

COMPARING THE CHALLENGES OF IMPLEMENTING WEB-BASED AND TRADITIONAL TEACHING SYSTEMS IN DEVELOPING COUNTRIES: A SYSTEMATIC REVIEW

Hlaing Htake Khaung Tin¹, J.Samuel ManoHarn²

¹Faculty of Information Science , University of Information Technology, Myanmar

²Department of Electronics & Communication Engineering, Sir Isaac Newton College of Engineering & Technology, India

ABSTRACT

Web-based teaching systems have several advantages and have the potential to benefit education greatly. It is significant to carefully consider learners' and instructors' specific needs and circumstances when deciding whether to use these systems. Using web-based and traditional teaching methods may be appropriate to provide a well-rounded educational experience. It may be appropriate to use a combination of web-based and traditional teaching methods to provide a well-rounded educational experience. Web-based teaching systems have the potential to greatly benefit education in developing countries by increasing access to quality education and reducing the cost of delivering education. However, there are also several challenges to implementing these systems in developing countries, such as limited infrastructure and resources, limited access to technology, and low digital literacy. The purpose of this review article is to analyse and contrast the efficacy of web-based teaching systems with traditional teaching systems, assess their respective advantages and disadvantages, identify the factors that influence their effectiveness, and conclude that web-based teaching systems offer certain benefits over traditional teaching systems, including greater flexibility, convenience, and the capacity to deliver multimedia content. However, traditional teaching systems also have advantages, such as the ability to provide face-to-face interaction and immediate feedback. This review paper examines the factors that impact the efficacy of both systems, such as the system's design, the quality of the educational materials, and the proficiency of the instructor. Both systems have their strengths and weaknesses, and the best approach depends on the specific needs and circumstances of the learner and the instructor.

KEYWORDS

Web-technology, Web-based teaching systems, traditional teachings, developing countries, Myanmar.

1. INTRODUCTION

The popularity of web-based teaching systems has grown in recent years as a result of technological advancements and the widespread accessibility of the internet. These systems offer several advantages over traditional [3] teaching methods, including increased flexibility and convenience, the ability to provide multimedia content, and the potential for personalized learning experiences.

There are several challenges to implementing Web-based teaching systems in developing countries. This passage suggests that although there are difficulties in implementing web-based teaching systems in developing countries, there are initiatives and programs that aim to promote

their use. [2] For instance, the World Bank has introduced several initiatives with the goal of increasing access to education in developing countries through technology. An example of such an initiative is the Global Partnership for Education, which offers financial support and resources for projects aimed at improving education accessibility in developing countries. There are certainly challenges to implementing web-based teaching systems in developing countries, there are also many promising initiatives and programs aimed at promoting these systems and improving access to quality education for learners in these countries.

2. LITERATURE REVIEW

The growing popularity of web-based teaching systems has resulted in the emergence of numerous authors and developers of such systems. One of the key advantages of web-based teaching systems is their flexibility. With web-based teaching systems, learners can access course materials and engage in online discussions from any location with internet access, making it easier to fit education into their busy schedules. This flexibility enables learners to learn at their own pace, which can be especially advantageous for those who require more time to comprehend complex ideas [4]. Web-based teaching systems can also provide access to multimedia content, such as videos, interactive simulations, and other digital resources, that may not be available in traditional classroom settings [3]. Using web-based teaching systems can enhance learner engagement and create a more interactive and stimulating learning experience. Additionally, various organizations and businesses have designed web-based teaching systems tailored for use in developing countries. [5] For example, the One Laptop Per Child (OLPC) program has developed low-cost laptops and tablets designed for use in developing countries, which come pre-loaded with educational materials and software.

3. BACKGROUND THEORY

There are many authors and developers of web-based teaching systems, as these systems have become increasingly popular in recent years. The following table 1 shows some examples of popular web-based teaching systems.

Table 1. Popular Web-based teaching systems

No	Web-based Teaching Systems	Description
1	Blackboard Inc.	Blackboard is a leading provider of web-based teaching and learning solutions for higher education, K-12, and professional education. Their flagship product, Blackboard Learn, is used by millions of students and educators around the world.
2	Moodle	Moodle is a free and open-source learning management system (LMS) that allows educators to create and deliver online courses. Moodle is developed and maintained by a community of developers and educators around the world.
3	Canvas	Canvas is a cloud-based LMS developed by Instructure. It is used by K-12 schools, higher education institutions, and businesses to deliver online courses and training programs.
4	Coursera	Coursera is an online learning [1] platform that partners with top universities and organizations to offer courses and degree programs online. Their platform uses a combination of video lectures, quizzes, and interactive assignments to deliver high-quality education to learners around the world.
5	edX	edX is a non-profit online learning platform founded by Harvard University and MIT. They offer courses and programs from top universities and institutions around the world, and their platform includes features such as interactive video lectures, online discussion forums, and peer assessments.

3.1. Web-based Teaching Systems

A web-based teaching system is an internet-based platform that aims to assist in the process of teaching and learning. Typically, these systems provide various tools and resources that allow educators to create and deliver courses and enable learners to access and participate in those courses. Web-based teaching systems are applicable to various educational settings, including K-12 schools, colleges and universities, and corporate training programs. They provide advantages such as flexibility, accessibility, and scalability, allowing learners to access course materials and engage in learning activities from any location with internet connectivity. The common features of web-based teaching systems shown in table 2.

Table 2. Common Features of Web-based teaching systems

Teaching Tools	Resources
Course management tools	These allow educators to create and manage courses, including adding course materials, creating assessments, and tracking student progress.
Communication tools	These enable learners to interact with each other and with their instructors, including through email, discussion forums, and chat rooms.
Assessment tools	These allow educators to assess student learning, including through quizzes, exams, and assignments.
Content delivery tools	These enable educators to deliver course materials, such as lectures, readings, and multimedia content, to learners.
Analytics tools	These enable educators to track student progress and identify areas where learners may need additional support.

3.2. Web-based Teaching Systems vs Traditional Teaching Systems

Web-based teaching systems and traditional teaching systems have several differences that can affect the learning experience. Web-based teaching systems and traditional teaching systems have their advantages and disadvantages, and the choice between them may depend on the specific context and learning goals shown in table 3.

Table 3. Web-based teaching systems Vs Traditional teaching systems

Learning Experience	Web-based teaching systems	Traditional teaching systems	Remarks
Flexibility	With web-based teaching systems, learners can access course materials and participate in learning activities at any time and from anywhere with internet connectivity.	traditional teaching systems require learners to attend classes at specific times and locations.	Web-based teaching systems are typically more flexible than traditional teaching systems.
Interaction	Web-based teaching systems often rely on asynchronous communication tools, such as email and discussion forums, which can limit interaction.	Compared to web-based teaching systems and traditional teaching systems that provide more opportunities for face-to-face interaction between learners and instructors, as well as between learners themselves.	Lack of face-to-face interaction, potential for technical issues
Personalization	Learners can advance through courses at their preferred pace and obtain instant feedback on their assessments.	Traditional teaching systems often require learners to progress through courses at a predetermined pace and may not offer immediate feedback.	Web-based teaching systems often offer more personalized learning experiences than traditional teaching systems.
Access to resources	Web-based teaching systems offer learners access to a wide range of digital resources, such as videos, online readings, and multimedia content.	Traditional teaching systems may have more limited resources, and learners may need to rely on physical textbooks and other materials.	Design of the system, quality of content, skills of the instructor
Cost	Do not require physical classrooms, textbooks, and other materials.	Require physical classrooms, textbooks, and other materials. [7]	Web-based teaching systems may be more cost-effective than traditional teaching systems. [18]

3.3. Benefits and Advantages of Web-based Teaching Systems

Web-based teaching systems offer educators and learners a range of benefits and advantages that can enhance the teaching and learning experience. Web-based teaching systems have several benefits and advantages for both educators and learners. The following table 4 shows benefits and advantages of educators and learners.

Table 4. Benefits and Advantages of Web-based teaching systems for educators and learners

Flexibility	Web-based teaching systems enable learners to access course materials and participate in learning activities at their convenience from any location with an internet connection.	This flexibility can be especially helpful for learners who have other commitments, such as work or family responsibilities.
Access to resources	Web-based teaching systems offer learners access to a wide range of digital resources, such as videos, online readings, and multimedia content.	This can help learners to engage with course materials in different ways and can accommodate different learning styles. [11]
Personalization	Web-based teaching systems often offer more personalized learning experiences than traditional teaching systems.	Learners can progress through courses at their own pace and receive immediate feedback on assessments.
Collaboration	Web-based teaching systems often include communication tools, such as discussion forums and chat rooms, which can facilitate collaboration among learners.[17]	This can help learners to build relationships with their peers and to learn from each other.
Cost-effectiveness	Web-based teaching systems can be more cost-effective than traditional teaching systems, as they do not require physical classrooms, textbooks, and other materials.	This can make education more accessible to learners who may not have the financial resources to attend traditional courses.
Scalability	Web-based teaching systems can accommodate large numbers of learners.	Web-based teaching systems can make it possible to reach a larger audience compared to traditional teaching systems.

4. WEB-BASED TEACHING SYSTEMS IN DEVELOPING COUNTRIES

Web-based teaching systems have the potential to bring high-quality education to developing countries, where access to traditional educational resources may be limited. The following table 5 shows some ways of web-based teaching systems can be useful in developing countries. There is also the potential for technical issues, such as connectivity problems or glitches in the software, which can disrupt the learning process.

Table 5. Web-based teaching systems in Developing Countries

Accessibility	Web-based teaching systems can enhance accessibility to education for learners who may not have access to conventional educational resources, including those in rural regions or those residing far away from schools or universities. [9]
Cost-effectiveness	Web-based teaching systems can be more cost-effective than traditional teaching systems, as they do not require physical classrooms, textbooks, and other materials. This can also make education more affordable and feasible for learners who may not have the financial resources to enroll in traditional courses.
Customization	Web-based teaching systems can be customized to meet the specific needs of learners in developing countries. This includes offering courses in local languages and adapting course materials to local cultural contexts.
Collaboration	Web-based teaching systems can facilitate collaboration among learners,

	even in areas where physical classroom space is limited. This can aid learners in establishing relationships with their peers and learning from each other.
Access to resources	Web-based teaching systems can offer learners in developing countries access to a wide range of digital resources, such as videos, online readings, and multimedia content. This can help learners to engage with course materials in different ways and can accommodate different learning styles.[11]
Infrastructure	Web-based teaching systems can be used to provide education in areas where physical infrastructure is limited, such as in areas with limited access to electricity or running water.

5. THE WEB TECHNOLOGY IN MYANMAR

Myanmar has seen significant growth in web technology in recent years, with a rise in internet access and smartphone usage. Web technology is a vital factor in Myanmar's economic and social development, and it is aiding in bridging the digital gap between urban and rural regions. The following ways of web technology is being used in Myanmar are shown in table 6.

Table 6. Using Web Technologies in Myanmar

Web Technology Services	Description	Application Area
E-commerce	The growth of web technology in Myanmar has led to the rise of e-commerce platforms, such as Shop.com.mm and Yangon Door2Door.	These platforms allow customers to buy and sell goods online, making it easier for businesses to reach a wider audience.
Social Media	Social media has become an important tool for communication, news dissemination, and marketing in Myanmar.	Social media platforms, such as Facebook, are very popular in Myanmar, with an estimated 22 million active users.
Education	Web technology is being used to improve access to education in Myanmar, particularly in rural areas.	Online courses and educational resources are being made available through platforms such as Myanmar Education Online and the Ministry of Education's online learning portal.
Healthcare	Web technology is being employed to enhance the availability of healthcare services in Myanmar.	The emergence of telemedicine platforms, such as Doctor to Doctor and Proximity Designs, has made it possible for patients to receive medical consultations from a distance, providing more convenient access to healthcare for individuals living in remote areas.
Government Services	Web technology is being used to improve access to government services in Myanmar.	Several online services have been introduced by the government, including the Myanmar eVisa application system, which enables travellers to apply for visas via the internet.

6. CONCLUSIONS

In conclusion, while web-based teaching systems have some advantages, they should not be viewed as a replacement for traditional teaching systems. Both web-based and traditional teaching systems have their own strengths and weaknesses, and their effectiveness depends on various factors such as teaching approach [8], content quality, and instructor skills. It's important

to carefully consider the needs and circumstances of the learner and the instructor when choosing between the two systems, rather than considering one as a substitute for the other. Web-based teaching systems offer the potential for personalized learning experiences. These systems can use data and analytics to monitor learners' progress and provide customized recommendations for further study based on their individual strengths and weaknesses. However, web-based teaching systems also have some potential drawbacks. The lack of face-to-face interaction is a significant issue that can make it more difficult for learners to ask questions and get immediate feedback from instructors. Therefore, when deciding on the most appropriate teaching system, it's crucial to weigh the advantages and disadvantages of both web-based and traditional teaching systems, considering the specific requirements of the learners and instructors. Both systems have their own unique features, and by carefully evaluating their suitability, you can make an informed decision about which system to choose for your particular teaching needs. Web-based teaching systems have the potential to bring high-quality education to learners in developing countries, and can help to bridge the educational gap between developed and developing countries. However, it's important to consider the unique challenges and limitations of the specific context when designing and implementing web-based teaching systems in developing countries.

REFERENCES

- [1] Academic Partnerships (2011). Research on the Effectiveness of Online Learning: A Compilation of Research on Online Learning. <http://www.academicpartnerships.com/sites/default/files/>
- [2] Brian Kelly, "A deployment strategy for maximising the impact of institutional use of Web 2.0" , in *Web 2.0 and Libraries*, 2010. <https://www.sciencedirect.com/topics/computer-science/web-based-technology>
- [3] Dimitrios Belias, Lambros Sdrolias, Kakkos Nikolaos, thanasios Koustelios, "Traditional Teaching Methods Vs. Teaching Through The Application Of Information And Communication Technologies In The Accounting Field: Quo Vadis?", *European Scientific Journal* October 2013 edition vol.9, No.28 ISSN: 1857 – 7881 (Print) e - ISSN 1857- 7431 <https://www.researchgate.net/publication/260289304>
- [4] Fan, S., Le, T. (2014). *Web-Based Technologies*. In: *The Future of Educational Research. Bold Visions in Educational Research*. Sense Publishers, Rotterdam. https://doi.org/10.1007/978-94-6209-512-0_14
- [5] GLEWWE, P., SHEN, R., SUN, B., & WISNIEWSKI, S. (2020). TEACHERS IN DEVELOPING COUNTRIES. IN THE ECONOMICS OF EDUCATION: A COMPREHENSIVE OVERVIEW (PP. 371-389). ELSEVIER. [HTTPS://DOI.ORG/10.1016/B978-0-12-815391-8.00027-6](https://doi.org/10.1016/B978-0-12-815391-8.00027-6)
- [6] Hanover Research Council (2009). *Best Practices in Online Teaching Strategies*. Washington, DC. Retrieved from <http://www.uwec.edu/AcadAff/resources/edtech/upload/Best-Practices-in-Online-Teaching-Strategies-Membership.pdf>
- [7] Hlaing Htake Khaung Tin, Phyu Sin Phwe, Yi Mon Thet and San Thida. "Effective Classroom Management Information System to Improve Teaching and Learning Approach.", *IJARCSSE* (2018). <https://www.academia.edu/71896247/>
- [8] Hlaing Htake Khaung Tin, "Role of Internet of Things (IoT) for Smart Classroom to Improve Teaching and Learning Approach", *International Journal of Research and Innovation in Applied Science (IJRIAS) | Volume IV, Issue I, January 2019*ISSN 2454-6194 <https://www.rsisinternational.org/journals/ijrias/DigitalLibrary/Vol.4&Issue1/45-49.pdf>
- [9] Hirsh-Pasek, K., Zosh, J.M., Golinkoff, R.M., Gray, J.H., Robb, M.B. and Kaufman, J. (2015). Putting Education in "Educational" Apps Lessons From the Science of Learning. *Psychological Science in the Public Interest*, 16(1), pp.3-34.
- [10] Khaing MM, ThetSu A, Thant KS, Aung TT, Tin HHK. Learning on the Smart Campus Information System. *Discovery*, 2022, 58(318), 597-602 https://discoveryjournals.org/discovery/current_issue/v58/n318/A10.pdf
- [11] McCann, B. M. (2006). "The Relationship Between Learning Styles, Learning Environments, And Student Success". *Journal of agricultural education*, 47 (3), 14. 10.5032/jae.2006.03014

- [12] McIver, D., Fitzsimmons, S., Flanagan, D. (2016). A Knowledge-in-practice approach to choosing instructional methods. *Journal of Management Education* Vol 40 Issue 1. <https://ctl.utexas.edu/ref-teaching-methods>
- [13] Nang Nwe New Soe, April Thet Su, Poe Ei Phyu, Hlaing Htake Khaung Tin, 2nd February 2016. Circumstantial Analysis of Preferred Teaching Styles (A Case Study of Computer University, Loikaw). *International Journal of Advanced and Innovation Research* ISSN:2278-7844, ijair.jctjournals.com, Published in IJAIR: Volume 05. <https://www.researchgate.net/publication/297563882>
- [14] Nilson, L. (2016). *Teaching at its best: A research-based resource for college instructors*. Jossey-Bass. <https://ctl.utexas.edu/ref-teaching-methods>
- [15] Paul Glewwe, Rongjia Shen, Bixuan Sun, Suzanne Wisniewski, "Teachers in developing countries", *The Economics of Education* (Second Edition), 2020, Pages 371-389, ISBN 9780128153918, <https://doi.org/10.1016/B978-0-12-815391-8.00027-6>.
- [16] R. Michael Alvarez, Carla VanBeselaere, "Web-based Survey", in *Encyclopedia of Social Measurement*, 2005. <https://www.sciencedirect.com/topics/computer-science/web-based-technology>
- [17] R. S. Gowda and V. Suma, "A comparative analysis of traditional education system vs. e-Learning," 2017 International Conference on Innovative Mechanisms for Industry Applications (ICIMIA), Bengaluru, India, 2017, pp. 567-571, doi: 10.1109/ICIMIA.2017.7975524. <https://ieeexplore.ieee.org/document/7975524>
- [18] Swaniawski.zetta, "Web-technology", 2021. <https://pdfroom.com/books/web-technologie>
- [19] Villanueva-Mansilla, E. (2015). One Laptop Per Child (OLPC) Strategy. In *The International Encyclopedia of Digital Communication and Society* (eds P.H. Ang and R. Mansell). <https://doi.org/10.1002/9781118767771.wbiedcs032>
- [20] Zang, Y (2005). An experiment on mathematics pedagogy: traditional method versus computer-assisted instruction. <http://files.eric.ed.gov/fulltext/ED490695.pdf>