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E-CONTENT DEVELOPMENT AND DELIVERY FOR VIRTUAL CLASSROOM

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ABSTRACT

Virtual Classroom is designed specifically for teachers, professors, and instructors who deliver virtual classes using online meeting platforms. A virtual classroom is a digital replica of a traditional classroom. The teachers teach, and the students learn in real-time, face-to-face but via internet-enabled technology devices. Although there are many fundamental similarities between a traditional classroom education and the online classroom experience, learning through a virtual classroom offers many benefits that traditional classroom doesn't provide. Thus, this paper focuses on the online learning environment, its features, the aspects of the virtual Classroom development and delivery. Also, this paper presents the suitable tools in developing and delivery the e-content for provided the convenient and acceptable environment for learners.

Keywords: *Virtual Classroom, e-Content, online learning*

Introduction

A virtual classroom is an innovative new method of bringing together students into a controlled environment tailored for teaching new concepts and ideas. As definition, a virtual classroom is an environment for teaching and learning in which students can interact, communicate, view and discuss, and engage with the lesson material while working in groups, all in an online setting. Furthermore, student can access with the material from any device that can connect to the Internet (Cloudshare, 2019 & Techopedia, 2019).

Another definition, virtual classroom is an online learning environment in which students and teachers engage in synchronous, asynchronous, or blended (synchronous and asynchronous) learning activities from anywhere and anytime. Synchronous learning is commonly understood as instructor led training that is delivered in an electronic or digital format. It involves an instructor

being online at the same time as the student. Asynchronous learning is curated content that is delivered in digital format, allowing students to progress through it at their own pace. It can be as simple as an online video tutorial, or it can be a complex program that combines video tutorials, readings, infographics, and audio overlay, to guide users through branched learning scenarios. High-quality asynchronous learning usually includes feedback, testing, and additional learning prompts. Virtual classroom allows users to progress at their own pace and dig deeper through asynchronous modules, while providing real-time support from an instructor during synchronous sessions.

Ramakrisnan (2020) listed the features of synchronous and asynchronous virtual classroom as shows in Table 1. Blended learning is a combination of synchronous and asynchronous and tries to take the best of each to provide a seamless learning experience for students.

Table 1: Features of Synchronous and Asynchronous Virtual Classroom

Synchronous	Asynchronous
Live Lecture (Audio-Video Support)	Recorded Lecture/ Digital Content
Learning Resources Sharing (Screen Sharing)	Interactive Learning Activities
Digital Whiteboard	Asynchronous Discussion
Session Recording	Self-paced Assessments
Synchronous Discussion	Assignment-based Learning
Schedules Quizzes and Tests	Project-based Learning

Virtual classes are more convenient and cheaper than their counterparts in traditional face to face classes. Those are many advantages of this method that lead many students to choose for online platforms. The ability of using audio and video conferencing which it provides the quality communication between teachers and students where teachers and students can see and hear each other as well as real-time text chatting. Also, these medium applications allow students from virtually anywhere to participate in learning process. However, not all virtual classroom platforms require teachers. Unsupervised virtual classrooms involve the learners' going through the content at their own pace, reading digital resources, and watching videos of the material.

In the following section discusses the guidelines of e-content development in providing the valuable knowledge to students. It also discusses the tools for designing e-content, learning activities and assessments. Other than that, the next section explores the delivery tools for synchronous and asynchronous teaching method and the conclusion is made at the end of the paper.

Development and Delivery Aspects for Virtual Classroom

a. Development of e-Content

Before designing the content of teaching, we need to meet the main objectives in development the content for students. The content able to help students to get the quality information and easy in learning process. Ramakrisnan (2020) has outlines a few things to keep in mind before developing e-content. The work identifies seven things to be considered which are : Map course and learning topic, Identify topic learning outcomes, Identify virtual classroom learning components, Align component to the learning outcomes, Identify delivery strategies and tools for each component, Identify the assessments for learning and Design and deliver virtual class learning.

Smitch (2018) suggests seven of the common steps that should apply in developing e-content which are: analysis, creating the instructional design document (idd), scripting, prototype development, developing the course without including audio, developing the course with audio and creating the learning management system version. Nachimutu (2012) also suggests some steps to follow when developing e-content which is consists of six phases: analysis, design, development, testing, implementation, and evaluation. In Table 2 present the summary of the work. Thair (2016) has revised Nachimutu (2012) work and come out with the e-content development Lifecycle which consist of four main stages as show in Figure 1.

b. Delivery of e-Content

It is not just important to create digital content, if no one sees the content, nobody is going to learn from it. Thus, teachers also need to ensure that it is delivered to students. The e-content delivery tools is a server-based or cloud-based software program. This tool can be used by anyone who is interested in conducting the online classes such as students, teachers, and administrators

and who wants to store and retrieve the teaching and learning documents. It has information about courses, the users and course content.

Table 2: Phase of e-Content Development (Nachimutu, 2012)

Phase	Description
Analysis	This phase accountability considered by the views of subject experts, target audiences, objectives, and its goals.
Design	It helps to plan of an e-content preparation. In this phase, we must know the planning, use of relevant software; required skills; creative and innovative interactions of subject contents like texts, pictures, videos, and suitable animations.
Development	It concerns the actual production of the e-content design. It helps to create the e-content by mixing of texts, audio, video, animations, references, blogs, links, and MCQs (multiple choice questions) with some programming specifications like home, exit, next etc.
Implementation	It helps to administer the e-content to the target audience. This phase explains how to install and how to use it and their difficulties experienced while using e-content. It checks the product accuracy and quality maintenance.
Evaluation	It helps to satisfy the e-content and its effectiveness. This phase considers feedback from both learners and instructors. After the feedback reactions, the e-content is designed again as post-production for effective delivery of e-content.
Testing	It helps to administer the e-content in the actual educational field. In this phase, we must test the spelling mistakes, content errors, clarity of pictures, relevant videos, appropriate audios, timing of animations, and hyperlinks.

A learning management system provides a platform to teach and learn without depending on the time and space boundaries. Anybody can take any course in which they are interested. Delivery tool is a software application that manages various functions like administration of classrooms online, documentation for various courses, tracking the progress of the students, reporting of learning activities and assessments, online events and grading the students. Besides that, content delivery includes the geographical distribution of web content in a way to ensure faster page loads and better access to the information by the students.

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Most of the delivery tools have the following features: Registration and Enrolment options to teachers and students, Adding and Deleting Courses by the University and Educational Bodies, set different Roles for users and managing user account, setting the course calendar, Upload and Retrieve Assignment and Resources. According to Gnana (2016), the modules can be grouped under the following category: Content Manager, Course Manager, Catalogue Manager, User Profile Manager, University Consortium Manager and Learning Planner and Calendar.

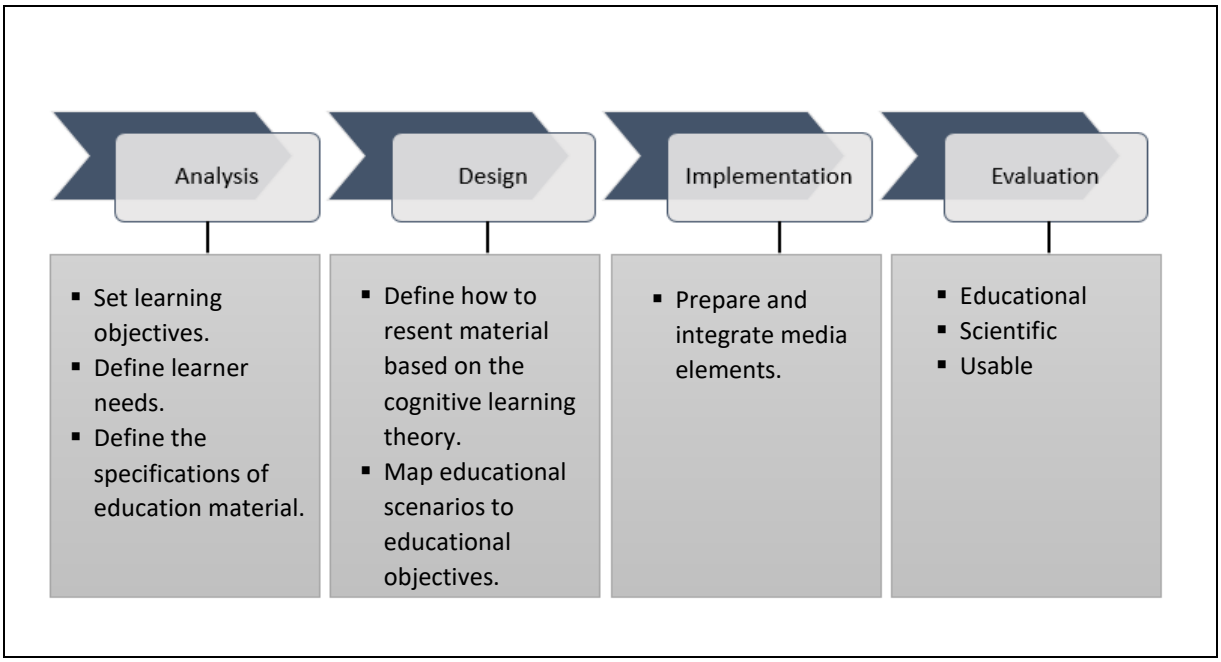

Figure 1: e-Content Development Lifecycle (Thair, 2016)

e-Content Development and Delivery Tools

Content development can be a long process depending on what we are looking to help your students achieve. In achieving learning objectives, we need to be working with the right content development tools. Choosing the right tools can make your life a lot easier by driving up efficiency and productivity. It allows the user to generate and manipulate multimedia objects for the content's intended purpose.

Also, we need to consider the tools that able to help us in delivery the content. The main thing that need to be considered while choosing the delivery tools is the ease of use to students. In

Table 3 are the well-known e-learning content development and delivery tools that will help us to develop e-content more informative and valuable as well as the delivery tools.

Table 3: The Well-Known Tools for E-Content Development and Delivery

Development Tools			Delivery Tools	
Learning Materials	Learning Activities	Learning Assessments	Asynchronously	Synchronously
• iSpring Suite • Powerpoint • Powtoon • Elucidat	• H5P • Hot Potatoes • ClassTools.net	• Kahoot • Quizzizz • Google form	• Future • Google classroom • Microsoft teams • Padlet • Trello	• meet • zoom • webex meeting • telegram • whatsapp

Hurix (2019) & Steve (2020) list down the factors that we need to consider while choosing the tools. The first factor is the cost of the tools. The tools come in difference price including freemium plans, one-time payments, and payment by the number of users. We can choose one that fits our requirements. Another important factor is ease of use. Different tools have different features. We need to choose the tools that have fewer features, sufficient for our need and able to produce the quality output. Besides that, don't forget to check for compatibility between development and delivery tool as well as the speed and efficiency of the tools.

Conclusion

Various innovative activities are offered to the students to make learning active interesting. Using the proper strategies and tools can increase motivation to students, promote learning, encourage interaction, provide feedback and support during the learning process. Virtual classes are the best approach which one can experience the greatest benefits of learning. This kind of approach involves reuse of the content and thus saves cost, effort, and time. Also, this approach can increase the level of education and many students can be educated which paves the way for the economic development of the country. Compared to traditional education, it is expensive, opportunities are limited, and economic disparities exists. Adding a systematic management to e-

content development and delivery to virtual classes will change our learning and development culture for the better.

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