learners' behaviour in web-based learning management systems." *Operational Research* 11, no. 2 (2011): 187-200.
- [41]. Farooqui, Nafees Akhter, Amit Kumar Mishra, and Ritika Mehra. "Automatic crop disease recognition by improved abnormality segmentation along with heuristic-based concatenated deep learning model." *Intelligent Decision Technologies Preprint*: 1-23.
- [42]. Chung, Chih-Hung, Laura A. Pasquini, and Chang E. Koh. "Web-based learning management system considerations for higher education." *Learning and Performance Quarterly* 1, no. 4 (2013): 24-37.
- [43]. Lwoga, Edda Tandi, and Mercy Komba. "Antecedents of continued usage intentions of web-based learning management system in Tanzania." *Education+ training* (2015).

- [44]. Rathor, Ketan, Keyur Patil, Mandiga Sahasra Sai Tarun, Shashwat Nikam, Devanshi Patel, and Sasanapuri Ranjit. "A Novel and Efficient Method to Detect the Face Coverings to Ensure the Safety using Comparison Analysis." In 2022 International Conference on Edge Computing and Applications (ICECAA), pp. 1664-1667. IEEE, 2022.
- [45]. Kshirsagar, Pravin R., and Sudhir G. Akojwar. "Prediction of neurological disorders using optimized neural network." In 2016 International Conference on Signal Processing, Communication, Power and Embedded System (SCOPE5), pp. 1695-1699. IEEE, 2016.
- [46]. Moura, Janine G., Leônidas O. Brandão, and Anarosa AF Brandão. "A web-based learning management system with automatic assessment resources." In 2007 37th Annual Frontiers In Education Conference-Global Engineering: Knowledge Without Borders, Opportunities Without Passports, pp. F2D-1. IEEE, 2007.
- [47]. Wang, Xin, Yuhao Zhou, Tingwen Huang, and Prasun Chakrabarti. "Event-triggered Adaptive Fault-tolerant Control for a Class of Nonlinear Multiagent Systems with Sensor and Actuator Faults." *IEEE Transactions on Circuits and Systems I: Regular Papers* 69, no. 10 (2022): 4203-4214.
- [48]. Dahiya, P., and D. K. Srivastva. "An efficient anomaly detection based on optimal deep belief network in big data." *Int. J. Eng. Adv. Technol.* 9, no. 1 (2019): 708-716.
- [49]. Kritikou, Yiouli, Panagiotis Demestichas, Evgenia Adamopoulou, Konstantinos Demestichas, Michael Theologou, and Maria Paradia. "User Profile Modeling in the context of web-based learning management systems." *Journal of Network and Computer Applications* 31, no. 4 (2008): 603-627.
- [50]. Mishra, Amit Kumar, and Shweta Paliwal. "Mitigating cyber threats through integration of feature selection and stacking ensemble learning: the LGBM and random forest intrusion detection perspective." *Cluster Computing* (2022): 1-12.
- [51]. Chandra, Vinesh, and Darrell L. Fisher. "Students' perceptions of a blended web-based learning environment." *Learning Environments Research* 12, no. 1 (2009): 31-44.
- [52]. Tsai*, Chin-Chung. "Information commitments in Web-based learning environments." *Innovations in education and teaching international* 41, no. 1 (2004): 105-112.
- [53]. Kao, Chia-Pin, and Chin-Chung Tsai. "Teachers' attitudes toward web-based professional development, with relation to Internet self-efficacy and beliefs about web-based learning." *Computers & Education* 53, no. 1 (2009): 66-73.
- [54]. Singh, Anuja, Tapan Behl, Aayush Sehgal, Sukhbir Singh, Neelam Sharma, Tanveer Naved, Saurabh Bhatia et al. "Mechanistic insights into the role of B cells in rheumatoid arthritis." *International Immunopharmacology* 99 (2021): 108078.
- [55]. Terrell, Steven R. "The effect of learning style on doctoral course completion in a Web-based learning environment." *The Internet and Higher Education* 5, no. 4 (2002): 345-352.
- [56]. Kshirsagar, Pravin, Akshay Pote, K. K. Paliwal, Vaibhav Hendre, Pranav Chippalkatti, and Nikhil Dhabekar. "A review on IOT based health care monitoring system." *ICCCE 2019* (2020): 95-100.
- [57]. Dahiya, Priyanka, and Alka Chaudhary. "FIDSM: Fuzzy based Intrusion Detection Systems in Mobile Ad Hoc Networks." *International Journal of Computer Applications* 975 (2014): 8887.
- [58]. Manjunath, C. R., Ketan Rathor, Nandini Kulkarni, Prashant Pandurang Patil, Manoj S. Patil, and Jasdeep Singh. "Cloud Based DDOS Attack Detection Using Machine Learning Architectures: Understanding the Potential for Scientific Applications." *International Journal of Intelligent Systems and Applications in Engineering* 10, no. 2s (2022): 268-271.
- [59]. Ge, Xun, Lourdes G. Planas, and Nelson Er. "A cognitive support system to scaffold students' problem-based learning in a web-based learning environment." *Interdisciplinary journal of problem-based learning* 4, no. 1 (2010): 4.
- [60]. Farooqui, Nafees Akhter, Amit Kumar Mishra, and Ritika Mehra. "Concatenated deep features with modified LSTM for enhanced crop disease classification." *International Journal of Intelligent Robotics and Applications* (2022): 1-25.
- [61]. Goeser, Priya T., Felix G. Hamza-Lup, Wayne M. Johnson, and Dirk Scharfer. "VIEW: A virtual interactive web-based learning environment for engineering." *arXiv preprint arXiv:1811.07463* (2018).
- [62]. Al-Wesabi, Fahd N., Areej A. Malibari, Anwer Mustafa Hilal, Nadhem NEMRI, Anil Kumar, and Deepak Gupta. "Intelligent ensemble of voting based solid fuel classification model for energy harvesting from agricultural residues." *Sustainable Energy Technologies and Assessments* 52 (2022): 102040.
- [63]. Huang, Xiaoxia, Aruna Chandra, Concetta A. DePaolo, and Lakisha L. Simmons. "Understanding transactional distance in web-based learning environments: An empirical study." *British Journal of Educational Technology* 47, no. 4 (2016): 734-747.