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An Experimental Study on Impact of Visuals in e-Learning Content of Art and Media

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Abstract
Visuals and e-Content growth become an inseparable from the human society today. Every day we engaged with conversations, most of the times e-Visuals help us to solve the issues to learn and understand better. This study explores on various types of visuals and methodology used for effective learning. The students from art, architecture and media were engaged and exposed few topics on art and design comprising the basics like elements and principles of art in conventional and e-Learning teaching method, on completion the pre-test and post-test were conducted to arrive the results and the questions were structured with static and dynamic visuals. Various statistical methods applied to prove the impact and effectiveness on visual usage in e-Learning content. This study confirms that comfort and multi task learning, clear understanding with higher retention are the impact of visuals
Keywords- visuals, art, design, effects, e-learning conten

Introduction

A picture is equivalent to thousand words which is quite often referred. The basic prerequisite to read a picture is that one should be able to associate with images and should know the reason. Visuals rapidly associates with the words and images. Drawings, illustrations, photographs, real images, graphics, animations, audio and video are the various types of visuals. Visuals first attracts, motivates the learner to concentrate on learning the content and to remember. Cognitive Theory on Learning, verbals and visuals are the two wings to develop the content information which is referred as dual - coding theory. Gestalt theory is mostly referred and followed to ensure the effectiveness of visuals. To study the impact of visuals among the students a survey was conducted with art and media colleges. e-Learning content on the basics of Art Studio and Basic Design was identified as one of the content developed under the MHRD (NME-ICT project) for this study. Visuals are divided in to two categories as static and dynamic visuals. As indicated by Kothari (2009), formulating the objective of the study, designing the methods of data collection, selecting the sample, collecting the data, processing and analysing the data, reporting the findings are followed.Questions were structured to analyse the various types of visuals and its usage, understanding level and retention capacity in supporting the content in the art and design course. The pre test and post test were conducted and various statistical tests were applied to find the impact and effectiveness of visuals.

Literature Review

The learners are able to read the visual content using the visual language or elements (Avgerinou 2007) and able to judge the accuracy of information given, author's intent, and methods used to convince and to convey the meaning (Scheibe 2004). Object or subject which has fully completed at the most, with its mastery qualities are called as good art which mostly depends on skill and visualisation of one's mind. It conveys a product which will be

created with functions or to achieve the needs of a particular is known as design (Clark & Lyons 2011). The e-content materials fully loaded with various types of visuals conveys the concepts expressively and imparting the knowledge in education. Visual helps to visualise meaning out of the content to remember (Gutierrez K 2014). According to Burmark (2015) says that the ideas and thinking process are altered into a visual form. Words are stored in seven bits of information and accessed by short term memory, whereas the visuals are permanently fixed and stored in long term memory. Felgenson & Sherwin (2007) discussed many corporate insists on graphic literacy as part of the creativity is more important than the verbal literacy in their professions. Therefore, the level of processing fluency can be directly linked to the levels of motivation, understanding and retention of the content user (Richard Mayer, 2007).

William Ryan & Theodore Conover (2004) and Amy Arntson (2002) discussed in their studies about six use full theory models are found suitable for the effective visual communication. They are Gestalt theory, Semiotic theory, Constructivism theory, Ecological Theory, Cognitive Theory and Huxley-Lester Model. Graham, L. (2008) says there are five types found to be followed in Gestalt theory such as Proximity, Similarity, Continuation, Closure, Positive and Negative space.

Lewalter (2003) and Lohse et al (1994), studies discussed about static visuals and dynamic visuals. The outcome by Haig Kouyoumdjian (2012), the effectively created visuals reduces the learning time, increase intellectual capacity; improve knowledge with greater recall capacity. The visuals shown in the books or screen help the learner to precisely understand the content communicated through the visuals. Mayer & Clark (2002) states that "less is more" concept works well to communicate like; a simple line drawing of a picture with a single colour itself will give more information about a content.

Methodology

This study uses the experimental survey method comprising of Pre-test, Post-test. Mainly the visuals used in the content with reference to syllabus, structure and how interesting it is presented, and the communication of visuals which carry the meaning of content were focused. The questionnaire was prepared to suit both the pre-test and post-test. The survey was conducted with 475 students from the 8 collegiate students of first and second year from Fine Arts and Master of Science (Electronic Media). On scrutinising 415 samples become eligible. Five point scale is assigned to find the reliability of the questions. The collected data of pre-test and post-test were segregated and coded through SPSS-17 to find the results.

Data Analysis

Pre-test and Post-test evaluation is an assessment that is strongly recommended. It is administered at the beginning, in between and at the end of a course. Twenty multiple choice questions was prepared to suit both pre-test and post-test. The content validity and the construct validity, was ensured through expert opinion. The reliability of the pre-test and post-test questionnaires was tested using Cronbach's alpha and was found to be 0.649 for the pre-test and 0.668 for the post-test and hence they are reliable.

Pre-Test on various types of visuals in e-Learning Content

Analysis on various types of visuals in e-Learning content design before showing e-Content to the respondents is presented. Around 39.04% of the respondents selected correct answer about the dynamic line and 60.96% selected wrong answer. To identify the radial line, 40.72% answered correct and 52.58% answered wrong. About harmonious and contrast line, 48.67 % and 43.13% selected the right answer and 51.33% and 56.87% selected wrong answer respectively. To identify the Value with reference to drawing and colour mixed with black, 44.58% and 38.31% answered the right answer and 55,42% and 61.69% answered wrong for the respective questions. Around 41.20% and 44.10% of the respondents selected correct answer about the Shadow and colour mixed with white and 58.80% and 55.90% selected wrong answer for the respective questions.

Around 49.88% and 46.51% of the respondent's selected right answer about the Hue, Value and Chroma of colour and to identify the contrast colour and 50.12% and 53.49% selected wrong answer respectively. To identify the Colours that are equally placed on the colour wheel and about the colour combination 23.13% and 69.88% selected correct answer and 76.87% and 30.12% selected wrong answer respectively. Around 53.98% and 35.18% of the respondents answered correct about the colour scheme do you like and appearance of the warm colour whereas 46.02% and 64.82% selected wrong answer for the questions respectively.

To identify the Subtract theory and Pleasing arrangements of colours, 61.45% and 58.31% answered the right answer and 38.55% and 41.69% answered wrong for the respective questions. About rendering colour, demonstration and characteristic of water colour 30.60%, 70.60% and 55.90% of the respondents answered correct whereas 69.40%, 29.40% and 44.10% selected wrong answer for the questions respectively.

It was observed that the responses of the respondents for the items 12, 13, 14 and 18 in the pre-test questionnaire accrued to the scores as higher score for right answers and relatively lesser score for wrong answers. This may be because, the content was taught with conventional method of teaching, some of the respondents might not have clearly understood the content and some would have answered these items with a guess.

Post-Test on various types of visuals in e-Learning Content

Descriptive Analysis on various types of visuals in e-Learning content after showing e-Content visuals to the respondents is explained bellow. Around 70.36 % of the respondents selected correct answer about the dynamic line and 29.64 % selected wrong answer. To identify the radial line, 68.43 % answered correct and 31.57 % answered wrong. About harmonious and contrast line, 57.35 % and 54.22 % selected the right answer and 42.65 % and 45.78 % selected wrong answer respectively. To identify the Value with reference to drawing and colour mixed with black, 79.28 % and 82.65 % answered the right answer and 20.72 % and 17.35 % answered wrong for the respective questions.

Around 66.75 % and 71.57 % of the respondents selected correct answer about the Shadow and colour mixed with white and 33.25 % and 28.43 % selected wrong answer for the respective questions. Around 74.22 % and 59.52 % of the respondent's selected right answer about the Hue, Value and Chroma of colour and to identify the contrast colour and 25.78 % and 40.48 % selected wrong answer respectively. To identify the Colours that are equally placed on the colour wheel and about the colour combination 46.99 % 81.93 % selected correct answer and 53.01 % and 18.07 % selected wrong answer respectively. Around 59.52 % and 71.33 % of the respondents answered correct about the colour scheme do you like and appearance of the warm colour whereas 40.48 % and 28.67 % selected wrong answer for the questions respectively.

To identify the Subtract theory and Pleasing arrangements of colours, 58.07 % and 61.45 % answered the right answer and 41.93 % and 38.55 % answered wrong for the respective questions. About rendering colour, demonstration and characteristic of water colour 68.43 %, 76.63 % and 83.86 % of the respondents answered correct whereas 31.57 %, 23.37 % and 16.14 % selected wrong answer for the questions respectively. It was observed that the response of the respondents for the item 11 in the post-test questionnaire accrued to the score as higher score for wrong answers and relatively lesser score for right answers. This may be because, the concept related to the content appears in the topics and related topics in many places. Hence, the respondents might have assumed one in place of the other, or there is a necessity to improve or strengthen the visual contents in that topic with much more clarity.

Paired t-test for significant difference between Pre-Test and Post-Test with respect to Impact of various Types of Visuals in e-Learning Content among Students

Table -1

Impact of Visuals	Mean	SD	t -test	P-test
Pre-test	9.78	3.978	21.140	<0.001**
Post-test	14.04	4.136		

Note : ** denotes significant at 1% level

The mean, standard deviation, t-value and P-value are calculated with the Pre-test and Post-test scores are presented. With the P value less than 0.01, null hypothesis is rejected at 1% level with regard to Impact of various Types of Visuals in e-Learning Content among Students of pre-test and post-test. Hence, there is significant difference between pre-test and post-test with regard to Impact of various Types of Visuals in e-Learning Content among Students. The mean score for Post-test (14.04) is higher than Pre-test mean score (9.78) as furnished in Table- 1. The post-test results based on the e-Learning method influenced the learners at higher percentage with right answers than the pre-test results based on the conventional learning.

Conclusion

That the principles of design were employed all over the content as per the cognitive theory of multimedia learning, is considered and followed by the principles of Gestalt theory (William Ryan & Theodore Conover, 2004) and (Amy Arntson, 2002). This method is more useful for the learners to focus on studies, gathering wider information about the subject content, retention of the content in the long-term memory, and to increase in concentration. The post-test conformed that the various type of visuals in e-Learning method provides more information and useful to the learners in terms of understanding of subject, higher retention of memory, scoring higher percentage in the subjects with valid points at a greater level.

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