

Improve the attitude and perception abilities through Multimedia in Biology

Dr. K. Nachimuthu
Asst Professor, Dept. of Education,
Periyar University, Salem, Tamil Nadu
www.drknmuthu.com, dr_knmuthu@yahoo.com

Abstract: Multimedia means, combination of text, audio, still images, animation, video and interactivity content forms delivered electronically. Multimedia may be broadly divided into linear and non-linear categories. In multimedia development aspects consists of six phases viz., analysis, design, development, testing, implementation and evaluation. The objectives of the study are as follows; (i) to prepare a plan for multimedia package on biology; (ii) to develop a multimedia package on biology; (iii) to find out the attitude and perception abilities through the prepared multimedia package on biology. Experimental method was adopted with the convenience sampling size of two B.Ed (Bachelor of Education) College Students in Rasipuram Taluk of Namakkal district of Tamil Nadu state of India. Fifty students from this one year regular course, from each B.Ed college will be taken as the sample of the study (n= 100). Out of fifty students from each college, twenty five will be exposed to traditional teaching while another twenty five students will be exposed to multimedia package based teaching strategies. For this research, a multimedia programme for “Genetics”, a biology content were prepared in Flash software file in December 2011 and it was found out the content validity by biology professors of Periyar University, Salem in Tamil Nadu State of India and the Multimedia attitude and perception questionnaire was also prepared by the investigator and that was found out with face validity and reliability (0.81). There are three volumes of Multimedia contents was stored in a single file related to “Genetics” with text, audio, video, references and MCQ formats. This research found out the attitude and their perception towards multimedia learning.

Keywords: Attitude, Perception, Multimedia, Student Teacher

I. Introduction

The Internet and other technologies honours multiple forms of intelligence; be they abstract, textual, visual, musical, social and therein present tremendous opportunities to design new learning environments that enhance the natural ways that humans learn. Today’s generation of students communicates in a language that many academics don’t yet understand. It’s an ever-evolving language of interpretation and expression, an interactive approach to learning, creating, and responding to information through a complex of images, sound, and communication. So students can take advantage of the enormous resources of the Web, transforming what they find there by using digital technologies to create something new and expressive.

II. Digital Literacy

Many learners will move into a variety of different, possibly unrelated fields over the course of their lifetime. Learning and work related activities are no longer separate. In many situations, they are the same. Technology is rewiring our brains. The tools we use define and shape our thinking. In the context of language education this translates into a focus on interaction and meaning [5] and acknowledgement that the online context requires the consideration of the mediating effects of digital and multi modal tools [2, 4].

A change in the basic vehicle used for learning today, from variety of courses, lectures, and textbooks to various interactive, electronically portable media could be a mode for enhancing our education system. Web-based modules are used as animations, voice and video clips, captions, and text, all

combined in accurate, well organized, pedagogically solid productions. There was a competition for a highly produced new media version covering the same conventional class teaching material. Even though, more courses could also be converted, although some level of face-to-face contact is certainly necessary to master such material [8].

III. Objectives & Hypothesis of the study

The objectives of the study are as follows; (i) to prepare a plan for multimedia package on biology; (ii) to develop a multimedia package on biology; (iii) to find out the attitude and perception abilities through the prepared multimedia package on biology. The hypothesis of the study are; (i) There is no significant difference between the male and female secondary student teachers (B.Ed) in relation to their attitude towards the multimedia on biology; (ii) There is no significant difference between the rural and urban secondary student teachers (B.Ed) in relation to their attitude towards the multimedia on biology; (iii) There is no significant difference between the male and female secondary student teachers (B.Ed) in relation to their perception towards the multimedia on biology.

IV. Phases of Multimedia development

Multimedia is media and content that uses a combination of different media content forms. Multimedia means, combination of text, audio, still images, animation, video and interactivity content forms delivered electronically. Multimedia may be broadly divided into linear and non-linear categories. Linear active content progresses without any navigational control for the viewer such as a Cinema Presentation. Non-linear content offers user interactivity to control progress as used with a video game used in self-paced computer based training.

Multimedia typically refers to the presentation of material in two forms: auditory/verbal and visual/pictorial [3]. The strategies have included Video [7], Educational games [6], and computer-assisted video learning [9] in a variety of content areas, in addition to auditory and video media. In multimedia development aspects consists of six phases viz., analysis, design, development, testing, implementation and evaluation. Some educationists utilized the same phases can be used to prepare e-content materials.

The Analysis Phase: It is the most important as it identifies area's in our current situation. This phase accountability considered by the views of subject experts, target audiences, objectives and its goals. In this phase, we must know the audience, and their skill, budget of the multimedia, delivery methods and its constraints with due dates.

The Design Phase: It involves the complete design of the learning solution. It helps to plan of a multimedia preparation. In this phase, we must know the planning, use of relevant software; required skills; creative and innovative interactions of subject contents like texts, pictures, videos and suitable animations.

The Development Phase: It concerns the actual production of the multimedia design. It helps to create the multimedia by mixing of texts, audio, video, animations, references, blogs, links, and MCQs (multiple choice questions) with some programming specifications like home, exit, next etc.

The Testing phase: It helps to administer the multimedia in the actual educational field. In this phase, we must test the spelling mistakes, content errors, clarity of pictures, relevant videos, appropriate audios, timing of animations, and hyperlinks.

The Implementation Phase: It helps to administer the multimedia to the target audience. This phase explains how to install and how to use it and their difficulties experienced while using multimedia. It checks the product accuracy and quality maintenance.

The Evaluation Phase: It helps to satisfy the multimedia and its effectiveness. This phase considers feedback from both learners and instructors. After the feed back reactions, the multimedia is designed again as post-production for effective delivery of multimedia.

This article looks at how multimedia based biology subject in the form of Compact Discs (CD) had contributed significantly in the remarkable enhancement of subject development, development of diagrammatic attitude and improve the perception skills on the colouring concept of the biology students. Further, this article shows empirical evidence the differential achievement rate when compared to the students who have not used multimedia package in the learning process. Multimedia packages are not only potential for engaging and enriching the knowledge to the users, but also in promoting learning. Lamy, M.N [4] has noted how our outlook of learning has been changed from being able to recall information to being able to find and use information.

V. Sample for the Study

Experimental method was adopted with the convenience sampling size of 2 B.Ed (Bachelor of Education) College Students in Rasipuram Taluk of Namakkal district of Tamil Nadu state of India. Fifty students from this one year regular course, from each B.Ed college will be taken as the sample of the study (n= 100). Out of fifty students from each college, twenty five will be exposed to traditional teaching while another twenty five students will be exposed to multimedia package based teaching strategies. Both the groups will be exposed to the identified teaching methodology for one month duration.

VI. Methodology for the Study

For this research, a multimedia programme for “Genetics”, a biology content were prepared in Flash software file in December 2011 and it was found out the content validity by biology professors of Periyar University, Salem in Tamil Nadu State of India and the Multimedia attitude and perception questionnaire with 50 items was also prepared by the investigator and that was found out with face validity and reliability (0.79). There are three volumes of Multimedia contents was stored in a single file related to “Genetics” with text, audio, video, references and MCQ formats. Both the groups will be exposed to the identified teaching methodology for one month duration. The teachers will be trained in such a way that they can appropriately teach the experimental classes according to the objectives of the present research. The study will look at how multimedia package in the form of subjectivity is incorporated in teaching and learning of Biology.

The prepared package was accessed and learned through CD. The collected data was analyzed and interpreted with mean, standard deviation and 't' test. From the test marks, the control group got only 40 % of marks in MCQ tests, where as the experimental group students got 85% in their MCQ tests. Hence, the investigator had taken the experimental group in statistical analysis for wastage of calculations. This statement also recommended by lot of researcher's view of experimental method was better than the control group through Computer based learning, Computer assisted instructions, and Video assisted instructions.

VII. Data analysis

The differences in the students' performance between the two groups will be observed in the use of diagrams and depth knowledge through multiple choice tests (pre and post). The result will be given by way of comparing the performance of both male and female and rural and urban students in experimental group. The table -1, explains the multimedia attitude between the B.Ed student teachers according to their gender wise. The acquired 't' value (7.38) is greater than sample 't' value (2.76 at df of 24). The acquired 't' value is significant. Hence the multimedia attitude between male and female B.Ed student teachers (trainees) are significantly differ each other. So, the null hypothesis is accepted.

Table-1. Multimedia attitude B.Ed Trainees in experimental group (Gender wise)

Variable	Strength	Mean	S.D	't' value
Male	25	13.21	1.84	7.38**
Female	25	18.57	2.68	

(** - Significant at 0.05 level)

This result depends on the gender character and their opinion of multi media awareness. The table -2, explains the multimedia attitude between the B.Ed student teachers (trainees) according to their gender wise.

Table-2. Multimedia attitude B.Ed Trainees in experimental group (Area wise)

Variable	Strength	Mean	S.D	't' value
Rural	25	14.78	1.67	6.56**
Urban	25	18.57	2.36	

(** - Significant at 0.05 level)

The acquired 't' value (6.56) is greater than sample 't' value which is significant. Hence the multimedia attitude scoring between rural and urban B.Ed student teachers are significantly differ each other. So, the null hypothesis is accepted. Like wise, the perception of the biology diagrams, the male students got 70% of mean scores and the female students got 92% of the perceptions ability. This was identified by the diagram test along with the MCQ test. The male percentages were lesser than the female students mean score percentages. This will indicate that, from the sample, in the experimental group male students are lesser colour perception attitude of diagrammatic skill than the experimental girls.

VIII. Conclusion

The conclusions of the study are as follows; i) The use of multimedia programme impacts positively on the B.Ed student teachers; (ii) It develop attitude of B.Ed student teachers for practice their teaching lessons in teaching practice periods and ever; (iii) It improves perceptions on Colour concept of the diagrammatic skills of B.Ed student teacher's knowledge; (iv) It able the B.Ed student teacher trainees to plan and implement practice lessons more efficiently and more effectively; (v) It paves the attention towards the ICT and (vi) It develops the ability of interest attitude and creativity in the mind of student teachers. (vii) There is a significant difference between the male and female secondary student teachers (B.Ed) in relation to their attitude towards the multimedia on biology; (viii) There is a significant difference between the rural and urban secondary student teachers (B.Ed) in relation to their attitude towards the multimedia on biology; and (ix) There is a significant difference between the male and female secondary student teachers (B.Ed) in relation to their perception towards the multimedia on biology). Some of the experts like Sherin M.G. [7] and Borko & Pittman, M. E. [1] also support this view in relation to video utilization in teacher education.

My suggestions for this research study is; (a) The teacher education institution should develop good Multi media resources; (b) The B,Ed and M.Ed trainees should be provided with Multi media based training; (c) Multimedia programmes should be mandatory in teacher education programmes; (d) For creating awareness about Multimedia more research is necessary in education and (e) Relevant technological devices will improve the psychological aspects of teaching learning process in between the students and teachers.

References

1. Borko & Pittman, M.E.(2008). Video as a tool for fostering productive discussions in mathematics professional development, *Teaching and Teacher Education*, Vol. 24., No.02., pp. 417-436.
2. Hampel, R. and Hauck, M.(2006).Computer-mediated language learning: Making meaning in multimodal virtual learning spaces, *The JALT CALL Journal*, Vol. 02, No.02 , pp. 3-18.
3. Higgins, J. A., & Dermer, S.(2001). The use of film in marriage and family counselor education, *Counselor Education and Supervision*, Vol. 40., No.03., pp. 182-192.
4. Lamy, M.N. and Hampel, R.(2007). *Online communication for language learning and teaching*, Pal grave , Hound mills, UK, pp. 22-26.
5. Murphy,L.(2005). Attending to form and meaning: The experience of adult distance learners of French, German and Spanish, *Language Teaching Research*, Vol.9, No.3., pp. 295-317.

6. Nachimuthu,K.(2010). Usability of E-Learning Resources in Teacher Education of India, International Journal of the Computer: The Internet Management, Bangkok, Thailand, Vol. 18. No. Spl., Dec, 2010. pp. 41(1) – 41(6)
7. Sherin, M.G. (2003). New perspectives on the role of Video in Teacher Education, Advances in Research on Teaching, Vol. 10., pp.01–27.
8. Vijayakumari,G & Nachimuthu, K.(2009).Virtual Reality Enhanced Instructional Learning, Journal of Educational Technology, I-manager,Vol.06. No.02, April-June 2009, pp 08-11.
9. Vijayakumari,G & Nachimuthu,K.(2010).Awareness and Achievement of Multimedia in Teacher Education, International Journal of Asian Studies, Pakistan, Vol.02, Issue.05., pp.694-696.