

# PREPARATION AND TRY OUT OF E-CONTENT FOR ELECTRONIC MODE FOR MENSURATION AT SECONDARY SCHOOL MATHEMATICS

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**Abstract:** *Electronic content (e-content) which is also known as digital content refers to the content or information delivered over network-based electronic devices or that is made available using computer network such as the internet. E-content is basically a collection of different tools that satisfies the conditions like minimization of distance, cost-effectiveness, user-friendliness, and adaptability to local conditions'. Well-developed e-content can be delivered many times and ways to different learners. Individual course modules i.e. units, lessons, graphics and animations be able to be re-used in diverse contexts.*

*In this paper we discuss preparation and try out of e-content for Mathematics subject, mainly mensuration topic to different levels of secondary school syllabus based on Andhra Pradesh, India. Teachers, students, and others get benefited by the use of well-designed and developed e-content. E-content design, development, and approach will depend upon the nature of the content and the learners. It will also depend on the quality and involvement of the learning we wish to create. Instructional design models are preparing according to our requirements, but most of the models involve the process of analyzing the learner needs, objectives and goals of the instructional material development, delivery system, and content.*

*Present e-content material and website developed for pilot study to implementation, evaluating, refining the materials etc. The designing and development of e-content, we have to adopt one of the instructional design models based on our requirements. This designing and development of e-content it is to understand the e-learning design, development, and application for effective learning. It is advantageous to this design to make their curricular program accessible to their teachers and students online, or home and other community learning or resource center on offline. It has a significant implication for schools and formal and informal learning institutions.*

**Keywords:** *e-content, e-learning, Mensuration and learning objectives.*

## E-LEARNING

E-learning means to the use of technology and computers via the Internet, to deliver information and instructions to individuals as well as mass. Its access flexibility and time in delivery, are emerging as a popular approach to learning in educational organizations like schools, colleges, and universities. Despite the ever-increasing practice of using e-learning in the schools, most of the applications perform poorly in motivating students to learn. Significant gaps exist among teacher and learner interests with learner needs when it comes to e-learning. Individuals can be learned through e-learning programs, more helpful in the knowledge learning to help improve their learning and understand performance. Enuance all types of supported learning and teaching. The information and communication systems, whether networked or not, serve as specific media tool the learning process and it means out-of-classroom and in-classroom educational practices via technology, even as advances continue in regard to devices and curriculum.

E-Learning is really the computer and network-enabled transfer of skills and knowledge. The processes include Web-based learning, computer-based learning, virtual classroom and different digital association. The content is delivered via the Internet, intranet/extranet/, audio or video tape, satellite Television, and Compact Disk /Digital versatile Disk -ROMs(offline). It can be self-paced and includes with media in the form of text, image, animation, streaming video, and audio. The other forms are CBT -Computer-Based Training, IBT-Internet-Based Training or WBT-Web-Based Training have been used as synonyms to E-Learning. Today these technologies being used, along with mobile devices such as called m-Learning. For effective electronic learning tools, preparation and presentation e-content are very important based on the continent and learner with following the Learning Management System principals (LMS) also, in this paper we also follow the all the norms and standards and used in the novel for preparation of content and web design.

## NEED AND IMPORTANCE OF ELEARNING IN MATHEMATICS

Mathematics in school level children feels it's very difficult at the same times some of the topics like Mensuration is very difficult to understand to learn achievement is also poor. For better learning and improvement of achievement, we select and adopt the other alternative method/ strategy like e-learning, our goals and objectives are to learn easy and effective way. So we arrange the content is structured and sequenced according to learner's interest and previous knowledge with specific learning objectives can archive through this website. E-learning strategies help us to select the appropriate media for instance if the learners are comfortable with learning from classroom teaching, by making interacting with online, we have to consider this as a learning strategy for our experiment. At the same time, we can introduce other learning strategies that are specific to self-study and independent learning.

## SIGNIFICANCE OF DESIGN AND DEVELOPMENT OF MODERN MATHS WEB SITE

For this website, we prepare e-content for all class at the secondary level in their regular school syllabus in Andhra Pradesh (6-10th Classes) take it consideration, and to teach mathematics topics of mensuration. This website having five important features, they are...

### IMPORTANT FEATURES FOR E-CONTENT MODERN MATHS WEB SITE

Some of the important characters of e-content are 1) consistency of content;2) ease of customization3) learner control, 4) easy feedback or evaluation and 5) cost effective learning. Consistency of content is achieved by the same learning being made available to anyone, anywhere, anytime with no degradation to the quality or effectiveness of the content or presentation. Learner control lets each learner complete just the sections of the learning they need leaving them free to come back at any time for more or to review what they have already covered. The instructional design in e-content will be learner centered. The content would be authentic, and it may have the requirements like interactivity, hypertext and hyperlinks etc.

The e-content will present the content in multiple formats. The contents are explained with suitable graphics, animations. The instructional strategies will be chalked out in such a way that learner never lose the interest. It presents the content in a simple text with visuals and with relevant supportive headings (Home page). It will have its own reference materials which generally do not burden the learners and those can appear on demand with optional frames. Some e-content has certain striking features like automatic retaking of the lesson. Wherever learners are not satisfactorily able to perform, it may have automatic learning path. Sometimes, it offers room for selection of the quantum of information considering the learners requirements. On the whole, e-Learning is a mixture of different learning methods, delivered to the learners through information technology supported with educational instructional design and relevant content. The e-Learning is, therefore as a universe, comprises of three basic elements such as content, services and technology. Thus the content forms the back bone of the e-Learning, services and technology forms the rider on which the content travels (Velmurugan, 2009).

### SELECTION OF CONTENT FOR THE DEVELOPMENT OF E-CONTENT

E-content development is student centered, materials and activities are designed with the needs and interests of the student in mind. The e-content will be interactive. E-content can be take place anytime and anywhere. E-content is also useful for physically or otherwise challenged students to more fully participate. It also provides consistent and effective learning.

On E-content studies can suggest when students are struggling over a particular piece of course material, when students aren't comfortable to learn, or the teacher need to freshen up the content to improve student learning. E-content will have the ability to retain long-term access and goals. The good designing of e-content is necessary follow the steps of e-content development

### MATHEMATICS (MENSURATION)

Mathematics is a fundamental part of human thought and logic that attempts to understand the world and ourselves. Mathematics provides an effective way of building mental discipline and encourages logical reasoning and mental rigor. In addition, mathematical knowledge plays a crucial knowledge in understanding the concept of other school subject such as science, social studies and even music and art. One of the most foremost branches of Mathematics is Mensuration. One of the fundamental uses of the Mensuration is for finding surface areas and volumes associated with solid figures. Many of the applications of Mensuration are also to be found in selected areas of engineering, Architecture, physics, business and using and working with many things in our day to day life. Promote, it is useful to understanding the other branches in mathematics. So we adopted secondary level syllabus as on Mensuration as a content unit for instructional purposes in e-learning mode of teaching. Mensuration is a chapter in the mathematics syllabus prescribed for higher secondary education.

### DEVELOPMENT OF E-CONTENT

Considering the objectives and hypotheses, the investigator being a post graduate in mathematics and having the exposure to Educational Technology, has developed and validated e-Content for learning Mensuration based on the Secondary School syllabus. In order to prepare the e-Content, we are followed ADDIE model. It has five phases as follows: 1. Analysis 2. Design 3. Development 4. Implementation 5. Evaluation.

- 1. Analysis:** The analysis phase includes planning and requirement of e-Content. In this phase, the investigator found out the problem of the student for studying through conventional method, testing the entry behaviour of the student and discussed the aim and objectives of e-Content. The teaching strategies are used for achieving the teaching goal. While using some of the teaching strategies like lecture method, the teacher remains active and the students are the passive audience. It results in the non-development of all the potentialities of the students. Such a situation needs some change in this teaching strategy and more and more new learning experiences are needed for students, especially for learning mathematics.
- 2. Design:** After completing the analysis phase, the investigator described what are the hardware and software components needed in the computer for developing the e-Content.
- 3. Hardware Specification:** Processor: Pentium IV, RAM capacity: 256 MB, Mother board : Intel Hard Disk drive : 120 GB.
- 4. Software Specification:** Windows XP operating system, Macromedia Flash MX software, VLC media player, Internet Explorer.

### WEBSITE SPECIFICATION

S. No	Web site specifications	Technical Aspects
1	Registration process	Online Registration
2	Version	HTML 5
3	Media Player	Windows Media Player, Quick time for Mac You Tube Player
4	Domain name	Modernmaths.com
5	IP Address	204.11.59.195
6	Home page design	HTML5/CSS3/JavaScript
7	Dashboard information	HTML-5
8	Source code	HTML5/CSS3/JavaScript
9	E-content display / Players	Customer web player using HTML5/CSS3/JavaScript
10	Website space size	~10GB

11	No. of webpages	~ 50
12	Hyperlinking type	HTML5 web hyperlinks
13	Sharing mechanism (social networking/ facebook/ twitter)	Facebook/Twitter
14	Feedback mechanism	Through feedback form on website
15	Common features of website(Static/Dynamic)	Static
16	Website	www.modernmaths.com

**3. Development:** In this study, the e-Content is developed secondary School level students for learning Mensuration in mathematics. First, the investigator selected the topic “Mensuration” in mathematics which is prescribed for Secondary school students, in consultation with the students and the teachers, the investigator selected the following units for the present investigation:

Sl.No	Topic	Specific Sub Topic
1	Cube	<i>Lateral Surface Area of the Cube , Total Surface Area of the Cube ,Volume of the Cube</i>
2	Cuboid	<i>Lateral Surface Area of the Cuboid , Total Surface Area of the Cuboid ,Volume of the Cuboid</i>
3	Prism	<i>Lateral Surface Area of the Prism ,Total Surface Area of the Prism ,Volume of The Prism</i>
4	Pyramid	<i>Lateral Surface Area of the Pyramid ,Total Surface Area of the Prism ,Volume of the Prism</i>
5	Cylinder	<i>Curved Surface Area of the Cylinder ,Total Surface Area of the Cylinder ,Volume of the Cylinder</i>
6	Cone	<i>Curved Surface Area of the Cone ,Total Surface Area of the Cone ,Volume of the Cone</i>
7	Sphere	<i>Surface Area of the Sphere ,Volume of the Sphere</i>
8	Hemisphere	<i>Curved Surface Area of the Hemisphere ,Total Surface Area of the Hemisphere ,Volume of the Hemisphere</i>
9	Combination of Solids	<i>Surface Area of the Combination of Solids ,Volume of the Combination of Solids ,Conversion of Solid From one Shape of Another</i>

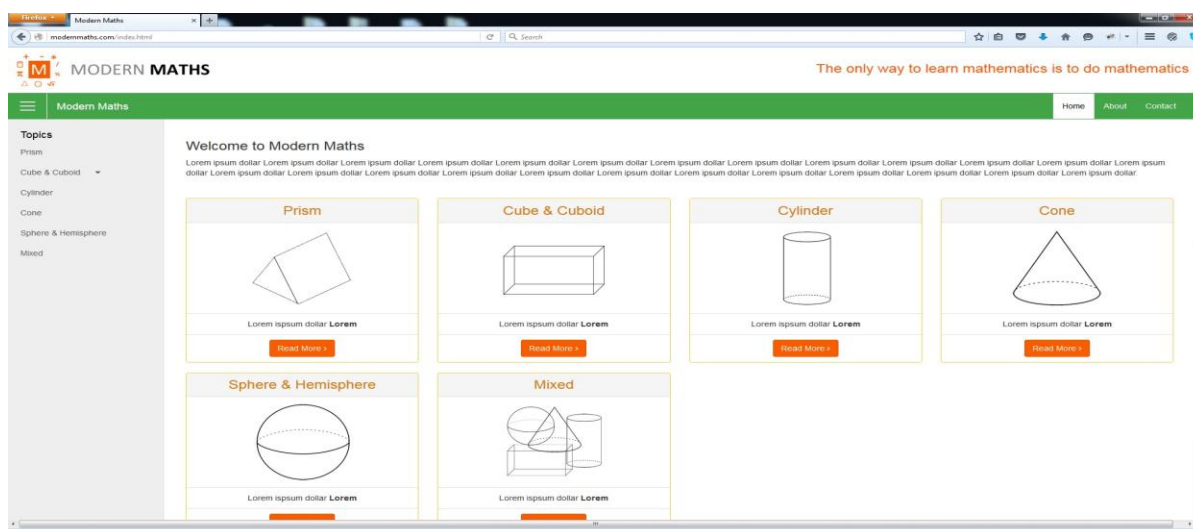
Each e-Module contains the following sections.

- Introduction
- Key Concepts/ Explanation
- Examples/ Solved problems
- Try these/ Assignment

**4.Selection of the Software:** The following major software was used to develop the e-Content: PHP - is a web designing software to frame page designing (background), HTML – hypertext mark-up language used for giving link between content, video, images and navigation, JAVA Script - used to create menu animation, Adobe Premier – used for video and audio editing, Macro Media Flash - used for menu designing, Adobe Photoshop – used for converting text into image Thus, the e-Content was developed such a way by using the above software which contains the following Menus:

**Home Page → Introduction → Key concepts → Examples → Assignment.**

**Home page:** In the Home Page a brief introduction about the e-Content was given



**5. Implementation:** In this website the unit each module is arranged in a proper way. In this there are Nine modules exist which give an explanation about mensuration with the related animated files with an explanation. Some modules may have more than one page. Based on unit content, every frame was tested whether the text, video, graph, and audio were linked correctly. Implementation is an important part in the eLearning. For this study, the e-Content is supported any internet browser.

**6. Evaluation:** It is one of the important functions in teaching and learning process. Evaluation enables to judge the effectiveness of the teaching and learning strategies. It is done through paper pencil test was conducted the achievement test/ standardized test. After evaluation, the e-Content was slightly modified suggestions of the teachers and students.

### FEATURES OF MODERN MATHS WEB SITE

For students are attracted to a flexible, self-paced method of education to attain their mathematics subject mainly mensuration. It is important to note that many of the students could feel happy learning through eLearning. Thus, these students are like and more motivated to attend in an e-learning class. Moreover, students are free to log on and learn to wish.

### DE-LIMITATIONS OF THIS WEBSITE

Modern Maths website, providing e-content is confined to Mensuration topics only. This e-content is confined to Secondary School Mathematics only. There is no immediate feedback from teachers to students through online. Preparation of this e-content website designed for education and research purpose only. This site main objective is to non-commercial in nature with effective mathematics teaching and learning only for the secondary school level. To fulfil the gap between teaching and learning of school subjects to achieve the aims and objectives of the education in effective.

### CONCLUSION

It is observed that the student's academic achievement and participation in learning had improved significantly when compared to traditional instruction. The students have shown much enthusiasm to learn through this mode and it is observed that they are preferring to selected various other topics. It is further observed that the students started using a wide variety of media from the internet, power point presentations, simulations and activities in Learning as it provided a holistic approach. This can be facilitating students to master the concept of Mensuration at their own pace, which also demands that teachers create such E-learning digital applications that can be used in their schools and to enable students to access it on a 24X7 basis.

The process is easy and used as a template to develop any e-content course material. Sharing knowledge in the way of digitalization is one of best way effective teaching and learning. The effectiveness of e-content through online/offline is understood the subject very much. The proposed e-content generation procedure is the platform to design an independent e-content and can be used across the world.

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