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Implementation of Flipped Learning through FlipCoD

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Abstract: ***21st century is the century of technologies. These technologies have transformed most of the areas; Education sector is not an exception. Education 4.0 has gifted revolutionary measures in the education system. The technological advancement has piloted the innovation in education. Flipped learning is a byproduct of such techno innovation which is expanding its base in education. This paper focuses on implementation of Flipped learning concept through the Edu-gadget called FlipCoD. The needs for flipped learning, its definition, application, delivery channels are discussed here. The paper focuses on Flipped Learning implementation framework and also content development and delivery modules. The paper elaborates multiuse of FlipCoD, its unique features and also the additional support for development and execution is presented through the dedicated blog.***

Keywords: Flipped Learning, Content Development, Delivery Channel, EduTech, Scanner

1. Introduction

Education is the manifestation of perfection already in man[1]. Education is the foundation for Life. Education sector has seen a sea change in this century. The stakeholders of education are really benefited by the inventions in this sector. Every country is prioritizing the development of education and reserving - allocating a separate fund for its upliftment. This has catapulted the growth of education. The globalization has made exchange of good practices possible with expanded boundary or literally no boundary.

Innovation in Education

The technological advancement is boosting the innovations; it is the need of hour. The fourth industrial revolution has made innovation possible. This century has witnessed the expedition in innovation. The remarkable transformation can even be seen in the education sector. Education 4.0focuses on the applications of technology in education sector. Teaching, Learning, Assessment, Evaluation, Administration and almost all the areas have affected by the implications of education 4.0.To fulfill the needs of young generation, to make them future ready, to make students employable and skillful, innovation in education is very much essential. Technology has multifold the innovation in education due to various favorable factors.

This decade has witnessed a variety of methods, methodologies, innovative techniques; digital learning, mobile learning, flipped learning, blended learning and many more state-of-art innovative methods are currently used in the education sector.

Need for Flipped Learning

Learning is easier now than it ever has been. People used to struggle a lot to learn and upskill themselves. The boundary for learning has expanded, which has made learning possible for all. The technology has boosted the learning possibilities. Due to the easy availability of the information, the learner's interest has switched from information seekers to the knowledge seekers. This has led the stakeholders to focus the research in this field to fulfill the needs. One of the outcomes of such research is "Flipped Learning".

Flipped classroom is an active, student-centered approach that was formed to increase the quality of period within class. Generally, this approach, whose applications are done mostly in Physical Sciences, also attracts the attention of educators and researchers in different disciplines. [2]

Flipped Classroom Approach

With its simplest definition flipped classroom approach is expressed as "what is done at school done at home, homework done at home completed in class" (Sams & Bergmann, 2014). In this approach before the course the students watch theoretical part of lesson via multiple equipment such as online videos, presentations, learning management systems and take notes, prepare questions about the parts that they do not understand (Kim, Kim, Khera, & Getman, 2014). During course they achieve supporting activities such as finding answers together to the questions they prepared before lesson, group working, problem solving, discussion and making an inference (Formica & et al, 2010). Flipped classroom is an approach that transfers learning responsibility from teacher to the student (Bergmann, Overmyer & Wilie 2011).

Flipped classroom approach has four different elements. It is expressed that in order to teachers achieve this approach, they have to take this four element into consideration (FLN 2014). "Flip" are explained like this by referring first letters:

- F ("F"lexible Environment): It indicates provision of time and place flexibility of learning.
- L ("L"earning Culture): In flipped classroom approach there is transition from teacher centered approach to student centered approach.
- I ("I"ntentional Content): Flipped classroom educators both think about how education is used to provide fluency and how they can develop cognitive understanding of students.
- P ("P"rofessional Educator): Flipped classroom educators continuously observe students during the

course, evaluate their studies and make feedbacks (Flipped Learning Network -FLN, 2014).

Technology of the flipped classroom
In order to apply flipped classroom, model it is not necessary to be a professional video producer, it is possible to use any source that explains the subject (PDFs, recorded sounds, websites). [3] Although educators are not needed to prepare their own videos instead they can reach lecture videos from internet sites, educators prefer to prepare their own videos. Some equipment that are necessary to form and broadcast lecture videos.

Video forming equipment:
Screen-Cast-O-Mattic, Camtasia PC, TechSmith Relay, Office Mix, Adobe Presenter etc.

Video Hosting:
YouTube, TeacherTube, Screencast.com, Acclaim, GoogleDrive etc.

Video interaction Softwares:
EduCanon, EdPuzzle, Zaption, Office Mix, Verso, TechSmith Relay, Adobe Presenter, Google Apps for Ed.

Learning Management:
As created videos can be sent to video hosting site, they can be presented to access by using learning management system (LMS).

Flipped Learning Implementation:
Considering the advantages and huge benefits of Flipped learning, the application of flip learning has increased. A flipped classroom is an instructional strategy and a type of blended learning that reverses thetraditional educational arrangement by delivering instructional content, often online and outside of the classroom. It moves the activities that have been traditionally assigned as homework into the classroom time and moves those activities traditionally performed in the classroom to the home environment. [4]

This methodhas two phases of implementation, which comprises of the tasks such as content delivery, study, discussion, understanding etc.

Both Phase 1 Phase 2 to Flipped learning content development content delivery study discussion and understanding teacher learner out of classroom in the classroom stakeholder when you task phase type

Type	Flipped Learning			
Phase	Phase – I			Phase – II
Tasks	Content Development	Content Delivery	Study	Discussion + Understanding
Stakeholder	Trainer		Learner	Trainer + Learner
Venue	Out of Classroom			In the Classroom

Figure 1: Flipped Class Implementation Framework

Both the phases are classified based on the factors such as tasks performed, stakeholder's involvement and the venue.

Content Development and Delivery
This paper focuses on Phase-I of the implementation framework / model. For Flipped Learning implementation, the content development and delivery plays very important role. Unlike face to face classes, here the content to be prepared well in advance based on the various aspects. Important concepts such as self-study- flexibility - format - type to be considered.

Type of content:
Images – Drawings -Maps- Audio - Video – Animation - e-books etc.

Delivery Channels
Post content development, it is important to deliver the study materials to the desired students/ learners in effective manner.

Factors to be considered such as:
Cost-effectiveness, Availability, Technology etc

Channels List:
- YouTube (for prerecorded videos)
- Live content delivery through Zoom, Google meet, Skype etc.
- Google classroom (multi-method delivery)
- Blog (Personalized)
- Drives (for file transfer application)
- Social media channels such as WhatsApp, Telegram etc

The development in telecommunication and technology has made easy delivery of the contents. The vast number of delivery channels is available. Even the layman can use it effectively. The prime concern is pertaining to the content preparation - development because this area is trivial.

Problems for content development:
There is a need to address the content development issue with more clarity and priority.[5] Simplicity and flexibility should be highly focused here because flipped classroom method increases the workload of trainers. In regular face to face, online, pre-recorded, digital / traditional classes teacher's preparation will be less, compared to that of flipped learning content preparation, because in regular class the teacher trains - explains - elaborates using the content. In Flipped learning, the learners should focus on self-study theme. Here the students, the learners need to study themselves, read - undergo - exposure under such conditions. The materials should be of *"self-study type"*. This needs teachers to rework on the material and the

content. This paper provides the solution for this issue through FlipCoD.

Content development through FlipCoD

What is FlipCoD:
FlipCoD is an acronym of Flipped Learning Content Developer. It is a flexi component that can be used for the developing the contents of flipped learning education.

WhyFlipCoD:
At metro, semi metro, Tier 1, 2 cities, the internet availability, speed, techno skills for stakeholders, device availability can be found. [6] But at tier 3, rural areas neither educational Institutions nor the stakeholders can afford content creation components / devices and also the above mentioned facilities is a mirage. To provide quality education, quality content please very important role. Hence the affordable device FlipCoD came into existence. On 27th December 2020 Mr. Shrinath S Pai,the techno educator from South India, India has coined this component and named it as FlipCoD.

Features
FlipCoD is easy implementable, DIY (do it yourself) component and it has a variety of features. Some of these are listed here.

- Cost-effective
- Mobility
- Do-it-yourself DIY
- User-friendly
- Eco-friendly
- Flexibility
- Resource utilization.

Figure 2: Features of FlipCoD

Content development using FlipCoD:
Varieties of contents can be developed through FlipCoD. Such as

Images:
It can scan the photo of the material or book etc

Activity:
The movement of the objects below the lens can be recorded and thus activity based learning can be implemented.

Activelaps:
The activity can be presented by using the built in Time Lapse feature available in the smart devices, which reduces the duration of the video and self-explanatory content, can be developed using this.

Drawing:
It can be used to draw the Design, Flowchart, Prototype and also models, framework.

Video:
It can also be used to create the video lectures. These pre-recorded contents later can be shared through the available channels.

What makes FlipCoD special?
It is practically affordable with very minimal investment less than $2. It comes for the price of a normal Pizza. FlipCoD makes the best use of resources available locally. [7] As already stated innovation in telecom and Technology has increased the mobile phone users. Smart phonesare the part and parcel of life. Due to EMI, Instant Credit Facility, Regular Offers, Easy loan, other features and facilities, the stakeholders of education are using the smart phones for educational activities. This FlipCoD makes the use of these existing available resources. Adding to this,each education system uses the institution's official Smartphone for content preparation. The same can be used for the content development if available instead of using trainer's personal Smartphone.

No use of Holder: The unique feature of the FlipCoD is it doesn't need lock based holders for holding the Smart phone during recording. Most of the users don't like to use holder for their personal or professional smart phones. The pin is usually very tight and users are worried about the probable damage and to make the Plug and Unplug easier, FlipCoD uses flat holder without any specific connector.

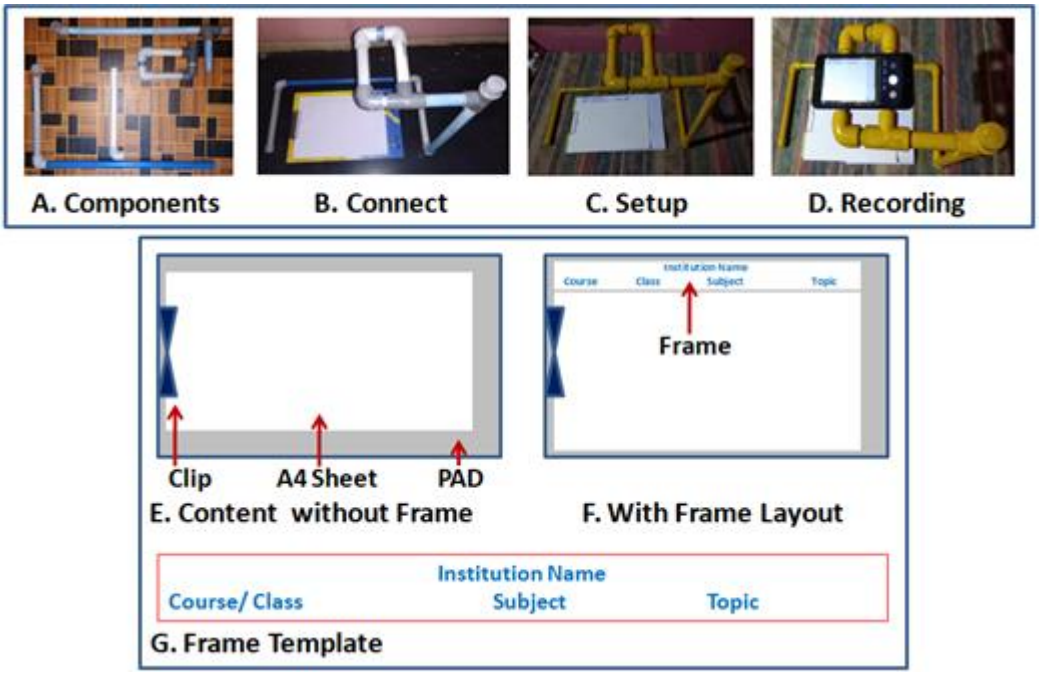

Figure 3: FlipCoD Setup

Unique feature of FlipCoD:
The "FlipCoD frame" can be used as a base pad frame which helps the learner to identify the topic, the trainer, subject, topic and other details. This frame also works as the secure mark (like Watermark) which helps in preserving the authenticity of the document and also avoids the copy paste (duplication).

The FlipCoD-frame is an optional frame, based on the content, subject, topic and also other parameters the trainer can use it.

The sample video, images and other process visit www.flipcod.blogspot.com.

Multiple use of FlipCoD:[8]

As document scanner:
FlipCoD can be used for scanning the images from the material, Text Book and other handwritten documents.

As Digitizer:
Digitization of the document is essential to preserve the documents and to access at ease. The official documents, registers, hard copy materials, books can be digitized with the help of this unit.

As Activity Recorder:
The activity based works can be recorded using this tool. The distance between the lens and the object is near hence without the use of external components the activities can be recorded easily.

Position / Placing FlipCoD:
Placing of this is very important point for the successful execution, implementation. The lighting effect plays very important role in quality recording. FlipCoD being the affordable doesn't need additional learning facilities. The Smartphone comes with default flashlight which can be used for recording the applications.

Figure 4: Placing of FlipCoD

2. Conclusion

This paper primarily focused on the Flipped Classroom and its Implementation. Here the special focus is given to the content development for the purpose of Flipped Learning. Usually the trainer needs to put lots of efforts to prepare the self-study based video content especially for the purpose of flipped learning. Unlike other normal video content which is presented with the assistance of a trainer, here the content is distributed to the users/ learners in advance. Hence the multiple methodologies to be planed. To help the trainers at rural parts of the developing country where internet and network, technological application is limited. This FlipCoD is a multiuse,Edu-gadget, which can even be used for set of administrational activities at the educational institutions. It is designed considering the facts such as resource utilization, investment, maintenance and mobility.

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