TRAINING AND EFFECTIVENESS OF MULTIMEDIA E-CONTENT BASED ON ADDIE MODEL PREPARED BY STUDENT TEACHERS IN ECONOMICS FOR THE STUDENTS OF STD. IX

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The most visible aspect of globalization has been the development of ICTs. It influenced the education worldwide. Education reform is occurring throughout the world and one of the tenets of the reform is the introduction and integration of ICT in the education system. ICT has tremendous potential for enhancing outreach and improving quality of education. The use of technology in education has revolutionized learning. Shifting beyond traditional mode of education, the integration of technology has become an advantage for students. ICT brings forth a flexible and accessible mode of education. Learning and teaching in a digital era are being profoundly reformed by the potential of Information and Communication Technology (ICT). Supporting learning in the digital age looks at devising innovative methods to utilize ICT in education for maximalist inclusion of learners accompanied by a reformed pedagogy that frames quality in the learning activity by raising the interest and involvement of the students in learner centered approaches. Reformed pedagogy needs to promote engaging learners in interesting and authentic contexts framed in ICT supported modules integrating pretexts for learning across the curriculum. When e-learning is reshaping the educational landscape of the world, an essential condition for effective practices of digital age pedagogy is that there must be access to high quality, culturally relevant content in digital forms.

For the upcoming generation, we need to create a digital learning culture and environment. Mastering ICT skills and utilizing ICT towards creating an improved teaching and learning environment is of utmost importance to teachers in creating new learning culture (Molly Lee, 2005). The greatest transformation poses challenges to educators regarding their basic tenets, to deploy the media in creative and productive ways, as "teachers are the central forces in tapping the learning opportunities created by ICT" (Majumdar, 2004).

In the process of developing a techno-pedagogy for the learners, the first issue to be addressed is the development of content. Sub-committee of Central Advisory Board of Education on Information and Communication Technology in school education has

recommended that the "process of outsourcing of digital content and resources should be discouraged" by states and emphasis should be on the "need for development of e-content by the states through their own pools of teachers and teacher educators." For this teachers and teacher educators should work together and first of all they should be trained in developing e-content. Technology, pedagogy, content and context are interdependent aspect of teachers' knowledge necessary to teach content-based curricula effectively with educational technologies. As per current practice of teacher education, technology is taught in isolation from the study of specialization, educational theories and educational practices as well. This situation will hinder the development of competence for prospective teachers in developing digital content for students.

However even today one of the greatest challenges of integrating ICT in education is lack of quality e-content. So it is need of the hour, to encourage e-content creation at various level of education.

With the recognition of problem with existing pre-service teacher education, the researcher decided to train student teachers in the development of multimedia e-content.

This research aims to provide training to student teachers at colleges of education to create quality, culturally relevant multimedia e-content.

E-content :

According to Selinger (2004), "e-content should be seen as a tool to improve the understanding, engagement and motivation of learners; to provide a safe environment for them to experiment and explore their conjectures; and to test their understanding using novel assessment methodologies based on trial and improvement; simulations and manipulation of models".

e-content learning encourages open-minded, reflective, critical and active learning. With

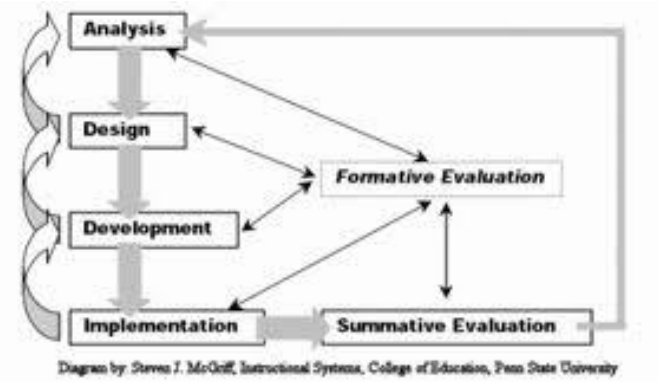
Multimedia "is the combination of various digital media types such as text, images, sound and video, into a multi-sensory interactive application or presentation to convey

a message or information to an audience" Tolhurst (1995). Multimedia can be seen as an effective instructional tool for delivering information to users. This is because it allows information to be illustrated using various media and including sound, text, and animation hence creating a more stimulating learning experience. As technology advances and becomes ever more sophisticated the use of multimedia as a platform for teaching, especially in an e-learning environment, becomes more feasible. The researcher planned to develop multimedia content.

ADDIE model

Existing material and document cannot be automatically transformed into e-content material. A systematic and scientific approach is essential to develop quality content. Instructional design is the teaching device that makes instruction as well as instructional material more efficient, effective and engaging. There are several such approaches to explain the design and development process of content development. Association for Educational and Communication Technology (AECT) has proclaimed the five stages of instructional design that can be used to develop any learning situation and learning content, i.e. ADDIE model to include Analysis, Design, Development, Implementation and Evaluation (seels & Richey, 1994)

Each step in the ADDIE Model has an outcome that directly feeds into the next step in the sequence. From the time a person asks, "What do people need to learn?" to the point when a person asks, "Did the people learn what they should have?"



The present study aims to train student teachers using blended learning model to develop multimedia e-content using ADDIE model. Further researcher also studied the effectiveness of e-content which is developed for teaching IX standard Economics.

1.2 NEED OF THE STUDY

Though the importance of Economics as a subject is realized at secondary school education, the method of teaching of Economics is rather crude in most of schools in India. The student-teachers generally do not get an opportunity to think independently and conceptualize the spirit of the subject while practice their teaching. So importance should be given on the training and orientation of student teachers to understand and manipulate difficult concepts in Economics: a collection of authentic information resources, related cases, cognitive tools to support knowledge construction and technology.

Integrating opportunities for "development of a storyboard to prepare E-Content" into coursework strengthens course participant learning. Through E-content, students examine their (often unquestioned) assumptions, and – through a cyclical process of revision – to record their "cognitive development process." Because the stories provide a record of students' thinking, teachers can use them in assessing student progress toward learning goals.

Technology – everything from Microsoft Word to blogs to iMovie – makes it easier to swap, critique, and revise stories in the form of real life incidents or fictitious situations. Digital tools make it possible for authors (even those who aren't very tech savvy) to construct multi-dimensional stories that are conveyed through a combination of hyperlinked, multidimensional words, images, motions, and sounds.

Designing E-contents are one way to increase student engagement and commitment – particularly students who do not respond to traditional academic chalk and talk teaching method. Properly constructed with clear rubrics, storyboards assignments are every bit as academically rigorous – and involve just as much "writing" as term paper assignments.

A creative teacher is one who applies her knowledge and skills appropriately to make

learning interesting and ensures the teaching content is well understood by every child. Considering there are limited resources available online for teaching concepts of Economics like you tube videos and images, it becomes important for an Economics teacher to develop the matter in her own way.

Benefits of developing a story board:

- Teacher is able to channelize her creativity in developing an innovating method of teaching abstract concepts of Economics
- While doing her B.Ed., a teacher gets an opportunity to experiment on various teaching styles and this helps in enhancing his/her to teach a dry subject like economics by not only making it interesting but also very interactive
- Students are exposed to a new learning mode with an audio-visual aspect that helps in longer retention of the concepts

It helps in creating interest for the subject and sensitized them with various real life situations connected to the subject of Economics

1.3 RATIONALE OF THE STUDY:

The principal goal of education is to create men who are capable of doing new things, not simply of repeating what other generations have done

Jean Piaget

With the advancement of the technology and fast growing information highway many computer program are professionally available. Such programmes are not suited as per the Indian context. This programmes rarely prepared by taking into consideration the pedagogical aspect and learning theories. So such efforts of designing and developing e-content become essential. In India and abroad, many computer mediated programmes are developed. But these programmes are in other subjects than Economics. So developing e-content in Economics is necessary to study its usefulness in that subject. Very important is the efforts should be directed towards making teachers trained enough to develop such packages. So the initiative and experimentation is necessary at the pre service training level.

1.4 STATEMENT OF THE PROBLEM:

Training and Effectiveness of Multimedia e-content based on ADDIE model prepared by student teachers in Economics for the students of STD. IX

1.5 OPERATIONAL DEFINITIONS:

Multimedia e-content: Digital content which uses various media such as text, images, sound and video, into a multi-sensory interactive application or presentation to convey a message or information to students.

ADDIE model: This is a systematic instructional system design model consisting of five phases i.e. Analysis, Design, Development, Implementation and Evaluation. Here multimedia e-content was developed by using ADDIE model.

1.6 OBJECTIVES:

1. To plan a training program on development of storyboard by using different e-learning tools.

2. To train the student teachers in developing storyboard for the development of multimedia e-content through blended learning using Edmodo and blog.

3. To develop ADDIE model based multimedia e-content for IX standard Economics syllabus of SSC board by student teachers.

4. To study the effectiveness of multimedia e-content among IX STD students.

5. To compare the effectiveness of multimedia e-content among IX STD students on the basis of gender.

6. Analyse the reflections of student teachers about the training program.

7. To assess the reflections written through journaling by student teachers w.r.t. training.

1.7 HYPOTHESIS:

1. There is significant difference between the pre-tests of control group and experimental group.
2. There is significant difference between post-tests of control group and experimental group.
3. There is significant difference between the pre-test and post-test of experimental group.

1.8 SCOPE AND DELIMITATION OF THE STUDY:

This training was given to 14 student teachers of Pillai College of Education and Research, New Panvel. Student teachers were trained to design storyboard for the development of multimedia e-content for economics subject of standard IX syllabus of SSC board. The prepared modules were implemented on 132 IX STD. students.

1.9 LIMITATIONS OF THE STUDY:

Time period given for training of student teachers was comparatively less. They were given training of only designing storyboard. They were involved in development part. But they did not get any training for development part of e-content.

The implementation of e-content requires sufficient training to teachers which could not be possible during this tenure.

1.10 SIGNIFICANCE OF THE STUDY:

This research will suggest how far multimedia e-content in Economics is beneficial for students of IX STD. of SSC board. This research is a trial of integrating technological, pedagogical and conceptual understanding to develop multimedia e-content during the pre-service training. This will initiate the teacher educators to follow such strategies in teacher education. This particular study will initiate the future teachers to take up the challenge of developing multimedia e-content for their students taking into consideration their needs. This study will also reveals the problems, constraints of developing multimedia e-content for the students. This study will reveal the effectiveness of multimedia e-content which was based on ADDIE model. The future teachers will come to know the process, challenges and effectiveness of development of such packages.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Research takes advantage of the knowledge which has accumulated in the past as a result of constant human endeavor. Review of related literature helps the researcher to do this. Literature review is an evaluative report of studies found in the literature related to selected area. The review describes, summarizes, evaluates and clarifies the literature. A review of related literature is the process of collecting, selecting, and reading books, journals, reports, abstracts, and other reference materials. A literature review is designed to identify related research, to set the current research project within a conceptual and theoretical context.

Review of the related literature allowed the researcher to acquaint himself with current knowledge in the field of Organizational Behavior.

Review of the related literature enabled the researcher to define the limits of his field. It helped the researcher to delimit and define his/her problem. The knowledge of related literature brought the researcher up to date on the work which others have done and thus could state the objectives clearly and concisely. By reviewing the related literature the researcher could avoid unfruitful and useless problem areas. The researcher could select those areas in which positive findings are very likely to result and his endeavors would be likely to add to the knowledge in a meaningful way. Through the review of related literature, the researcher could avoid unintentional duplication of well-established findings. Review of related literature reveals the recommendations of previous researchers listed in their studies for further research.

Review of literature:

Study conducted in India

Kumar, S. (2013) did a descriptive research on design and development of national digital repository system for health information in India. Bhatt, A. (2011) developed computer assisted instruction in physics for the students of standard XII and

experimented it. Jeyamani P. (1991) conducted research on effectiveness of simulation model of teaching through computer assisted instruction package in physics for class XI standard. Joshi, C. L. (1992) constructed and tried out of networks for some topics of physics for standard XII Economics stream. Sindhi N.O. (1996) constructed and tried out of multimedia package for the teaching of physics in standard XI. Kadhiravan, S. (1999) studied effectiveness of computer assisted instruction for standard XI of Economics stream in relation to students' use of self-regulated learning strategies. Meera S. (2000) studied relative effectiveness among different modes of computer based instruction in relation to students' personality traits. Quasi experimental method as well as quantitative and qualitative approach was adopted for the study. Dalwadi, N. (2001) developed computer assisted instruction in Economics for the standard IX for the unit "light". Alesander, N. (2013) prepared and validated multimedia packages in the teaching of Economics to hearing impaired students of secondary schools. Rothore, V. (2013) studied various e-learning mechanisms for supporting innovative online training and design of a generalized e-learning system. John. K.K. (2010) prepared and tested learning modules in environmental Economics at higher secondary schools. Bhatt, A. (2011). Computer Assisted Instruction in Physics for the students of standard XII: an experimental study. Veer Narmad South Gujrat University.

Study conducted in abroad

Keino, L.C.(2008) developed a course to incorporate universally recognized International Standards for Technology in Education in planning learning activities in a content area in one of the Career and Technical Education programs. It demonstrated that technical application can enhance pre-service teachers' abilities to conceptualize and create learning activities and assessments that strengthen the constructivist learning perspective. Brawley (1974) conducted an experiment to evaluate the multi-media instructional modules to teach time-telling to retarded, children. The findings revealed that the experimental group made significant gains over the control group. Ralph and Harold (1975) developed Process Modules for investigating Environmental Economics. Huang & et.al (2012) developed a web-based cooperative learning system which contains personal module, admin module, course module, communication module and learning record module to support the

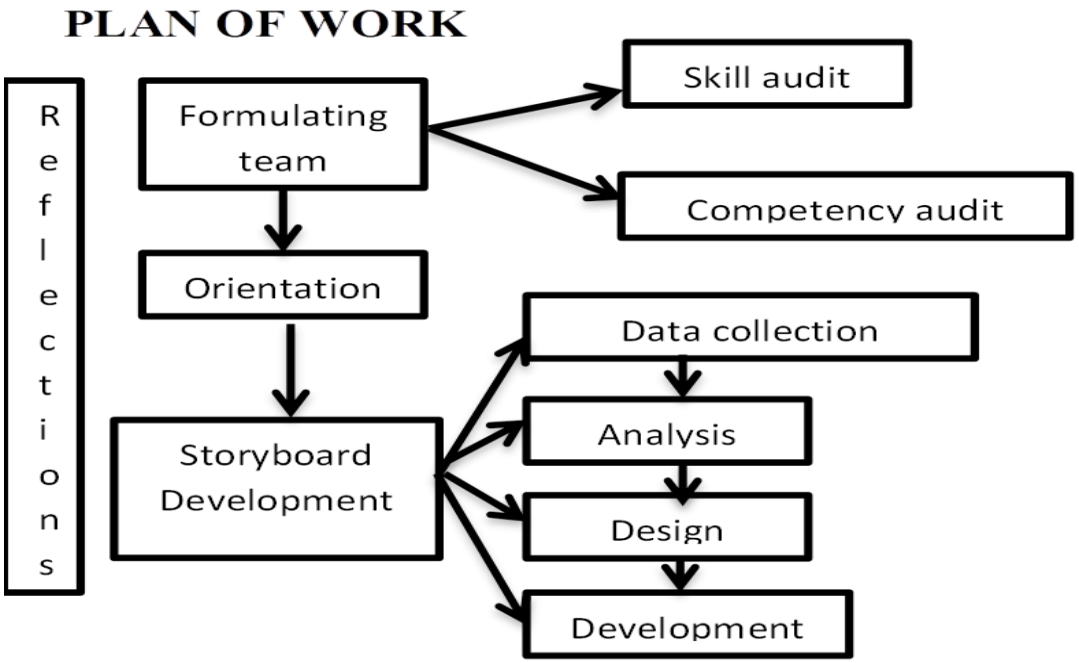
implementation of cooperative learning. Tse-Kian and Mai (2004) discussed the incorporation of multimedia into the tutor's instructional process which should result in a union between the educational content and the multimedia technology. The combination of content and technology are targeted to create multimedia content applications that wasmulti sensory, visually challenging to the students and above all promote interaction. This means that students can have an interactive experience within the topic being discussed, and the impact of this experience would exceed the conventional textbook-type learning experience.

CHAPTER 3

METHODOLOGY OF THE STUDY AND PLAN OF WORK

Training model based on blended learning approach:

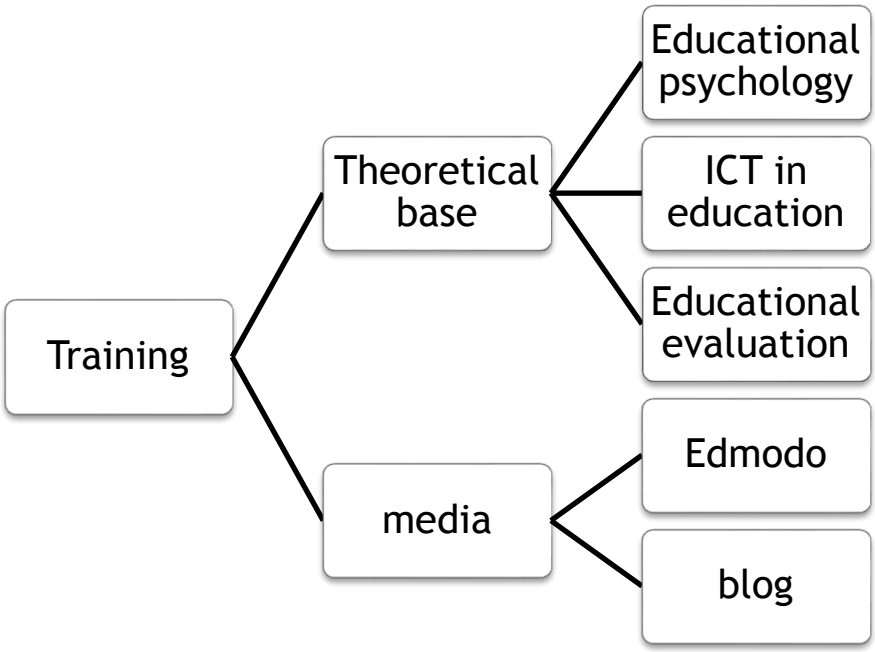
Teacher educator gave training to student by using the following model:



Phase I: Pre-planning: Formulating the team

- Teams were chosen on the basis of following factors: Content matter Knowledge and adequate Knowledge of computers.
- **Skills audit:** a brief skill audit was done to assess the existing skills and expertise of team and identify any expertise is needed. The gaps were filled by faculty, contracting out certain tasks.
- Fourteen students were divided into four groups of 3, 3, 4, and 4 each. These groups were distributed chapters of economics.
- Team was given orientation about instructional design.

Phase II: Orientation



Orientation includes the following points:

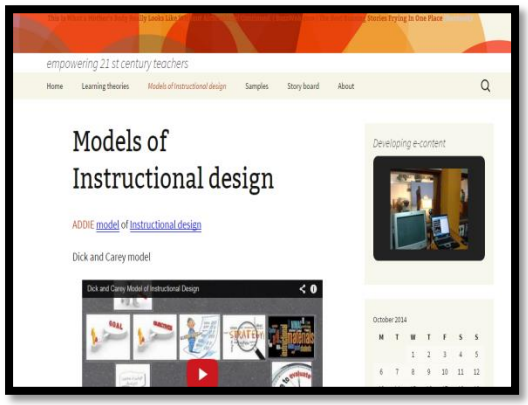
Concept of e-learning, Concept of e-content, Teachers' role in developing e-content

- Then 5 sessions were taken by the researcher on the following aspects:
    - Modes of e-content delivery
    - Concept of storyboard
    - How to make storyboard
    - Components of storyboard
    - How to write reflections in diary
    - Presentation of storyboard and discussion
- B.Ed. curriculum includes theory required to develop e-content in various subject
    - ICT in education: Concept of instructional design, ADDIE model: concept, process, application, E-learning, principles of ICT in education, techniques, models, methods of teaching.
    - Psychology of learning :Learning theories, individual differences among learner, learning styles, attention, memory, interest, maturation, fatigue

- Through Evaluation subject learners learn how to make objectives, specifications, how to make question paper, summative and formative evaluation, different types of tests. Researcher took some session to correlate these theories to their practical work.

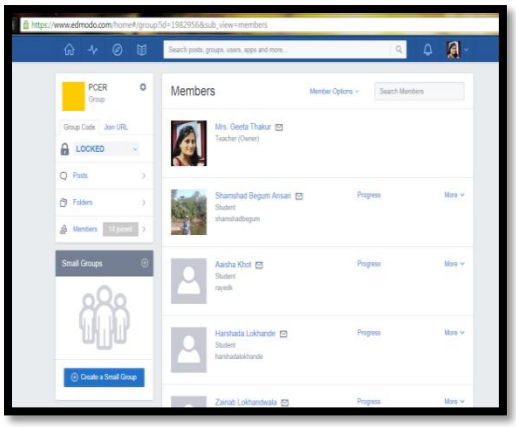
Learning through blog:

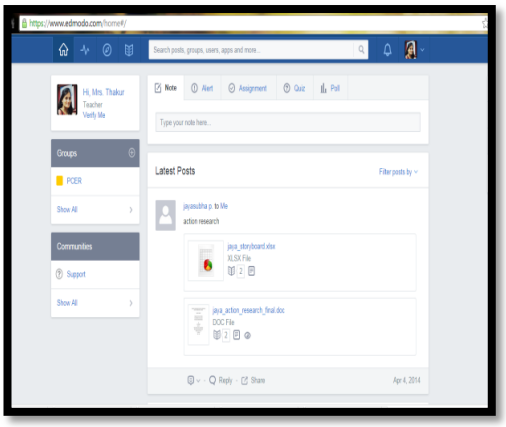
Blog was created. Blog on instructional design include menus such as learning theories, instructional strategies, samples of e-content, storyboard, Models of instructional design. Student teacher could go through blog and watch simple videos to learn theory related to instructional design.



Learning experiences through Edmodo:

Online classroom was created to interact with students online. Teacher educator enrolled student teachers in PCER group. Through Edmodo, teacher communicated assignments, notices; schedules etc. teacher educator could monitor the assignments and provide automatic reminders. It helped them to smoothen the instructions. Students teacher were given batches to encourage them to proceed with enthusiasm. Teacher educator shared required study material and support material with student teachers.





Phase III: Content development

The multimedia e-content was developed based on ADDIE model.

1. **Analysis:** The researcher made the design of the course. The student teachers formulated the objectives for the e-content of each topic. They did content analysis for the unit in which they were preparing module.

   Analysis is done to know the following information

   Need analysis:

   What time and other resource limitations the learner will face?

   Audience analysis:

   What does the learner already know?

   Where will learner want to learn?

   What resources will learner have at their disposal?

   Content analysis

   Is there any exiting material that can be used to prepare this material?

   After collecting any existing material, review the material for what content can be reused.

Structure analysis:

Provide step by step instructions that will take the learner from start to finish.

Which information the learner will be learning?

Which information the learner already knew?

Which information did the learner need not to know?

Learners were analysed by collecting data. Interest, learning styles, their intelligence, anxiety level towards economics, attitude towards economics was studied. For this purpose the following tools were given,

1. **Attitude towards Economics scale:**

It has 21items. It is 3 point scale with options –Agree, can't say and disagree.

2. **Anxiety towards Economics scale**

It has 12 items. It is 3 point scale with options –mot at all, somewhat and very much

3. **Multiple intelligence scale**

It has 30 items. If it expresses some characteristic of readers and sounds true for the most part, they are supposed to tick mark in true column. If it doesn't, tick mark in false column.

Data was collected and analysed. Experiences of practice teaching by student teachers enabled them to analyse the need of their learners.

Table no 3.1

ANALYSIS OF SCORES OF ATTITUDE SCALE

LEVEL OF ATTITUDE	NO OF STUDENTS	%
High	11	8.21
Average	105	78.36
Low	17	12.69

- 8.21 % of the students have high attitude towards Economics, 78.36 % students have average attitude towards Economics and 12.69 % students have low attitude towards Economics.
- Most of the students have average attitude towards Economics whereas very few students have high level of attitude towards Economics.

FIG. 3.1

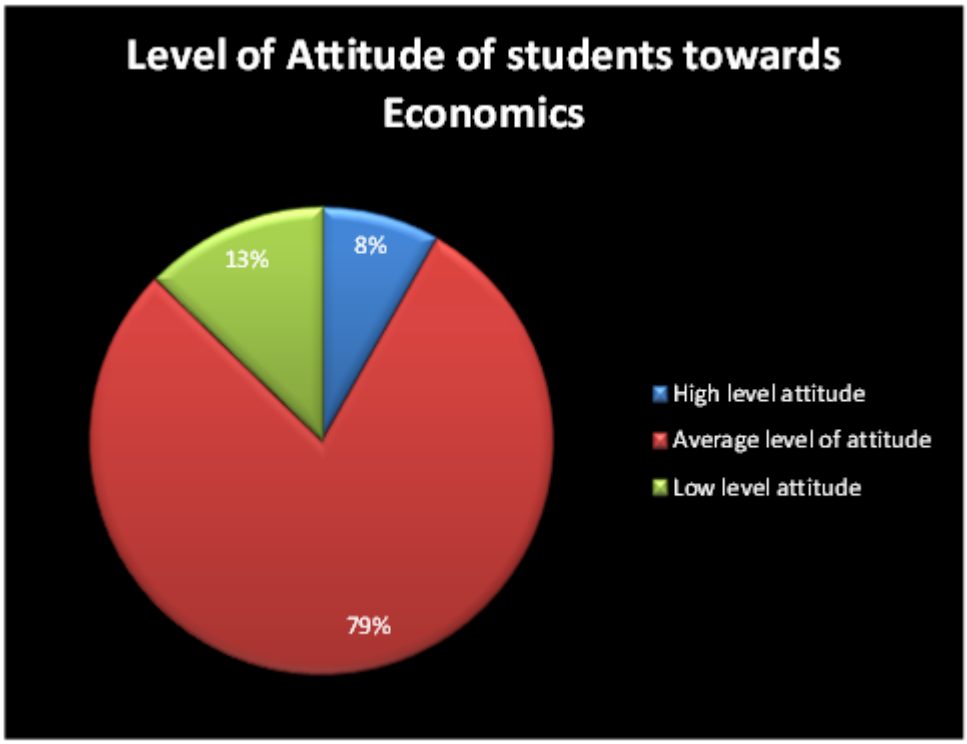


Table no 3.2

ANALYSIS OF SCORES OF ANXIETY SCALE

LEVEL OF ANXIETY	NO OF STUDENTS	%
High	**97**	**72.93**
Average	**31**	**23.30**
Low	**5**	**3.75**

- 72.93 % of the students have high anxiety towards Economics, 23.30 % students have average anxiety towards economics and 3.75 % students have low anxiety towards economics.
- Most of the students have high anxiety towards Economics whereas very few students have low anxiety.

FIG. 3.2

LEVEL OF ANXIETY TOWARDS ECONOMICS

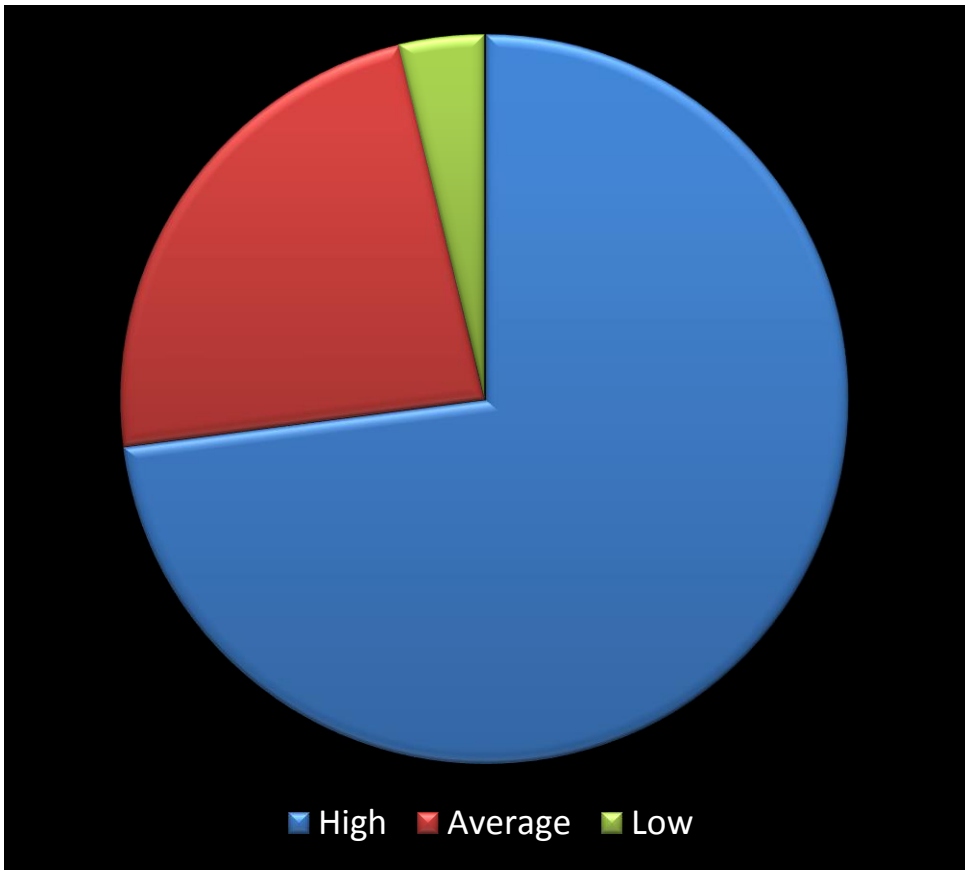


Table no 3.3

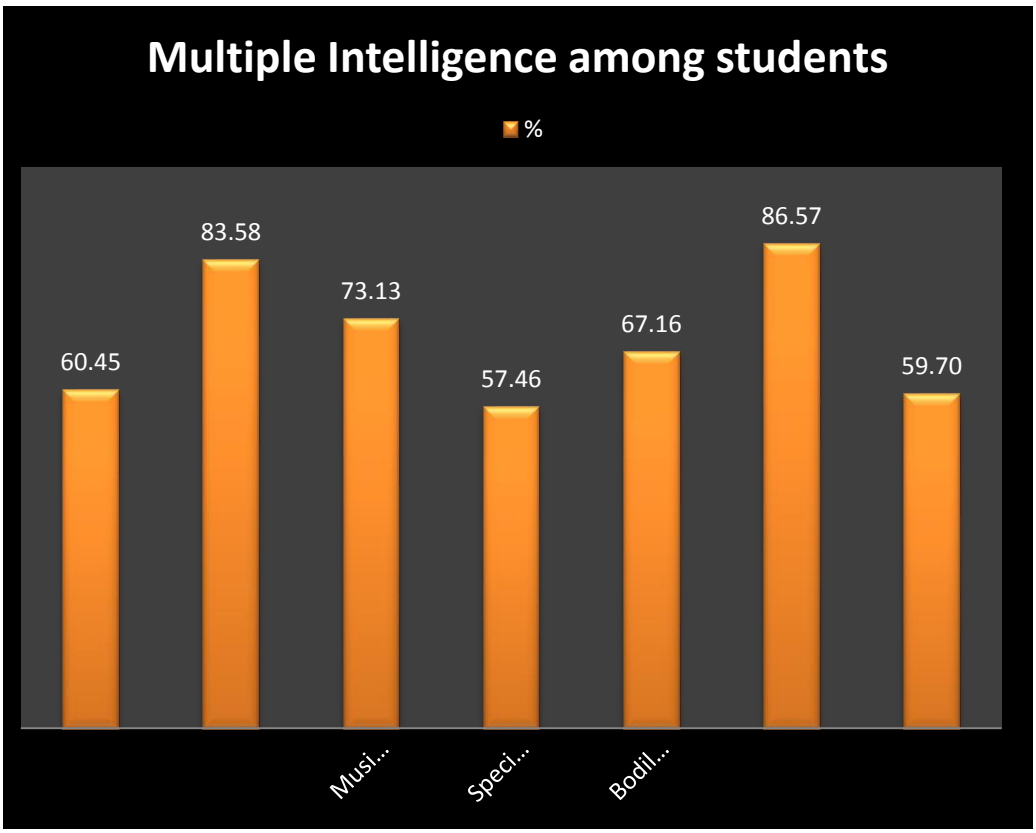
ANALYSIS OF SCORES OF MULTIPLE INTELLIGENCE

TYPE OF INTELLIGENCE	NO OF STUDENTS	%
Linguistic intelligence	81	60.45
Logical mathematical intelligence	112	83.58
Musical intelligence	98	73.13
Spatial intelligence	77	57.46
Bodily kinesthetic intelligence	90	67.16
Intra personal intelligence	116	86.57
Interpersonal intelligence	80	59.70

- 60.45% students have linguistic intelligence to much extent
- Maximum student fall under the category of Intra Personal Intelligence with an observation of 86.57% to much extent.
- Minimum percentage (57.46%) students possess Spatial Intelligence to much extent.

FIG. 3.3

LEVEL OF MULTIPLE INTELLIGENCE SCORE



2. **DESIGN:**

Taking into consideration the above data, student teachers started designing storyboard for developing multimedia e-content. Each student teacher chose the topic from the Economics standard IX.

For each module following plan was prepared:

- Goal of the instruction in general term.
- Specific learning objectives for the students
- The instructional strategies
- Instructional activities needed to achieve objectives
- Sequence of instructions
- Visuals, videos, audio, scenario needed.
- Assessment strategies they will use.
- Assignments
- References

Preparing storyboard

While preparing storyboard following steps were followed:

- Instructional strategies were decided
- Organization of learning activities
- Chunking learning activities into smaller pieces
- Sequencing the content in logical order
- Scaffold the learning experiences
- Use relevant real world learning experiences
- Using multimedia approach
- Assignments were prepared
- Concept map, mind map, crossword, quizzes were designed

PREPARATION OF STORYBOARD

Tell me a fact and I'll learn

Tell me a truth and I'll believe

Tell me a story and I'll remember it forever

In this modern era, where technology takes an up-step, an attempt is made to innovate education and co-create it with students to provide holistic development of their personality.

In an educational setting, a learning needs-analysis helps students identify where they are in terms of their knowledge, skills and competencies, versus where they wish to be - what are their learning goals?

Before preparing the story board, the students were assessed on various aspects so as to understand the need and importance of integrating technology with education. The assessment was done through tools that examined the following:

- Development of a positive attitude towards Economics
- Reduce anxiety towards Economics
- Making Economics learning interesting
- Interactivity

Storyboard: The Plot

Story board: Script is to be converted to story board which is the working document for the development of the e-content. The storyboard gives outline of the material which includes screen on text, animation, voice over/narration, effect audio and video etc.

This storyboard focuses on clearing the concept of Personal Income from the subject of Economics for Grade 9 students. It is creatively designed to show a conversation between a father and his son (Jugnu) who celebrates his 15th Birthday and gets a gift along with weekly pocket money from his parents. Considering he is also learning the same topic (i.e. Personal Income) at school, he considers his pocket money as an Income. But his father clarifies his ideas with the help of various examples and explains how income is earned from different factors of production.

This storyboard was eventually be developed into an animated E-content with Audio Visual effects.

Analysis process:

In this particular Action Research Project, a combination of elements are considered to create the foundation of this storyboard to ensure a positive attitude is developed towards the subject of economics and its relevance in the real life.

The elements are classified as followed:

- **Principles of Learning:**
  - Principle of Individual Difference (Slow Learners, Gifted Learners): This story line is simple and easy to understand for all kinds of learners
  - Learning Styles (Auditory, Visual, Kinesthetic): It caters to all learning styles. Once it is developed into an E-Content, it transforms into an audio-visual form of learning. There is also an activity at the end of the storyboard which caters to the kinesthetic learners.
- **Principles of ICT in education:**
  - Principle of Spatial and Temporal Contiguity: With the sub-titles facilities along with the 2D animation of the E-Content, both the Principles of ICT are satisfied.
  - Principle of Individual Difference: The flow and the design of the E-Content were such that the student can understand it as per their capabilities due to the Pause-Replay option added in the E-content. The teacher can replay the lesson until the student understands the concept thoroughly.
- **Factors affecting Learning:**
  - Attention: The animation, audio-visual component of the E-content will automatically capture the student's attention
  - Maturation: The E-content is developed keeping in mind the understanding and maturation level of the students
  - Interest: The real life situation of getting pocket money from parents and the illustrations provided in the storyboard will ensure student's interest levels are maintained

- Motivation: Converting a text book chapter of a technical subject into an animated format like a video or a short movie-like situation will motivate students to learn more. Students will also be motivated to think with an economic perspective and apply their knowledge
- Fatigue: It was a good change from the traditional Textbook and Chalk-Talk method of learning that often leads to boredom and fatigue. With practical examples, learning is retained that does not leave any scope for rote memorization

- **Howard Gardner's Multiple Intelligence Theory:** Through the storyboard, cognitive competence can be better described as a set of an individual's multiple abilities, talents and mental skills as related to a multiple number of domains of knowledge in a particular cultural setting.

- **Maxims of teaching:**
  - Known to Unknown: Students already have previous knowledge or experience of receiving pocket money. This will help to teach the concept of personal income through this story line
  - Simple to Complex: Similarly, the simple real life examples provided in story line help the learners to grasp the concept easily
- **Principles of Constructivism:**
  - Learning is an active process: The students actively pay attention to the E-content while learning the concept. Also, the teacher can conduct the activity (provided after the storyboard) as an evaluation to check if students have understood the concept clearly.
  - Students learn to learn as they learn: In the storyboard, while understanding the concept of labour and wages, the character gets sensitized to the plight of the construction workers who work so hard and get meagerly paid yet miss out on education. He plans to go with his friend and spend some time with the children of the construction workers and teach them basic English.
  - Learning is a Social Activity: This becomes a part of experiential learning. The students can themselves interact with their parents, relatives and friends to understand a concept of Factors of Production

and Income. Thus, developing their social skills and improving their confidence level.

- 5 Es of Constructivism: *Engage, Explore, Explain, Elaborate, Evaluate.* Considering all the 5 senses of the students are engaged in learning through and E-content, the 5 Es of Constructivism are automatically integrated in the same

In totality, the above factors form the base for preparing the story board and ensure that the pre-assessment findings are considered and the needs expressed by the students are met.

SAMPLE STORYBOARD

The topic selected for development of story board is Personal Income

Objectives and Specification

Knowledge

General Objectives

- The pupil acquires knowledge about the concept of personal income

Specification

- The pupil recalls the meaning of personal income
- The pupil recalls the various sources of personal income

Understanding

General Objectives

- The pupil develops an understanding about the concept of personal income

Specification

- The pupil explains the meaning of personal income
- The pupil categorizes the personal income received from various sources
- The pupil classifies the various sources of personal income

Application

General Objectives

- The pupil applies his knowledge and understanding in a new and unfamiliar situation

Specification

- The pupil highlights the importance of personal income

Content Analysis

- New Terms:

○ Income	○ Enterprise
○ Capital	○ Rent
○ Labour	○ Wages
○ Interest	

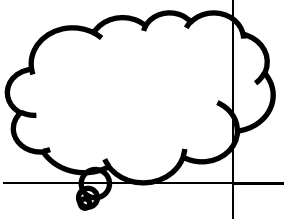
- Concept:
  - Personal Income
- Generalization:
  - Personal Income is the sum total of earnings received by a person during a given period of time. A person receives income for his contribution to the production
- Core Element:
  - **Removal of social barriers:** (Based on an example taken in the story board) Children working on construction sites to help their parents are often deprived of basic education due to lack of financial resources. We, as educated citizens of India, must bring to our own awareness about such pressing problems of our country and collectively work removing this social barrier
- Values:

- **Dignity of Labour, Patriotism and Sensitivity:** People working on the construction sites live a very meager lifestyle with inadequate resources to ensure we get a well-built home. Being citizens of the same country, we must work towards bridging the gap between the rich and poor and at least work towards providing them a healthy and a self-sufficient lifestyle.
-

Story Line	**Animations**	**Background**	**Music/Voice over**	**Effects**
Dialog between Father and Son	*(2 D pictures – cartoon charactered father and son having a conversation – Flash animation and subtitles)*	**Every slide has a pause, play and replay button in the bottom right corner**		
Slide 1				
Father: "Happy Birthday, Jugnu! Today you turned 15 years old. This is a Bday present (Gives a gift) But along with this you will now be getting some pocket	*Jugnu and his Father walk in to the room and speak to each other. The subtitles fade in (in the bottom half of the screen) with the conversation between Jugnu and his Father.*	Home scene: Sofa in the middle, two windows at the back and a lamp shade.	Jugnu and Father's voice over	Dissolve to the next slide

money. You will now be given Rs. 350 per week as your pocket money."				
Jugnu: (Excited): "Oh Wow! I now have my own Income! Just like you and mommy do!"				
Slide 2				
Father: (Laughs): "It is similar to what we earn BUT not the same. Daddy earns **PROFIT** because he is a business man earning Stationery Items. "	*Small pop up bubble showing picture of man working with currency notes showing profits*	2D image of a man in a suit and brief case and holding money in his hand	Father's voice over	

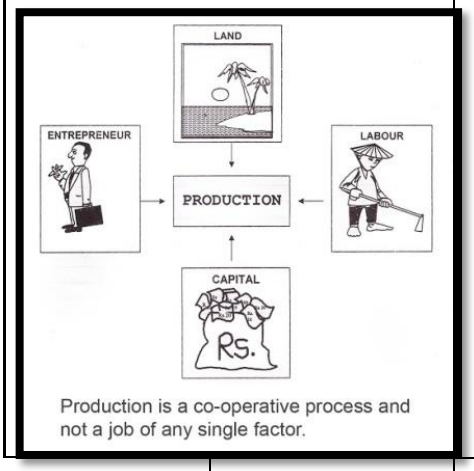
Mommy works in an office and earns what we call a SALARY.	*Small pop up bubble showing picture woman working in office with the salary word/boss handing over a pay cheque*		Father's voice over	
		PERSONAL INCOME	Father's voice over	Dissolve to the next slide
Slide 3				
<**Personal Income** is the **sum total of earnings** received by a person during a **given period of time**. A person receives income for his **contribution to the production**>	*(Definition of Personal Income with a voice over and key words highlighted)*	Plain solid background or background with money in a semi-transparent form and definition in bold block letters with the highlighted key words	Male Voiceover	Dissolve to the next slide
Slide 4				

Jugnu: Oh! Is that so? So, daddy, How do we earn this income? Who can give it to us?		Back to home scene with Jugnu and Father. Jugnu is inquisitive. 3 question marks pop over his head as he asks his father some questions.	Jugnu's voiceover	
Father: These are good questions, Jugnu? There are 4 components which help in the process of production. **LAND – LABOUR – CAPITAL – ENTERPRISE.** These are known as **Factors of Production.**	*(Highlight the bold words in pop ups with pictures)* 			Dissolve to the next slide
Let me give you some examples:				
Slide 4				
1. Land earns RENT				

Father: Like in the village, Gopal uncle has lent his piece of land to Babloo for his cattle grazing activities, for which Babloo pays a sum of money. This money is known as RENT	*(Village scene: Piece of land on which Gopal Uncle is accepting Rent from Babloo (with 2 goats besides him))*	**Title:** Land earns RENT **Still image**: Farmland picture with 2D images of Gopal uncle accepting money in the form of RENT and Babloo doing activity of grazing. 2 arrows pointing - Income (at the money) and Contribution (Grazing activity)	Background voiceover of the father	Faded dissolve
Slide 5				
2. Labour earns WAGES				
Father: In the building that is getting constructed next door, the workers who are doing the base work with picking up bricks and cementing are labourers. They get paid WAGES on	*Google image*	Title: Labour earns WAGES Background picture of labourers	Background voiceover of the father	

per day basis or on weekly basis				
Jugnu: Oh really! Daddy, When I go to school, I also see their children playing around with the cement and their tools. Isn't it dangerous?	*Google image*	Picture of children playing at construction sites	Background voiceover of the Jugnu	
Father: It is! But they are poor and most of them do not even go to school.		Back to the Room Scene with Jugnu and his Father communicating	Jugnu and Father's voice over	
Jugnu: Can Raju (friend) and I go visit those kids and teach them some ABCD after school for some time?				
Father: That will be great! I am so proud of	*(Conversations)*			

you that you gave it a thought.				
Jugnu smiles				Faded dissolve
Slide 6				
3. Capital earns interest				
Father: In daddy's stationery factory, capital includes the human population; nonmaterial elements such as skills, abilities, and education; land, buildings, machines, equipment of all kinds; and all stocks of finished or unfinished goods that earn him an INTEREST	*Google image*	4 pictures on the slide: one of pens and pencils (Stationary items), Factory building with machinery, human resources in the office, final finished stationery material. First all of them are highlighted and then they become semi-transparent and the word INTEREST is faded zoomed in.	Father's voice over	Faded dissolve

Slide 7				
4. Entrepreneur earns Profit				
Father: Lastly, when daddy sells these stationery items, he earns a PROFIT	*Conversation*	Picture of a man selling stationery item at the shop and getting paid some money in return (JPEG image).	Father's voice over	
Jugnu: I have now understood the factors of production		Back to home scene with Jugnu and Father		
Father: Good boy!		Father pats on Jugnu's back		
Image of all the factos of production (Recap)				
		Recap so far		

Frequently Asked Questions (FAQs)

I. Answer the following:

1. What is Personal Income?
2. Name the Factors of Production?

II. Match the following:

a. Land	1. Profit
b. Labour	2. Office
c. Capital	3. Rent
d. Entrepreneur	4. Wages
e. Salary	5. Interest

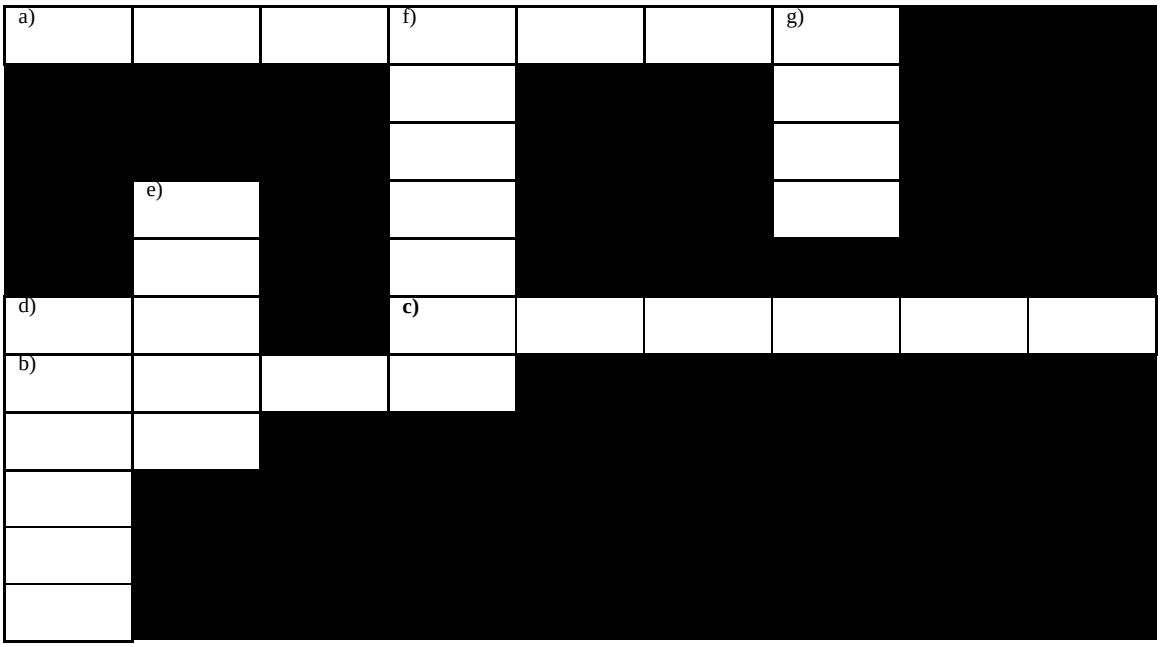
ANSWER KEY

I. Answer the following:

1. **Personal Income:** Personal Income is the sum total of earnings received by a person during a given period of time. A person receives income for his contribution to the production
2. **Factors of Production:** Land, Labour, Capital and Enterprise

II. **Match the following:** a – 3, b – 4, c – 5, d – 1, e – 2

CROSSWORD PUZZLE



1. **ACROSS**
   a. _____ (7) earns Interest
   b. _____ (4) is the income earned from Land
   c. Jugnu's mother works in an Office. She earns a _____ (6)

2. **DOWN**
   d. An Entrepreneur earns _____ (6)
   e. Ghanshyam is a Labour in a factory. He earns income in the form of _____ (5)
   f. Capital includes all stocks of finished or unfinished goods that earn _____ (7)
   g. _____(4) earns Rent

ANSWER KEY

a) **C**	**A**	**P**	f) **I**	**T**	**A**	g) **L**		
			N			**A**		
			T			**N**		
	e) **W**		**R**			**D**		
	A		**E**					
d) **P**	**G**		c) **S**	**A**	**L**	**A**	**R**	**Y**
b) **R**	**E**	**N**	**T**					
O	**S**							
F								
I								
T								

ACTIVITY

1. Have students clear their desk except for a clean sheet of paper and a pen or pencil.
2. Tell the students that they are to leave the Dairy Milk on their desk until further instructions are given. Do not eat the Dairy Milk until the end of the class.
3. Place one Dairy Milk on each student's desk.
4. Tell students that they are to list on paper everything that went into making the candy bar from the time someone had the idea for the Dairy Milk until the consumer purchased the candy off the store shelf.
5. Write on the chalkboard or overhead projector each of the things that went into making the candy, as the class changes or modify each thing on their paper. (Examples: sugar, ink on wrapper, idea, machinery, advertiser, trucks for hauling, electricity, etc. Usually, students will have fifty or more things.)
6. Explain the definitions for each of the four factors of production and the income earned from them.
    - Land - Rent
    - Labour - Wages
    - Capital - Interest
    - Entrepreneurship - Profit
7. Ask for any questions about the definitions.
8. Have the students create a hypothetical timeline of the creation of the candy bar from start to finish. Instruct them to use four different colors, one for each factor of production.

3. **DEVELOP:**

The modules were developed based on storyboards

Development includes the following:

- Video recording
- Integrating images, video clips
- Editing

4. **IMPLEMENTATION:**

The module of the e-content designed tried before presenting it to the target group. During this time the student teachers have an opportunity to review the whole thing. They can modify the programme to suit the time frame and the audience. Tryout gives an opportunity to re edit and re sequence the program and to make last minute addition and deletion to improve e-content.

Analysis of data:

Quantitative as well as qualitative data analysis was done. Descriptive and inferential analysis is done. Researcher used Mean, Median, Mode, Standard deviation, Skewness, Kurtosis for the descriptive data analysis. 't' test was used for the inferential data analysis.

CHAPTER 4

ANALYSIS AND INTERPRETATION

First of all, experimental and control group were given pretest. The e-content is implemented on experimental group. The control group was taught by using traditional face to face mode. After 3 days of implementation, both experimental and control group were given posttest.

The scores of pretest and posttest were obtained and analyzed using statistical test. i.e. t test.

TABLE 4.1

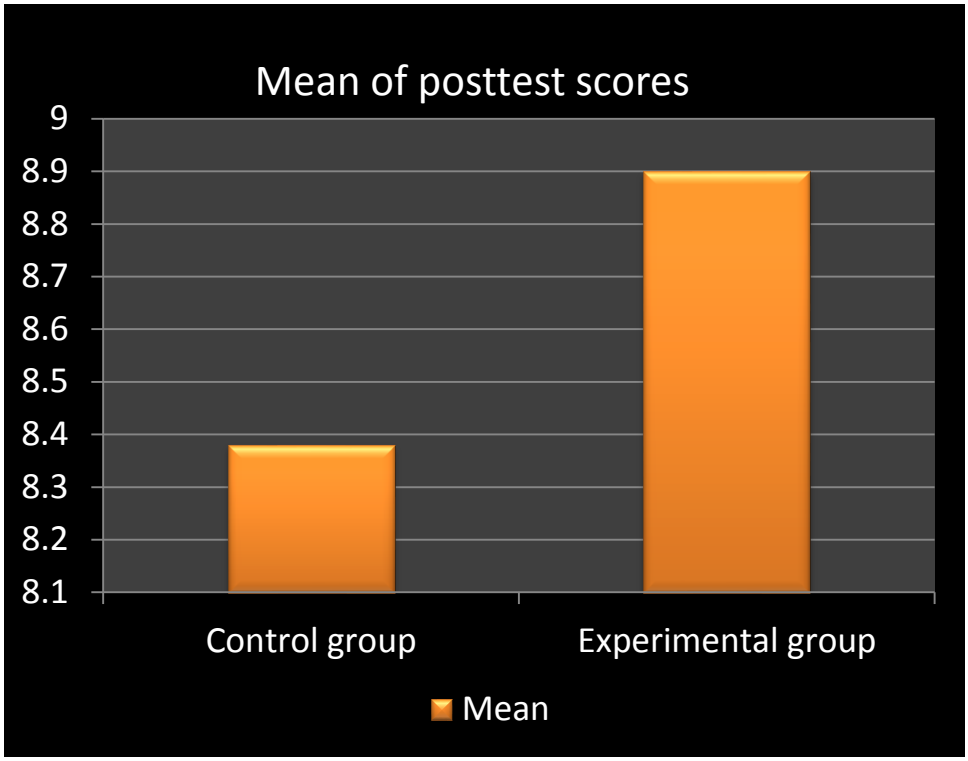
PRE-TEST AND POST-TEST SCORES OF CONTROL GROUP AND EXPERIMENTAL GROUP

Pre-test Scores of control group and experimental group						Post-test scores of Control group and Experimental group					
Group	N	Mean	SD	t value	LS	Group	N	Mean	SD	t value	LS
Control group	61	8.38	4.06	1.89	N.S.	Control group	61	12.24	6.22	6.83	0.01
Experimental group	61	8.90	2.78			Experimental group	61	20.80	6.64		

Mean, standard deviations and t-value for pre-test scores in Economics were calculated. The mean score for the experimental group was 8.90, while that of the control group was 8.38. A t-test for independent samples was carried out to test whether the experimental and the control groups differed significantly on pre-test achievement in Economics. Non-significant differences were found with t=1.89 at 0.05 level. As there were no significant differences on the pre-test, it can be assumed that the two groups started out with equivalent means.

FIG. 4.1

PRE-TEST AND POST-TEST SCORES OF CONTROL GROUP AND EXPERIMENTAL GROUP



Mean, SD and t-value for post-test scores were calculated. Mean of post-test scores of experimental group was higher (20.80) than that of control group (12.24). The t-value calculated for post-test scores revealed that control and experimental group differed significantly with t=6.83 at 0.01 levels.

TABLE NO. 4.2

POST-TEST SCORES OF CONTROL GROUP AND EXPERIMENTAL GROUP WITH RESPECT TO GENDER

CONTROL						**EXPERIEMENTAL**					
Gender	**N**	**Mean**	**SD**	**t-value**	**LS**	**Gender**	**N**	**Mean**	**SD**	**t- value**	**LS**
Boys	32	13.10	5.64	1.32	N.S	Boys	30	20.88	6.32	0.097	N.S
Girls	29	11.42	6.79			Girls	31	20.72	7.40		

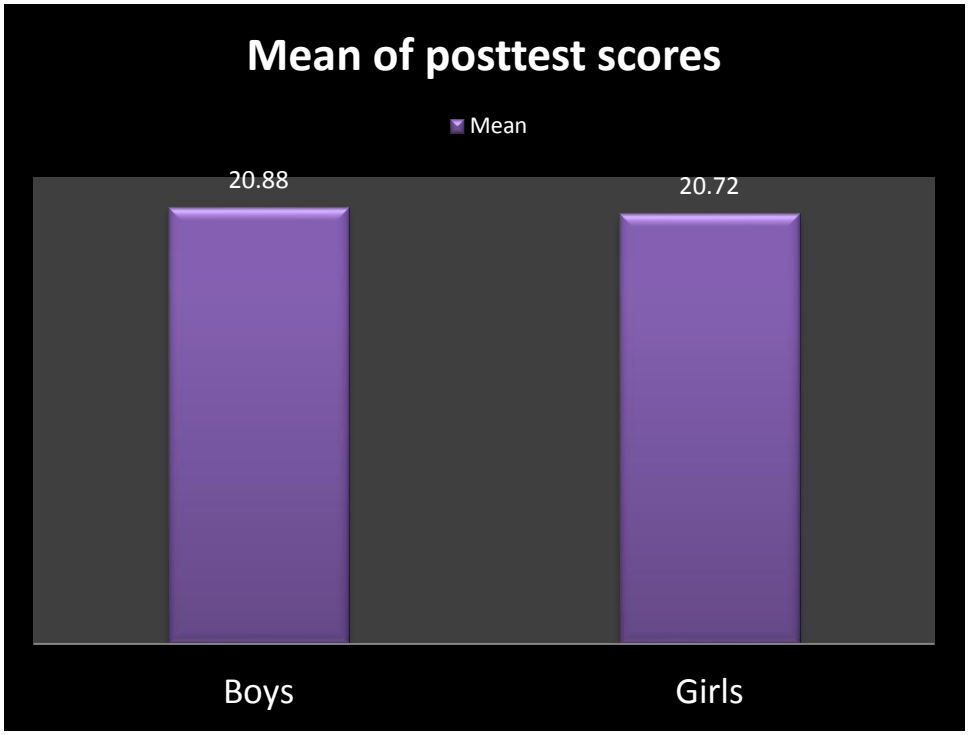
The mean, SD and t-values of post-test scores of boys and girls for the control and experimental groups were calculated. Result shows that mean scores of girls (11.42) in the control group are lower than those of boys (13.10). In the experimental group, mean of post-test scores of both boys and girls are 20.88 and 20.72 respectively. The t-value was calculated for post-test scores of control group (1.32) and experimental group (0.097) with respect to gender. It did not differ significantly even at 0.05 levels.

The students in the experimental group answered reflection questions on their experience in learning with the help of e-content at the end of the treatment period.

Students replied that concepts were clear through this method of teaching. E-content helped them to better understanding and the ability to answer questions easily, assisted them in summarizing the learned material, and helped them to retain the learned concept for a longer time. This e–learning helped to promote the attitude towards Economics education. 73.47% students said that e-content should be used to teach most of the topics in Economics and 54.32% said that it should be applied in other subjects also.

FIG.4.2

POST-TEST SCORES OF CONTROL GROUP AND EXPERIMENTAL GROUP WITH RESPECT TO GENDER



DISCUSSION

According to the achievement points obtained at the end of the study, e-content was found to be more influential in student success than the traditional method. The analyses in the present study have shown that there was a significant difference in the post-test score of control and experimental group at 0.01 levels. More specifically, experimental group has higher mean score than that of control group. Further analysis investigated the significant difference of post-test score with respect to gender. There was no significant difference of post-test score of control and experimental group with respect to gender.

Other questions in the attitude scale elicited student's attitude towards e-content. Students, in general, showed a very positive attitude towards e-content. They agreed that e-content was a very good technique for learning and found it very beneficiary. These students suggested that e-content helped them summarize and organize new information, retain information longer and simplify their learning tasks. Thus, it could

be of great help to students to develop and use metacognitive skills, which resulted in better achievement.

REFLECTIONS THROUGH JOURNALS

Analysis:

Student teachers were asked to write reflections. Through this journaling they could understand how they learn. Further it was helpful for the researcher to understand effectiveness of training. The researcher was able to understand the hurdles, problems and motive which play a significant role in learning. Most of them (92.85%) were unaware about e-content development. They were familiar about online learning. Most of them (78.42%) experienced a plateau stage meanwhile due to inclusion of more than one tool. In the beginning they showed enthusiasm and interest towards innovative and digital media. But given the opportunity to use learning management system initially they showed resistance due to failure in implementing from their side. 78.57% stated that orientations, demonstrations, reinforcements and even peer tutoring help them to come out of this resistance stage. 71.42% agreed that the communication through chat and blog helped them in sustaining their interest in creating storyboard. The blog was helpful for them to understand the concepts and their target. For 71.4 % student teachers, their goal (i.e. multimedia e-content) was source of inspiration. All of them experienced feeling of great achievement when their storyboard was ready. They found developing storyboard demands critical thinking, creative thinking and imagination.

FINDINGS

E-content was found to be more influential in student success than the traditional method. The analyses in the present study have shown that there was a significant difference in the post-test score of control and experimental group at 0.01 levels. More specifically, experimental group has higher mean score than that of control group. Further analysis investigated the significant difference of post-test score with respect to gender. There was no significant difference of post-test score of control and experimental group with respect to gender.

Conclusion:

The development of the multimedia e-content of Economics was the result of the joint effort between the teacher educators and the student teachers. The student teachers were appeared engaged in training which will make this future teacher competent enough, digitally skilled enough to face the challenges of inculcating 21 century skills among their students.

RECOMMENDATIONS

- Teachers should be given training for developing e-content so that they can develop the content suitable to students' need.
- E-content development should be a part of pre-service and in-service training.
- Teacher should try to modify the available content to make it more effective as per students' need.
- Teachers should be made aware about the open educational resources so that they can use the available resources, modify and create new.

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APPENDICES A

1	**Aaisha Khot**	M.Com.	Basic computer course from NIIT	1 year	Goods and resources
2	**Shaily Shah**	M.Com.	------	-----	Personal inome
3	**Shamshad Begum**	M.Com.	Tally	2 years	Importance of economics
4	**Kruti Vayda**	M.Com.	Basic computer course	1 year	Trade and modern sources of income
5	**Kumari Hemlata**	M.Com.	Basic computer course	-----	Definition of Economics
6	**Jyoti Yadav**	M.Com.	-----	-----	Agricuture
7	**Preeti Pillai**	M.Com.	-----	-----	Baluta system
8	**Harshada Lokhande**	M.Com.	-----	-----	Introduction to Economics
9	**Harmeet Kaur**	M.Com.	-----	-----	Basic wants
10	**Iccha Mehlotra**	M.Com.	-----	-----	Ultility, value and price
11	**Jausubha Pillai**	M.Com.	-----	-----	Demand and supply
12	**Shabnoor Masoom**	M.Com.	-----	-----	Types of budget
13	**Zainab Lokhandwala**	M.Com.	-----	-----	Components of budget
14	**Apporva Daudane**	M.Com	-----	-----	Importance of agriculture

Attitude towards Economics Scale

Sr. no.	Statement	Agree	Can't say	disagree
1	Knowledge of the economy will help me get a suitable job in the future			
2	Economics will be very useful in my everyday life			
3	I like Economics since it is an easy subject			
4	Economics is very interesting to me			
5	I don't like Economics, and it scares me to have to take it.			
6	I do not feel nervous or frustrated during Economics tests or exams			
6	I always enjoy studying Economics in school			
7	I get a lot of satisfaction from studying Economics			
8	Economics is fascinating and fun			
9	In general, I have a good feeling towards Economics			
10	When I hear the world "biolody", I have a feeling of dislike			
11	I approach Economics with a feeling of hesitation			
12	Studying Economics is a waste of time			
13	I would like to continue with Economics subject after 10^{th} standard.			
14	I expect to use what I learn in Economics after I left school.			
15	Economics as a subject is not difficult			
16	It is easy to understand economics concepts			

17	I enjoy Economics as a subject because it challenges my thinking skills.			
18	Economics will be very useful in my future career.			
19	Economics will be useful in leading my life in future.			
20	Everybody must have at least basic knowledge of Economics subject.			
21	Economics will help me to earn my livelihood.			

Anxiety towards Economics scale

I am scared while doing the following:

Sr. no.	Statement	Not at all	Some what	Very much
1	Buying Economics text book			
2	When economics teacher enters in class			
3	Looking through the pages of Economics text book			
4	Starting new chapter in Economics			
5	Answering in Economics class			
6	Thinking about Economics class			
7	Watching graphs in Economics			
8	Listening to a lecture in an Economics class			
9	Doing homework of Economics			
10	Getting ready to study for Economics			
11	Taking an examination in Economics			
12	Waiting for result of Economics paper			

Multiple intelligence scale

Read each statement. If it expresses some characteristic of yours and sounds true for the most part, tick mark in true column. If it doesn't, tick mark in false column If the statement is sometimes true, sometimes false, leave it blank.

Sr. no.	Statement	True	False
1	I'd rather draw a map than give someone verbal directions.		
2	I can play (or used to play) a musical instrument.		
3	I can associate music with my moods.		
4	I can add or multiply in my head.		
5	I like to work with calculators and computers.		
6	I pick up new dance steps fast.		
7	It's easy for me to say what I think in an argument or debate.		
8	I enjoy a good lecture, speech or sermon.		
9	I always know north from south no matter where I am.		
10	Life seems empty without music.		
11	I always understand the directions that come with new gadgets or appliances.		
12	I like to work puzzles and play games.		
13	Learning to ride a bike (or skates) was easy.		
14	I am irritated when I hear an argument or statement that sounds illogical.		
15	My sense of balance and coordination is good.		
16	I often see patterns and relationships between numbers faster and easier than others.		
17	I enjoy building models (or sculpting).		
18	I'm good at finding the fine points of word		

	meanings.		
19	I can look at an object one way and see it sideways or backwards just as easily.		
20	I often connect a piece of music with some event in my life.		
21	I like to work with numbers and figures.		
22	Just looking at shapes of buildings and structures is pleasurable to me.		
23	I like to hum, whistle and sing in the shower or when I'm alone.		
24	I'm good at athletics.		
25	I'd like to study the structure and logic of languages.		
26	I'm usually aware of the expression on my face.		
27	I'm sensitive to the expressions on other people's faces.		
28	I stay "in touch" with my moods. I have no trouble identifying them.		
29	I am sensitive to the moods of others.		
30	I have a good sense of what others think of me.		