

Principles of Effective Online Learning: Developing a Curriculum for Virtual Classroom

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ABSTRACT

Colleges and universities of all sizes are expanding into online education in response to rising demand from students and academics. Using the ideas of learner-centeredness, constructivism, and contextual learning, this article explores the five cornerstones of online learning. The capacity to (a) cultivate a sense of belonging and community, (b) integrate active learning, (c) leverage learner agency, (d) embrace mastery learning, and (e) adapt one's educational experience are all cornerstones. In this article, the authors evaluate 11 studies published in the last five years to draw conclusions on the fundamentals of efficient online education. This paper presents an analysis of the concerns and obstacles encountered during the development of a curriculum for virtual classrooms. The identified issues are thoroughly examined and potential solutions are proposed and debated.

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1. INTRODUCTION

Online education has emerged as a prominent issue over the past two years. The inception of online learning can be traced back to 1960 and has since undergone significant advancements (Sarkar, 2020). Originally, online learning was used in higher education institutions, where both students and institutions were seen to be more equipped for this mode of education (Dick et al., 2020). Online learning has been utilised as an appropriate method for facilitating education due to its numerous advantages. It is widely recognised as a powerful instrument for advancing learner-centered, innovative, flexible, and cost-effective learning methods by eliminating transit expenses and accommodation costs (Singh & Thurman, 2019; Butler Kaler, 2012; Dhawan, 2020).

Although numerous educational institutions worldwide have implemented online learning as a method for delivering instructional material, there is limited evidence of a prevalence of creative solutions that encourage a wide range of teaching methods. With a few exceptions, the design of most online learning environments follows the traditional instructional delivery model and does not fully utilise the empowering potential of information and communications technologies (ICT) (Dreher, 2006). University students are rarely provided with the necessary resources to structure their learning activities effectively according to their specific requirements and situations. Collaborative online problem-solving tasks and group projects rarely result in satisfying learning experiences. Additionally, consistent encouragement for seamless collaboration with the broader online community is lacking.

One of the most important signs that the "learning process" has taken place in a learning implementation is interaction. Therefore, it is imperative that educators foster an environment conducive to student-teacher dialogue. Interactions with content, instructors, and peers are the three forms of contact that experts have identified as crucial to effective learning implementation (Moore, 1989). Students engage with content when they have a relationship with the subject matter, for example, when they comprehend and fully grasp the subject. The term "interaction with instructor" refers to the moments when students communicate with the teacher, whether it's asking or answering questions. In contrast, when students collaborate with their pals, like in a group project or a conversation, they are interacting with their peers. The most popular medium for online education, Hillman et al. (1994) introduced a new kind of interaction between students and the learning media/platform that facilitates online education (distance learning-learner-interface).

Currently, a significant number of university students utilise web-based learning management systems of version '1.0'. These systems provide closed, centralised, server-oriented, and distribution-oriented virtual learning environments (VLE). The extensive use of Virtual Learning Environments (VLEs) in educational institutions has resulted in the prominence of a small number of market leaders who advocate for the provision of innovative and sophisticated learning methods. However, most have chosen to only offer an online version of the traditional distribution model. As a result, online delivery systems that encourage a variety of teaching methods are rare rather than common. Most online learning systems lack features for learners to effectively organise themselves, hinder group and problem-based learning, and fail to seamlessly interface with the broader internet, creating isolated learning environments (Liber, 2004).

Outside of traditional university networks, people now "meet" in online chat rooms, run weblogs, participate in "virtual" communities, find answers to their questions on "support" websites (such as wikis and bulletin boards), and share resources through incredibly user-friendly and interactive peer-to-peer systems. There is a clear disparity between the resources accessible online and the capabilities of university learning delivery platforms, despite the fact that new technologies to assist such activities are constantly appearing on the Internet. The World Wide Web 2.0 has quickly progressed to include social, distributed, open, peer-to-peer, and contributive features. These features enable various levels of communication among individuals who share resources and interests. They can dynamically connect and exchange ideas through technologies like email, wikis, chat, weblogs, and short messaging services (sms). In most cases, top VLEs do not offer all of these characteristics. Students are limited to acquiring information through channels that lack the variety and depth of in-person conversation and engagement, rather than learning how to generate their own knowledge.

Novel design concepts and tactics are necessary to leverage the social utilisation of the internet and expand its capabilities to encompass virtual (online networked) learning communities. Participating actively in learning communities, whether they are physical or virtual, allows learners to be exposed to other perspectives, ideas, practices, interests, and links to different knowledge areas that they may not encounter through self-study alone (Ou et al., 2019). In the design approach outlined in this chapter, the learner is prompted to navigate through various contexts, either predetermined or self-selected, while being observed by community members who offer feedback on the concepts and knowledge produced during the learning process. Therefore, the ability to acquire and develop knowledge is improved both on an individual and societal level.

Many studies have found that putting online learning into practice comes with a number of problems (Atmojo & Nugroho, 2020; Febrianto et al., 2020; Lie et al., 2020; Rasmitadila et al., 2020; Sepulveda-Escobar & Morrison, 2020). For example, Sepulveda-Escobar and Morrison (2020) said that in Chile, the lack of face-to-face contact and the sudden switch to online learning make it very hard to learn. Other studies have also found problems like these. Another study from Indonesia suggested that the difficulties of online learning are caused by many things, such as teachers, students, technical and pedagogical knowledge, and tools.

The research focus on the virtual classroom remains significant, and scholars have investigated instances of the virtual classroom using other names such as distance education, online learning, and emergency remote teaching in the context of higher education. Advantages commonly cited for online learning include the reduction of travel time and expenses, the provision of flexibility for students, and the enhancement of opportunities for worldwide collaboration with experts (Finch, 2012). The commonly emphasised drawbacks include feelings of solitude and technological disparities (Castro et al., 2021). The effectiveness of online courses in higher education is investigated in a recent literature review by Castro and Tumibay (Castro et al., 2021). Many studies have examined the effectiveness of learning outcomes and student satisfaction in comparison to traditional classroom instruction, and the results demonstrate that online learning is just as effective, if not more so, than traditional classroom instruction. This is something they emphasise in their work. In addition, the authors summarise the current state of the art by saying that the best ways to foster learning in virtual spaces include guided, purposeful online conversations with explicit objectives and regular interaction between instructors and their students input that is specific, timely, and useful for improvement (Castro et al., 2021). Although their research is highly pertinent, there is a distinction between the high school settings where they examined the educational affordances provided by a variety of instruments and instructional designs. In order to fill that void in the literature, this research takes principles of effective online learning related on developing a curriculum for virtual classrooms.

2. METHODS

The study aimed to investigate principles of effective online learning related on developing a curriculum for virtual classroom. Library research was implemented to obtain publications from journals and databases. Systematic literature review (SLR) approach was employed in analyzing the accepted articles. PRISMA framework was adapted to carried out the study by performing four stages namely identification, screening, eligibility, and synthesize (Page et al., 2021; Siddaway, Wood, & Hedges, 2019)]. Next, the accepted articles were analyzed through narrative synthesis (Popay et al., 2006) to investigate the principle of online learning.

The researcher searched articles relevant to the study from online databases and article search engines such as Harzing's Publish or Perish (POP) through Scopus, Google Scholar, and Semantic Scholar published from 2018-2023. The search keywords used by the researchers were 'effective online learning', 'virtual classroom', and 'developing curriculum'. The inclusion criteria of the literatures were articles, proceeding and theses that relevant to the research variables. Articles or proceedings that could not be accessed directly, except by a membership, were excluded. The researcher collected 327 papers at this stage. However, 52 items were deleted since they could not be accessed with membership.

The researcher reviewed the titles and abstracts of the articles in order to assess the inclusion and exclusion papers. The researcher would save the articles that were related to the study's research questions and eliminate those excluded articles that were inappropriate to the investigation at this point. During the initial screening, 279 publications were excluded because they were unrelated to the study's variable. Those articles did not discuss about online learning or virtual classrooms. Thus, the researcher obtained 89 publications in the final screening.

The researcher manually reviewed the remaining publications to figure out if the papers met the inclusion criteria. After analyzing the title, abstract, and content, 72 publications were removed because they were not related to developing curriculum in online learning. The overall number of articles at this stage was 17, but because 6 of them did not contain full-text, the researchers discarded them.

In synthesize and results stage, there were 11 articles reviewed by the researchers. These articles were published in 2018-2023, discussed about principles of online learning. Afterwards, the selected articles were analysed through narrative synthesis by grouping or clustering the data and making tabulation based on the research questions to convey the data graphically in order to assist the

researchers in synthesizing the reviewed articles (Popay et al., 2006). During this stage, the researcher studied 11 articles in depth that were relevant to the study topics and met the inclusion criteria.

3. FINDINGS AND DISCUSSION

The four overlapping components of an effective online pedagogy, as described by Anderson (2008), are learning that is learner-centred, knowledge-centred, community-centred, and assessment-centred. To back up this idea and provide an additional framework for online pedagogy, Archambault et al. (2022) state that learner-centeredness, constructivism, and situated learning should form the basis of five pillars that online pedagogy should have. The pillars encompass the following: (a) Establishing connections and fostering a sense of community, (b) Integrating active learning methods, (c) Empowering learners to take charge of their own education, (d) Embracing mastery-based learning, and (e) Customising the learning experience.

3.1 *Establishing connections and fostering a sense of community*

A virtual learning environment defines "a sense of virtual community (SOVC)" as the emotions of belonging, identity, attachment, and membership that individuals experience towards a group that predominantly communicates through electronic communication (Blanchard, 2007). A strong sense of community among students is associated with increased dedication to learning, participation in group activities, and achievement of group objectives (Rovai, 2002c). Spirit, trust, interaction, and learning are the four pillars upon which Rovai (2002c) rests the definition of classroom community. Feelings of camaraderie, anticipation of shared experiences, and belonging to a group are what make up a community's spirit. A student's trust in the community is defined as their confidence in and ability to rely on one another. Classroom relationships can be further developed through task- or discussion-driven interaction. Dedication to high-quality learning and shared learning outcomes is what we mean when we talk about learning. Teachers need valid ways to gauge classroom community since students' feelings of belonging play a major role in their performance in the classroom. If teachers find out that students don't have a strong sense of community in class, they can change the way they teach to make it more communal. Researchers Cornell et al. (2019) looked at how online graduate students' sense of community was affected by synchronous learning opportunities. The students said that the key to building a sense of community in online learning was providing chances for students to have genuine, unplanned, and supportive conversations with one another.

A plethora of assessment techniques have been created to gauge the degree of classroom community in both traditional and virtual settings. The Online Student Connectedness Survey (Bolliger & Inan, 2012) and the Social Presence Questionnaire of Online Collaborative Learning (Lin, 2004) are two examples of assessment tools for online learning. Arbaugh et al. (2008) and Rovai (2002a) provide two examples of measuring methods for both online and in-person learning environments: the Community of Inquiry Scale and the Classroom Community Scale.

The significance of establishing a sense of community and fostering relationships in online learning is commonly regarded as a direct remedy for the absence of in-person communication or the unavailability of the conventional, classroom-based learning setting. Although online learning programmes have expanded students' access to learning beyond traditional methods, there is limited research on the impact of Web 2.0 technologies on the formation of online learning communities. Furthermore, there is limited knowledge regarding students' viewpoints on the utilisation of Web 2.0 technologies for the establishment of these communities (Abdelmalak, 2015).

Since the rise of online and distance education, emerging technologies have significantly influenced the growth and sustainability of existing online communities. The incorporation of innovative technological advancements has the capacity to enhance these communities even more, while also offering opportunities to develop a lasting online presence for recently formed online communities. The progress made in social networks has effectively linked learners together, while advancements in technologies like augmented reality (AR) and virtual reality (VR) are always offering

fresh opportunities for online learning communities (Tan & Lee, 2018). Social media networks, like Twitter, Facebook, Instagram, and YouTube, offer students extra chances to connect and engage with others outside of the online class. This has the potential to significantly enhance the feeling of connection and responsibility towards others within the community. Although the transition to online platforms may seem to be happening quickly, it is important to note that Web 2.0 technologies, which enable user interactivity, collaboration, and the creation of user-generated content, have been around for nearly twenty years (Tan & Lee, 2018).

Online learning encompasses various modalities, including synchronous, asynchronous, and hybrid formats. Synchronous environments, which involve audio, video, and text conferencing, have the potential to establish a standard for assessing and evaluating engagement between instructors and students in real-time. The selection of tools can demonstrate different types of involvement, which could impact the assessment of genuineness. Maddrell and Watson (2012) found that text-chat can promote impromptu backchannel conversation in online learning. The potential for sidebar exchanges to arise concurrently in online contacts raises inquiries regarding the quantification of authenticity and community development in these settings. While some may argue that backchannel contacts using text chat in videoconferencing disturb the main interaction and formal framework of a course, others believe that students find these exchanges to be more genuine and entertaining. Wilton et al. (2020) found that teacher-student backchannel communication, specifically through private notes, can significantly improve learning outcomes and promote more meaningful interaction with students.

3.2 Integrating active learning methods

Maintaining students' interest and participation in online classes is just as difficult as it is in more conventional, in-person classrooms. There are a number of challenges unique to online course delivery that make it harder to engage students than traditional classroom settings (Khan, 2017). These include the following: the need to plan and develop the course content before delivering it to students; the need for students and teachers to effectively manage time and resources when learning online; different approaches to encouraging students to communicate and interact with one another and with teachers than in traditional classrooms; and, for many teachers, the difficulty of effectively implementing the teaching tools used to deliver online courses. Many of these issues, however, can be resolved with the use of active learning tactics that get students involved with the material in online classes. According to Hagen, LaBarre, and Melrose (2001), the most important factor influencing the creation of an online course is how well it compares to its conventional, in-person equivalent. Designing instructional materials for content distribution, student assessment of information, managing discussions, time, and frustration are some of the essential components of online courses.

Incorporating active learning into course content is essential for effectively involving students, regardless of the learning setting. Nevertheless, due to the distinct characteristics and difficulties associated with online courses, it is important to comprehend the distinctive methods for engaging in active learning. The integrated course design models encompass the fundamental elements of identifying situational circumstances, establishing learning objectives, implementing teaching and learning activities, and providing feedback and assessment (Fink, 2015). The meticulous design of these components is essential for captivating pupils in an online setting. Poll and Weller (2014) delineate six strategies for fostering optimal performance in the online setting. The key components of effective online teaching include: (1) fostering a sense of community, (2) clearly defining course expectations, (3) utilising online technologies for engagement, (4) encouraging the sharing of ideas, (5) delivering timely and appropriate feedback, and (6) developing a student-centered environment. As per the Pearson (2014) report titled "Implementing Comprehensive Online Learning Programmes that Improve Student and Institutional Outcomes in Higher Education," 74% of academic leaders assess that online education yields learning outcomes that are either equivalent to or superior to those of face-to-face courses. This research substantiates the amalgamation of these tactics to foster student involvement within a digital community.

Various technologies and pedagogical approaches can be utilised to integrate active learning into online courses, including platforms like Piazza and Poll Everywhere, as well as activities such as discussions, multidisciplinary collaboration, and industrial partnership. These technologies were discovered to effectively include students in the courses and enhance learning. The focus was placed on enhancing the accessibility of the course materials for the students. The mobility of students to retrieve course materials and participate in course activities while they are away from a fixed location is crucial for the success of an online course. Furthermore, the incorporation of learning with other disciplines, as well as the selection of application and evaluation methods, are crucial factors in effectively involving students (Khan & Erickson, 2014).

3.3 Empowering learners to take charge of their own education

Open distance learning has historically exemplified a transition from a focus on the teacher to a focus on the student in the learning process. Nevertheless, due to the implementation of Information and Communication Technology (ICT), observing traditional classroom instruction incorporating these technology is increasingly prevalent, thereby transforming into a student-centred approach. Self-directed learning is enhanced by the use of social networking services (SNS), which allow for seamless communication between peers and specialists. Furthermore, the presence of a Learning Management System (LMS) or a Knowledge Management System (KMS) that offers restricted communication and collaboration, enabling students and tutors to engage with each other, is an additional crucial aspect that facilitates student-centred learning (Bisanda, 2016). Furthermore, the presence of a diverse range of educational resources, including both static and dynamic materials, as well as materials contributed by a large number of individuals, is a crucial factor.

They are becoming closer as a result of the shifting learning environment that current ODL and in-person students are confronting. As the function of the educator evolves, a new chasm has opened up between online and face-to-face students as a result of their growing reliance on both types of learning environments. There have been some recent changes: Improvements in connectivity between the Internet of Things (IoT), first- and second-generation social networking sites (SNSs), and third-generation SNSs; a shift from wired to wireless internet; a shift from personal computers to portable smart devices; a shift from web 1.0 to 2.0 and 3.0; All of these factors have contributed to the shift in emphasis from instructors to students in recent years. There has been a great deal of change in the following areas: learning platforms, assessment and examination methods, student demography, student attitude, accessibility of learning materials, scalability of learning, and the learning materials themselves. Many of our practices can help our learners, both ODL and non-ODL, become more self-reliant. First, it's important to make sure that students have something to do before, during, and after class. Then, using the teacher-prepared materials for both in-class and independent study must take centre stage. The "Flipped Classroom" is a product of students preparing for in-class activities through self-study.

3.4 Embracing mastery-based learning

In order to complete group projects and participate in class discussions, students can greatly benefit from the opportunities presented by online platforms. These platforms offer a virtual meeting place where people may work together easily, regardless of their actual location or the time of day. Students can collaborate in real-time on shared documents, have asynchronous group discussions, and present their work in multimedia presentations through the use of online platforms. Students are able to communicate more effectively, think more critically, and be more creative thanks to these platforms.

A generation's approach to learning and information processing has been significantly shaped by the pervasiveness of technology in daily life. To cater to the digital literacy and learning styles of millennial students, it is crucial to use technology, according to Prensky (2001) and Johnson et al. (2016). Educational institutions have the power to improve student engagement and participation through the use of technology in the classroom. The interactive digital tools, multimedia materials, and online learning platforms that cater to millennial students provide engaging and immersive learning

experiences. They will have a more thorough grasp of the material thanks to these interactive features, which cater to their love of doing things by themselves.

3.5 Customising the learning experience

There was a choice between efficient and wasteful distance learning. Learning that took done remotely had its advantages and disadvantages. In a comparison of effects, the negative ones should be greater than the positive ones. Students' attitudes about not understanding the material, their chronic tardiness to class, their diversions from classwork, their silence in class, their lack of questions and comments, and many other behaviours all had an effect on the outcomes of the learning process. Misunderstanding and time wasting were the biggest problems with remote learning. The results of instructors' use of luring and manual learning are different from those of the conventional school management system, which aims to generate, assign, and mark assignments (Yulia, 2020). One of the many advantages of teaching by hand is that students have the freedom to study the materials and add their own remarks, and the teacher has more options for how to give the materials directly. One criticism levelled against online applied remote learning was that students would not pay attention in class. This is due to the fact that not all students gain from the use of narcotics. By talking it over and providing comments or suggestions aloud, they can work together to complete the assignment to their full potential. The effectiveness of the online class was dependent on the teacher's level of creativity in delivering the content.

A lot of individuals worked really hard to make sure everything ran well with the online course. Knowledge of both the medium's technical features and the material itself is necessary for efficient use of instructional media. As long as the device satisfies specific criteria, the app can be utilised with any kind of learning device, including computers, tablets, and smartphones. Students were understandably irritated by the need to pay more for internet access, which they found to be extremely expensive. Molnar and Muntean (2012) found that when it comes to using a mobile phone for schoolwork, the overall cost is the main worry for the majority of students. This is due to the fact that, compared to PCs, mobile data connection is still somewhat pricey. As a result, this incident had devastating consequences, and very little is known about how effective it was.

Further evidence of a lack of student-teacher engagement in instructional activities was provided by the facts. The impact of distant learning has grown into a major issue in the field of English education, and more so in the context of the educational process at Gombara boarding school. Therefore, the purpose of this research is to determine the extent to which the shortcomings of remote learning affected the academic performance of those pupils. Effective learning and interaction, on the other hand, necessitate that students be encouraged to engage in self-reflective thinking, debate, and activity in order to overcome the inherent difficulties of distant learning (Apriyanti et al., 2019). Plus, they can always ask their teacher for clarification on anything they don't understand. Students can express their excitement for learning by sharing their ideas or comments as feedback on the process.

4. CONCLUSION

The five pillars of online learning were identified by this study's results. Essential skills include (a) developing a sense of community and belonging, (b) including active learning, (c) empowering learners, (d) embracing mastery learning, and (e) customising one's educational journey. However, the researchers did note a weakness of the study: the authors only found eleven pieces of literature discussing the principles of online learning. Consequently, the researchers advise future researchers to use a variety of methods and a large sample size in their future investigations.

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