

Development and Validation of Video Lesson Package for Flipped Mastery Classroom in Computer Science Teaching for Higher Secondary School Students

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Abstract:- Flipped classroom is a new instructional strategy and popular trends in education. A flipped classroom is one where students are introduced to content at home, and practice working through it at school. In flipped classroom Students watching online video lectures and reading any materials relevant to the next day class. In traditional classroom subject contents are received by the students in fixed amount of time. Flipped classrooms become a mastery learning approach for that every student to master subject knowledge before going to further content. This technique will be suitable for all the subject especially for computer science students. The main purpose of this research is to check the effectiveness of flipped classroom in computer science teaching for higher secondary students. The researcher being a computer science teacher, She prepared a E-content video lesson on Theoretical concepts of Operating System which is in Volume-I, Unit-I, Chapter 4 of XI Standard Computer Science text book in Tamil Nadu State Board Samacheer Kalvi new syllabus.

Keywords:- Flipped Classroom, Effectiveness, Computer Science Teaching and Learning.

I. INTRODUCTION

Today, educational systems across the globe are undergoing efforts to move beyond the ways they operated at the beginning of the 20th century, with traditional instructional practices that commonly ask students to work individually on exams that require them to recall facts or respond to pre-formulated problems within the narrow boundaries of individual school subjects. Education is the key for quality of life. To increase the quality in education, efficiency of the teachers is the basic need. The best teachers always add values to their teaching. Nowadays, technology is becoming a staple in education and many schools even provide their students with access to computers or laptops. Considering these trends, we are optimistic that this issue will become more and more relevant.

II. NEED FOR THIS STUDY

Flipped Classroom is an new instruction approach and one type of blended classroom learning that reverse the normal classroom situation by delivering subject content, often online E-content video lesson and outside the classroom. In the traditional classroom model the teacher stands between the students and the knowledge. Students do not have knowledge about the subject when they come to class. In traditional class, they get taught all the knowledge, and it is often the basic knowledge about a subject. Students have to do the more comprehensive knowledge at home, that is called homework. In Flipped classroom model, students have direct access to the knowledge and they have to prepare their contact moments.

"Technology in the twenty-first century puts instantaneous access to information, and the Internet can be handily accessed through numerous technology tools such as laptop, computer, and Smartphone" (Fu, 2013). "Now more than ever, students spend much of their waking time on using some sort of technology tools by using technology, it is possible for them to interact with friends, instructors, and learning content everywhere, not only in the class but also outside the class through distance learning" (Fisher, 2009). "Also, many free learning materials have been provided on Web sites for learning activities" Richter et.al (2012) states that "In today's digital age, every student can access many free Internet learning resources such as online video lectures and they can watch these free contents everywhere and at their convenience". "Even more, the use of the traditional learning approach which focuses on the instructor as the centre of knowledge is irrelevant in today's digital age" (Wang & Heffernan, 2010). "As a solution, traditional classroom activities such as lectures, labs, homework, and exams can be moved to the Web 2.0 technology and students can study everywhere outside the classroom" (Staker & Horn, 2012). "The positive impact of technology growth has influenced the development of instructional technology in education and replaced the use of the blackboard with online video lectures" (Evans, 2011).

III. TERMS AND DEFINITIONS FOR THIS STUDY

➤ *Flipped Classroom*

New Pedagogical Approach refers to one type of blended classroom learning that reverses the normal classroom by delivering subject content, Online videos, outside the classroom activities. A flipped classroom is one where students are introduced to learn in free time, and practice working through it at classroom.

➤ *Effectiveness*

Refers to the extent to which an activity fulfils its intended purpose or function.

➤ *Computer Science Teaching And Learning*

Refers to teaching and learning of Computer Science as a subject for Higher Secondary school students.

IV. OBJECTIVES OF THE STUDY

The following objectives are present in this study :

1. A video lesson is prepared on Theoretical concepts of Operating System which is in Volume-I, Unit-I, Chapter 4 of XI Standard Computer Science text book in Tamil Nadu State Board, Samacheer Kalvi new syllabus.
2. Validate the video lesson on Theoretical concepts of Operating System which is in Volume-I, Unit-I, Chapter 4 of XI Standard Computer Science text book in Tamil Nadu State Board new syllabus.
3. The researcher identified the subject content for the Theoretical concepts of Operating System which is in Volume-I, Unit-I, Chapter 4 of XI Standard Computer Science text book in Tamil Nadu State Board, Samacheer Kalvi new syllabus for English Medium students.
4. The researcher presented the teaching point to computer science teachers working in higher secondary schools and they were used for the purpose of the experiment. The experts went through the content of the strategy and validate the various key points in this study.

CONTENT	E-CONTENT
Theoretical concepts of Operating System	Audio / Images
Learning Objectives	Audio / Images / Animation
Introduction	Audio / Images
Type of Software	Audio / Images / Animation
Application Software	Audio / Images
System Software	Audio / Images / Animation
Need for Operating System	Audio / Images / Animation
Uses of Operating System	Audio / Images
Types of Operating System	Audio / Images / Animation
Single User Operating System	Audio / Images
Multi User Operating System	Audio / Images
Features of Operating System	Audio / Images / Animation
User Interface	Audio / Images
Memory Management	Audio / Images
Process Management	Audio / Images / Animation
File Management	Audio / Images / Animation
Multi Processing	Audio / Images
Time Sharing	Audio / Images / Animation
Conclusion	Audio / Images
Prominent Operating System	Audio / Images
Distributed Operating System	Audio / Images
Activities	Audio / Images

Table 1:- Development of Video Lesson Package

V. DEVELOPMENT OF SCRIPT FOR VIDEO LESSON PACKAGE

After review by experts, the researcher prepared the script for the Video Lesson package. The script is covered all subject matter for the study unit "Theoretical Concepts of Operating System". According to this script, the researcher developed the Video E-content package for the same. The developed content of script is given to Computer Science Teachers to check the accuracy of content of the script.

The following steps are used to develop the video scripts

- ❖ Subject Knowledge : Collected all the materials, met experienced teachers, refer Libraries, useful subject matters are reviewed more over materials are collected widely.
- ❖ Logically arranged the content of the script form the starting of the unit through familiar to unfamiliar and ending with proper closure points.
- ❖ Rewrite and necessary modification is done to give the final scripts with proper continuity and proportion.
- ❖ Finally the content of the scripts are drafted with list of audio-video and animation with visual illustrations.

VI. DEVELOPING VISUAL CONTENT

After the subject content is ready, the researcher converted the scripts into Visual Images. Visual Images are made to use for illustrative talk, when Audio lesson presented with the use of visuals, it clarifies the concept and leads to the meaningful association of ideas. As far as the visual images components are concerned, visuals are made. Rough drafts of simple and uncluttered layouts are prepared.

Then e-content with logical sequence are shot from the visual by the researcher.

VII. SCHEMATIC PRESENTATION OF VIDEO LESSON PACKAGE

The Schematic presentation of the video for this study is given below;

VIDEO LESSON PACKAGE	PURPOSE
Computer Science Lectures and Post graduate computer science teachers working in higher secondary schools	Get the clear cut ideas about video lesson E-content package and identifying subject matter of Operating System.
XI standard students from D.R.B.C.C Higher Secondary School, Perambur, Chennai, TamilNadu.	Demonstration for trying out the Video Lesson Package.
Two Experts	For validating Video Lesson Package

Table 2

In order to validate the video lesson package two subject experts are asked to scrutinize the video lesson and their feedback are received. Based on their feedback the investigator modifications are done in the video lesson package. The modified video lesson package is again reviewed by the experts. With that approved final form of the Video Lesson Package is attained.

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VIII. CONCLUSION

In this study the researcher has developed and validated Video Lesson Package on "Theoretical concepts of Operating System" in the XI Standard Computer Science subject of Tamil Nadu State Board New Syllabus. This Video Package has positively impact the students' achievement in Computer Science.

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