

Developing an e-learning module

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ABSTRACT

The knowledge-based society demands learning to be holistic and cutting across generations and life spheres to become a lifelong activity. Therefore along with traditional learning a special emphasis must be given on information and communication technology (ICT)-based forms of learning. E-learning has been proven effective with lesser delivery cost which is an important concern in countries like India. Reaching the wider geographically-dispersed target audience with paucity of time and other resources has to be the focus of future extension machinery. A combination of both instructor-led and self-paced e-learning approaches can be harnessed for effective delivery of the content. An attempt was made to develop an e-learning module for the farmers in which a frequent learner interaction was built to sustain attention and engage farmers while providing a motivating learning experience. The module was designed in such a way that it could be used both as a self-paced and instructor-led course. Being a fine tool for the trainers it was reported not just to answer the existing queries but also encourage inquiry and critical thinking.

Keywords: E-learning; farmer; agriculture; interactivity; communication

INTRODUCTION

Learning, particularly in agriculture needs to become a lifelong activity cutting across life spheres and generations for effective application of possessed knowledge and skills. Institutions like universities, training organizations etc are increasingly making use of information and communication technologies (ICTs) along with traditional teaching methods to impart learning to the farmers. Although developing e-learning material could be a little expensive compared to classroom materials but the delivery cost is considerably lower than that of classroom facilities, instructor time, participants' travel and job time lost to attend classroom sessions (Anon 2011). Moreover e-learning can reach geographically dispersed audience with limited resources without demanding time out of work and family commitments. It can penetrate through barriers of cultural and religious beliefs and reach out to shy learners.

Studies suggest that e-learning can result in better learning experience compared to other forms of learning (Khalil 2013, Park et al 2014) considering which the present investigation was formulated to design and validate an e-learning module on introduction to world trade organization (WTO) and its agriculture related aspects.

METHODOLOGY

The present study was formulated in a scientific, systematic and planned way to find answers to the research questions (Kerlinger 1964). Since international agricultural trade in general and world trade organization (WTO) and its agriculture-related issues in particular are increasingly impacting production systems, agricultural policies and in toto farmers' income. An e-learning module was designed on world trade organization (WTO) and agriculture entitled 'Jagtik Vyapar Sangathna: Ek Parichay'.

A standard procedure was established for designing the e-learning module which involved determining training needs of the farmers with respect to WTO and issues of agriculture. Training need was

Training need percentage= $(1 - \text{Awareness mean score}) \times 100$

where Awareness mean score= $\text{Obtained score} / \text{Maximum possible score}$

The identified training needs of farmers with respect to WTO and its agriculture-related issues were employed to define the universe of content to be covered in the module. Secondary sources of information were used to collect the relevant information about the topic. Basic principles of content structuring viz chunking, relevance, labeling, modularity, sequencing and hierarchy and principles of composition viz balance, unity, repetition, variety, rhythm, emphasis and contrast were followed while designing the e-learning module. Storyboarding was done to define the strategy for presenting the information effectively using multimedia objects (Anon 2011).

A prototype module was designed using Microsoft PowerPoint 2010 and validated using 60 farmers from Yavatmal district of Maharashtra selected through multi-stage random sampling method. Validation was done employing before-after research design. Data were analyzed using appropriate statistical tools.

RESULTS and DISCUSSION

Developing an e-learning module required identifying training needs of the farmers with respect to WTO and its agriculture related aspects as a prerequisite in defining the universe of content and the scope of the module.

Training needs of farmers with respect to WTO and its agriculture-related issues

Training needs' gap was found to be very high (>90%) for the farmers concerning all the dimensions of WTO namely evolution and objectives of WTO, structure and functions of WTO, tariffs and quantitative restrictions, agreement on agriculture issues and intellectual property rights issues (Table 1). Therefore it was decided that the module would focus on very basic aspects of WTO and its agriculture related aspects. Moreover the information covered in the module has to be introductory in nature so as to first make the target users aware about the issues.

operationalized as the difference between actual and desired level of awareness of farmers and was calculated using formula suggested by Singh et al (2011) and Raina et al (2014):

Designing the e-learning module

Farm journalistic style of writing was employed while writing the text of the module and the information content was strictly restricted to address the training needs of the farmers. Jargons, technical terminologies etc were either avoided or elaborated and simplicity in using words and constructing sentences was given priority. Practical aspects were emphasized to attract and retain attention. Short and catchy titles and words were used to label concepts and ideas.

The information was presented in a well-structured manner following the principles of content structuring and composition. The universe of content was divided into chunks which was then arranged properly to create a flow in the information delivery. Formal balance was used to minimize the perceptual loss. Repetition, variety and emphasis were employed to generate a rhythm, harmony and unity in the presentation of information. Storyboards were developed to envision the module for the farmers.

Before actual validation of the module a prototype e-learning module was tested among the farmers for its usability and acceptability based on which presentation of some part of information was modified using better and relevant examples, multimedia objects etc. Moreover efforts were also made to reduce the number of storyboards of the module to suit learners' time of exertion. The difficulty of e-module was reduced to match farmers' existing knowledge.

The assessment at the end of the e-learning course was modified to summarize the content and enable farmers to re-answer the questions until they provided the right answer to a specific question. Difficulty of assessment was reconfigured to the developed concepts and understanding of learners rather than specific knowledge about the topic.

Audio support for the e-module was also incorporated for increasing appeal to the learners

Table 1. Training needs of farmers with respect to WTO and its agriculture related issues (n= 60)

Dimension	Awareness mean score	Training needs' gap (%)
Evolution and objectives of WTO	0.08	92.08
Structure and functions of WTO	0.01	99.44
Tariffs and quantitative restrictions	0.07	92.92
Agreement on agricultural issues	0.04	95.83
Intellectual property rights issues	0.02	98.33

Table 2. Comparison of knowledge levels before and after the exposure to the e-module (n= 60)

Dimension	Pre-test score		Post-test score		Mean difference (X 2 × X 1)	t-score
	Mean (X 1)	SD 1	Mean (X 2)	SD 2		
Evolution and objectives of WTO	0.90	1.24	3.00	0.69	2.1	10.8**
Structure and functions of WTO	0.77	0.97	2.67	0.88	1.9	15.7**
Tariffs and quantitative restrictions	1.07	1.08	2.97	0.85	1.9	10.11**
Agreement on agricultural issues	0.40	0.62	3.53	0.97	3.13	15.5**
Intellectual property rights issues	0.77	0.94	4.23	1.48	3.46	15.8**
Overall	3.90	2.98	16.40	2.99	12.50	27.8**

**Significant at 1% level of significance

whereas enough care was taken to design audio component in a way that can address situations where no speakers are available. Efforts were also made to present information in a way which can seem to be of immediate use to the farmers. All the reported technical errors were removed and technical terms were elaborated with examples.

Validation of the module

The e-module namely 'Jagtik Vyapar Sangathna: Ek Parichay' was validated using farmers as learner respondents. Knowledge tests were conducted before and after the exposure to the e-learning module.

The data in Table 2 show that there was significant difference between the pre-test and post-test scores of the respondents on all the aspects of WTO such as evolution and objectives of WTO, its structure and functioning, tariffs and quantitative restrictions, agreement on agriculture and intellectual property rights.

The large mean difference values suggested sudden and big improvement in the knowledge of respondent farmers about WTO and its agriculture-related issues.

CONCLUSION

Even though e-learning can neither replace human interaction of traditional learning nor can substitute a good teacher it can always serve as a powerful tool with the instructors or extension personnel in imparting learning. Thus to be effective e-learning modules need to be designed considering learners' needs, interests, education level etc. Self-paced or instructor-led e-learning should employ interactive features to encourage participation and promote active learning. Besides learning as well as retention of what is learned highly depend upon the motivation that has been provided during the process of learning in the form of relevant examples, visuals and self-assessment. E-learning modules must not just answer queries but also encourage further enquiry; above and beyond instructor must be able to utilize it as an apparatus to promote imagination and critical thinking.

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