Designing, Validation and Evaluation of Self Instructional e-Module on Photography for Online Learning

Monica Singh[1], Varinder Randhawa[2] and A.P. Singh[3]

1. Res. Asso., NAIP, School of Agriculture, Indira Gandhi National Open University , New Delhi ,
2. Prof. & Head, 3. Sr. Editor, Department of H. Sc. Ext. Edu., Punjab Agricultural University , Ludhiana
Corresponding author email: monysingh@rediffmail.com

ABSTRACT

In the era of information technology real photographs play a crucial role in communication. Photograph is called a 'Universal Language'. It has been widely used in past, is being used today and will be used in future for conveying message, instruction and information. In a country like ours with every state having different language and dialect changing every where, masses especially extension workers face problems in communicating with people especially rural people where national language and technical language is of no help. However, photographs can help to communicate with them with ease and gain proper understanding, thus proving the saying 'A photograph speaks a thousand words'. Taking all this into consideration it was decided to design e-module on photography. To make the structural outline for multimedia application, the script was developed. The script was checked and validated by content experts. This script was developed by using modular approach. After finalizing script storyboarding was done. The actual multimedia elements i.e. text graphics, videos were developed separately using suitable software's. After development of multimedia element screen development work of designing was undertaken. Integrations of all these multimedia elements were done in HTML format using Front Page as authoring tool. Testing of e-module appropriateness was done by 20 judges five each from Extension Education, Home Science, Communication and Information Technology discipline. The e-module thus prepared, can be used by anyone who is interested in gaining cognition and improving his/her skill regarding photography. Considering the shift in extension education curriculum teachers can use it as teaching resource and to prepare e-learning resources and instructional media. Also, it can be used by extension personnel to convey a point or message to vast illiterate rural population of our country.

Key Words: *Multimedia; e-module; Photography; Online learning;*

The advent of computers and communication technology has brought about revolution in the pedagogical nature of instruction. Computers are not only being used for teaching but also for learning. Besides, these can record, store, analyze and communicate words and figures with equal dexterity. Thus, its use in education is all pervasive today because of its compatibility with other media options. The great potential of this wonder medium for absorbing text, sounds, still pictures and meaningful images has further catapulted its importance so much that the instructions now a day are prepared using multimedia applications. The term Multimedia is defined as 'an exciting combination of computer hardware and software that allows you to integrate video, animation, audio, graphics, and test resources to develop effective presentations on an affordable desktop computer'. Graphics/ photograph plays an important role in preparing multimedia application. In today's age of information technology real photographs play an important role in communication. Photograph is called a 'Universal Language'. It has been widely used in past, is being used today and will be used in future for conveying message, instruction and information, where otherwise any particular language may be inappropriate. In a country like ours with every state having different language and dialect changing every where, masses especially extension workers face problems in communicating with people especially rural people where national language and technical language is of no help. However, photographs can help to communicate with them with ease and gain proper understanding, thus

proving the saying 'A photograph speaks a thousand words'. Taking all this into consideration it was decided to design self instructional e-module on 'photography with following objectives:

1. To design the content with modular approach on photography.
2. To develop the relevant multimedia elements viz., text, pictures, graphic, animation, video, audio, etc for developing the multimedia application.
3. To integrate the media elements to compute prototype applications using various multimedia authoring system.
4. To evaluate the pre-delivery appropriateness of self instructional e-module for online learning.

METHODOLOGY

The present study was carried out in Department of Extension Education and Home Science Extension Education, PAU, Ludhiana during the period from 2006-2009. The research methodology was carried into three phases i.e. Design phase, Development phase and Validation phase *(Randhawa, 2006)* as discussed below :

Design Phase: In this phase the input information needed to carry out all other phases was scrutinized and planned in four parts. The first part was selection of users. In this part the user could be anybody who has sufficient knowledge of computer, keen subject interest and more especially extension professionals and teachers. The second part was selection of media. The relevance and practically of e-learning in contemporary educational environment was the decision factor in selecting it as media of choice. Then was the selection of media options. Under this part out of several media options available for extension personnel, photography was chosen because of its utility and relevance in modern Teaching-Learning environment. It also has significant importance in training also. Lastly modular approach was selected as format because it leads to coherent learning as supported by ample empirical evidence.

Development Phase

a. Script writing : It contained master outline of contains. An exhaustive literature search was done on photography. All available sources were consulted such as research articles, booklets, websites, newspaper articles, journals, books, etc for developing contents on photography. The scripts for the present work was developed using composite structure to enable the users to use their discretion in following the path through the material and developing their own pace and convenience to learn it.*(Ruchi, 2005).*

b. Story boarding: Based on the script a detailed plan indicating the use of different media elements i.e. graphics, charts, video clips, audio clips animations etc was created carrying specifications about their use on each screen to maximize impact of message on the user of the application *(Sanvedana, 2005).*

c. Screen development : Based on storyboard, all the resources needed for multimedia authoring were developed and integrated with the help of various software tools. Microsoft Word was used for typing and editing of text. The graphics were produced by clicking actual photographs, scanning photographs, importing from clip art or directly from web. Editing of the photographs was done with the help of Adobe Photoshop and Corel Draw. Video was recorded to explain technical aspects such as aperture and shutter speed of camera. Also to explain more about shutter speed and aperture a video in for of quiz was also used. The videos were shot using camcorder. Pinnacle studio was used for digitizing Thus using different software's all the files were finalized and final interface in the form of a prototype application was developed with the help of Front Page as authoring software. Light blue colour was used for the background of the screen. Background design consists of header which was prepared using 20 graphic images. Some water marks of photographs were also used as background. Hotwords were used to provide navigation between contents of the module. These hotwords were given maroon colour and were underlined to differentiate it from the rest of the text.

Validation Phase : Validation means inspection and approval of the material by the content experts to judge technical quality and correctness of the contents. It was carried out at different levels from content development through screen designing. Rubrics were prepared for judging pre-delivery appropriateness of the modules *(Chong et.al, 2005)*. The response pattern comprised of disagree, neutral and agree categories. The responses were elicited from a group of 20 subject matter expert

i.e. 5 each from Extension Education, Home Science Extension Education, Agricultural Journalism and School of Information Technology. The data were analyzed with the help of frequencies, percentage and mean scores. Criterion referenced mastery test was developed for each module to assess cognitive learning outcomes of learners through self assessment. For this test items were developed based on each module which included objective type questions. A separate score card and score key were developed to enable learners to appraise their own performances.

RESULTS AND DISCUSSION

Content of e-module on Photography : The appropriateness of the contents of e-module on the photography was judged on the basis of seven parameters are presented in Table 1. All experts (100%) agreed that the contents of the module are comprehensive, easily understood, related to photography, systematic presentation of the contents was done and language used for preparing module is good. Ninety five percent experts agreed that the examples given were easily understood and contents

being free from spelling errors are reported by 75 per cent of experts. As far as mean scores were concerned, highest mean score (3.00) was given to contents which were comprehensive, easily understood, systematic presentation of contents and related to photography with good use of language. Lowest mean score (2.70) was for contents that were free from spelling errors. The total mean score for contents of e-module on photography was 2.94. *Chong et.al* (2005) reported similar findings while developing and evaluating an e-module for pneumatics technology.

Presentation of e-module on Photography : Presentation of e-module was analyzed on the basis of nine parameters given in Table 2. It was observed that cent percent of the experts agreed for introduction presented about the topic was good, there was systematic presentation of topic and module was user friendly. Ninety five percent of the experts said that the module was suited for interactive learning style and the module was interesting. Higher percent (90%) of experts expressed that the learning objectives were clearly written and they were able to move forward and backward of contents. Lastly, 85 per cent of experts

Table 1. Content of self instructional e-module on photography for online learning

S.No	Items	Response (%)			Mean Score
		Disagree	Neutral	Agree	(out of 3)
1	Contents are comprehensive.	0.00	0.00	100.00	3.00
2	Contents are easily understood.	0.00	0.00	100.00	3.00
3	Content are related to photography.	0.00	0.00	100.00	3.00
4	Systematic presentation of the contents.	0.00	0.00	100.00	3.00
5	Easily understood examples given.	0.00	5.00	95.00	2.95
6	Contents are free of spelling errors.	5.00	20.00	75.00	2.70
7.	Good language usage in content presentation.	0.00	0.00	100.00	3.00
	Average mean score is 2.94				

Table 2. Presentation of self instructional e-module on photography for online learning

S.No	Items	Response (%)			Mean Score
		Disagree	Neutral	Agree	(out of 3)
1	Learning objectives are clearly written.	0.00	10.00	90.00	2.90
2	Good introduction to topic.	0.00	0.00	100.00	3.00
3	Able to move forward and backward of contents.	0.00	10.00	90.00	2.90
4	Able to move out of the content.	0.00	15.00	85.00	2.80
5	Systematic presentation of ideas.	0.00	0.00	100.00	3.00
6	Content presentation suits interactive learning style.	0.00	5.00	95.00	2.95
7.	The module is interesting.	0.00	5.00	90.00	2.95
8.	The module helps you to do reflection.	0.00	15.00	85.00	2.80
9	Module is user friendly.	0.00	0.00	100.00	3.00
	Average mean score 2.92				

felt that they were able to move out of the content and the module helped in reflecting upon ideas. Further, it was seen that highest score and lowest score was 3 and 2.8, respectively. The total mean score for the presentation of e-module was 2.92. These results are consistent with results of *Chong et.al, (2005).*

Multimedia Presentation and Interactivity of e-module on Photography : To make the modules interactive and interesting, multimedia elements were used such as graphics and video. It was necessary to check appropriateness of these elements to ensure effectiveness of the prepared module. In this parameter, the design, layout, text, graphics, video and interactivity elements of the module were checked. Table 3 shows that all experts (100%) opined that the module design was aesthetically appealing and font type and size are readable. Majority of the experts (95%) agreed that the content on each page was well organized and placed, font colour was in contrast with background, graphic used were informative and there is proper balance between graphics and text.

It was also reported by maximum percentage of experts (90%) that interface was well designed with easy to read text, supported by graphics, video was relevant to text and interactivity exists between the e-module and the learner. Further, it was found that 85 per cent percent experts were of the opinion that video was easily accessible without any technical difficulty, the font type and size was easy to read, and eye is immediately drawn to the most important informational or functional area of the page. Lastly, seventy five percent of expert found that the amount of the contents on each page was readily digestible.

It was seen that highest mean score (3.00) was given to the parameter referring design is aesthetically appealing and lowest mean score of 2.75 was given to the parameter stating the content on each page was readily digested. The total mean score was 2.89 for multimedia presentation and interactivity of e-module on photography.

Module Applicability on Photography : Table 4 indicates, the majority of expert also agreed for the applicability of the module on photography. All experts were reported that the module was helpful regarding understanding of photography and improving skill regarding photography. Further the experts 95 per cent felt that module can also be used by lecturers as a teaching aid while delivering classroom based instructions/lectures and distributed among students and treated as learning aids. Further 90 per cent experts were of the opinion that the module can be of help as resource material in workshops and training programmes.

Table 3. Multimedia presentation and interactivity of e-module on photography

S. No.	Items			Response (%)			Mean Score
				Disagree	Neutral	Agree	(out of 3)
1	*Design* :	i.	Interface is well designed.	0.00	10.00	90.00	2.90
		ii.	The design is aesthetically appealing	0.00	0.00	100.00	3.00
		iii.	The amount of the contents on each page is readily digestible.	0.00	25.00	75.00	2.75
2	*Layout*	i.	The content on each page is well organized and placed.	0.00	5.00	95.00	2.95
		ii.	Your eye is immediately drawn to the most important informational or functional area of the page.	0.00	20.00	80.00	2.80
3	*Text*	i.	Text is easy to read.	0.00	10.00	90.00	2.90
		ii.	Font type and size is readable.	0.00	0.00	100.00	2.80
		iii.	Font colour is in contrast with background colour.	0.00	5.00	95.00	2.95
4	*Graphics*	i.	There is proper balance between graphics and text.	0.00	5.00	95.00	2.95
		ii.	Graphics support text.	0.00	10.00	90.00	2.90
		iii.	Graphic used are informative.	0.00	5.00	95.00	2.95
5	*Video*	i.	The video is relevant to text.	0.00	10.00	90.00	2.90
		ii.	Video is easily accessible without a lot of technical difficulty.	0.00	15.00	85.00	2.80
6	*Inter-activity*	i.	Interactivity exists between the e-module and the learner. Average mean score 2.89	0.00	10.00	90.00	2.90

Table 4. Applicability of self instructional e-module on photography

S. No.	Items	Response (%)			Mean Score (out of 3)
		Disagree	Neutral	Agree	
1	This module helps in your understanding of photography	0.00	0.00	100.00	3.0
2	This module is helpful in improving skill regarding photography	0.00	0.00	100.00	3.0
3	This module can be used by lecturers as a teaching aid while delivering classroom based instructions /lectures.	0.00	0.00	100.00	3.0
4	The module can also be used as resource material in workshops and training programmes.	0.00	10.00	90.00	2.90
5	The module can also be distributed among students and treated as learning aids.	0.00	5.00	95.00	2.95
	Average mean score 2.97				

Table 5. Measures of overall appropriateness of e-module on photography

S. No.	Parameters	Mean Score (out of 3)
1	Content of e-module	2.94
2	Presentation of e-module	2.92
3	Multimedia presentation and interactivity of e-module.	2.89
4	Module applicability	2.97
	Overall mean score	2.93

Overall Appropriateness of e-module on photography :
Table 5 shows overall appropriateness of developed e-module on photography in terms of mean scores. It observed that modular applicability has the highest mean score (2.97) followed by content of e-module (2.94), presentation of e-module (2.92) and multimedia presentation and interactivity (2.89). From the overall mean core for appropriateness of e-module on photography it can be inferred that the designed e-module possessed all attributes of excellent resource material. The module can be up-loaded on PAU website. It can also be multiplied and used for classroom learning through CD-ROM. *Ruchi (2005)* also reported same advantage of e-learning resources or multimedia application in class room teaching.

CONCLUSION

The finding of the study concludes that the developed e-module can be used as electronic educational resource material. The Teachers, Trainers, Researcher and Extension personnel can use this module as a guide for taking photos, using cameras and improving their skill regarding photography. This way they will increase their skill in the use of camera and field of photography. It will lead to effective presentation of lectures and supply of written material. If linked on World Wide Web, it will provide good interactive learning environment. Also in CD-ROM format, it will work and provide same opportunity. Its efficiency will not decrease only due to its availability on CD-ROM. Though, its spread will be restricted because one has to have a CD of the module to view the content. This e-module is an enhancement rather than a replacement of traditional instruction material and methods. It will allow self-paced, independent learning and change the role of instructor from 'Guide by the Side' to 'Guide behind the Screen'. In the era of Information Technology, it seems that the future belongs to computer based interactive multimedia modules.

REFERENCES

1. Chong, J. L. S. Yunos, J. M. and Spahat, G. (2005). The development and evaluation of an e-module for Pneumatics Technology. *Malaysian J. Instructional Technology.* **2**(3) : 25-33.

2. Randhawa, V. (2006). Development of Extension Training Guide on Interactive Instructional CDRs. Project Report, Punjab Agricultural University, Ludhiana, India.

3. Ruchi, V. (2005). Designing of a multimedia application (CD-ROM) on selected agro-based enterprises. Unpublished M.Sc. Thesis (*Unpublished*), Punjab Agricultural University, Ludhiana, India.

4. Sanvedana, K. (2005). Designing of CD-ROM on women entrepreneurship. M.Sc. Thesis (*Unpublished*), Punjab Agricultural University, Ludhiana, India.