

Development of an educational interactive video-DVD on dairy health management practices

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ABSTRACT

A study was carried out to design, develop and test an educational interactive video-DVD on dairy health management practices. Design for the provision of menus and sub-menus in the developed video-DVD facilitated interactivity by means of branching navigation to different chapters in the video content. A total of 60 dairy farmers owning DVD player and television were selected by means of proportionate random sampling among the farmer members of four milk cooperative societies identified in Kannur block of Kannur district in Kerala State of India, which constituted the sample for the study. The findings of the study revealed significant difference between the mean scores of knowledge level of respondents in pre and post -exposure stages and a high majority of the respondents perceived the various aspects of the video-DVD to be most satisfactory in fulfilling its intended use.

Keywords: *Educational interactive video-DVD; dairy health*

INTRODUCTION

Dairy sector in India plays an important role in the national economy and in the socio-economic development of the country. The dairy sector plays a significant role in supplementing family income and generating employment in the rural areas, particularly among the landless, small and marginal farmers and farmwomen, besides providing cheap and nutritious food to millions of people. Hence it is rightly considered to be a powerful instrument to bring about social and economic transformation by the planners and policy makers. India owns 57 per cent of the world's buffalo population and 16 per cent of the cattle population and ranks first in the world in respect of cattle and buffalo population (Srivastava, 2009). Over 70 per cent of the milk produced in India is by small and marginal farmers whose landholdings are small with few heads of cattle (Bandyopadhyay, 2009). India contributed about 15 per cent towards the bulk milk pool of the world during 2003 and continues to remain the largest milk producer in the world.

Productive and reproductive performance of dairy animals in India is largely affected by poor nutritional and health management practices. A dairy farmer should have sound knowledge of each of the different subsystems of dairying and the integrated approach will facilitate the producers for sustained milk production that would further fortify the rural economy (Gosain, 2004). They need education and training so that their cattle are housed in hygienic conditions with provision of adequate healthcare and management. It is estimated that about 32 lakh out of the total 55 lakh households in the state of Kerala in India are engaged in livestock rearing for supplementing their income (Anonymous, 2006). The homestead settlement pattern, relatively high level of literacy, highly favourable agro climatic conditions conducive for biomass production and the long tradition in livestock rearing are inherent strengths that Kerala possesses in favour of livestock rearing.

Several studies conducted in Kerala among dairy farmers identified the need to educate them in aspects of dairy health management, diseases and control and maintenance of hygiene. Dairy health care was the major problem perceived by the farmwomen in Kerala, in which reduction in

milk yield due to occurrence of diseases was perceived as most serious problem. Vaccination, symptoms of common diseases, control and identification of important diseases were identified as the major areas which required training (Durgga Rani, 2004). Disease control of dairy cattle was perceived as one of the domains for knowledge and skill based training needs (Vimal Raj Kumar, 2003), Lalitha and Seethalakshmi (1999) opined that rural women in dairying should be imparted knowledge and skill based training on contagious diseases, vaccination, uses of disinfectants, sources of microorganisms and deworming schedule. Considering the above studies in view, an interactive educational tool was inferred imperative to disseminate knowledge input on dairy health management practices among dairy farmers in Kerala.

Among various communication media available, the emerging interactive video - DVD appears to hold great promise in extension. Unlike the video discs, DVD discs do not wear out, has seven or more times the information storage capacity and the picture quality of DVD videos is superior to VCDs. DVD has better colour resolution, portability, superior data storage, storage of information in layers and on both sides giving it the obvious advantage in terms of size and cost compared to CD (Laaser, 2004). A recordable DVD has advanced menu systems, subtitles and still pictures that can be played by many stand alone DVD players unlike CD-ROM which require a personal computer. These advantages besides its affordability make interactive video - DVD, one of the most powerful upcoming electronic media for dissemination of information. Extension programs that target low-income groups need to include demonstrations of new and innovative media and use in educational programs, besides discuss the value of these technologies as professional development and educational tools (Kudryavtsev et al., 2006).

The interactive video – DVD being an audio-visual medium with its facility for branching navigation to different chapters in the video content unlike the conventional DVD-video which plays the video contents in a linear fashion puts it as a good tool for mass approach, which help dissemination of information to large number of livestock farmers and holds more promise in bringing about knowledge centric dairy health management practice among dairy farmers. Keeping in view of all these aspects, the study was conducted with the following specific objectives.

1. To design and develop an educational interactive video-DVD on dairy health management practices.
2. To test the effectiveness of the developed educational interactive video-DVD in terms of knowledge gain among the learners and to know their level of satisfaction.

Theoretical background

Development of the educational interactive video-DVD in the field of Veterinary and Animal Husbandry Extension has been a pioneering attempt and no other similar studies have been reported from India. The advantage of an interactive video – DVD include that it can be played in any DVD player and with the remote control one can easily navigate to any chapter in the video content. Most of the DVD - video players currently available in the market support a command set that provide a sort of interactivity. The main feature is the menus and sub-menus in the DVDs that allow content selection and feature control. Each menu is a still-frame graphic with a number of on screen buttons with links to other contents on the disc which could be selected using the four arrow keys, numeric keys, select or enter key, menu key and return key available with the remote control units of the DVD players. This facilitates audience to decide which part of the movie to be viewed and in what order. This characteristic feature of the DVD players and the DVD - video was utilized in creating interactivity in the video content developed for the study.

RESEARCH METHODOLOGY

Preparation of the video script

The scientific information regarding dairy health management practices were collected through relevant literatures, consultation with experts in the field and secondary data sources with which a script was prepared. The contents of the script were then classified into chapters, viz., introduction, hygiene for dairy health and clean milk, identification of sick animals, disease prevention and control, calf health management, and deworming and vaccination schedule. Besides these, a separate quiz section was also included with 10 questions relevant to the content in multiple-choice formats.

The prepared script has been administered to the subject matter specialists, veterinary extension personnel and progressive dairy farmers to get their opinion on the relevancy of the contents and its completeness. In the light of their suggestions, necessary corrections were made in the script. The script was then translated into Malayalam, the vernacular language in the area of study. The translated script was again sent to experts in the field with proficiency in Malayalam for correction and finalization of the script. Documentary mode / off-camera narration was opted with regard to its merits based on review of literature and a story board was then created to have a blue print of the video scenes, nature of video shots, audio, background music and other audio and visual effects needed for the development of the interactive video-DVD.

Design for provision of menus and sub-menus in the educational interactive video DVD

Based on the organization of the contents into different chapters and a quiz section as discussed earlier, a two page main menu was opted. The design for first page consisted of three titled on-screen buttons with links to the relevant video segments and with a go to next button to move to the second page of the main menu (Figure 1).

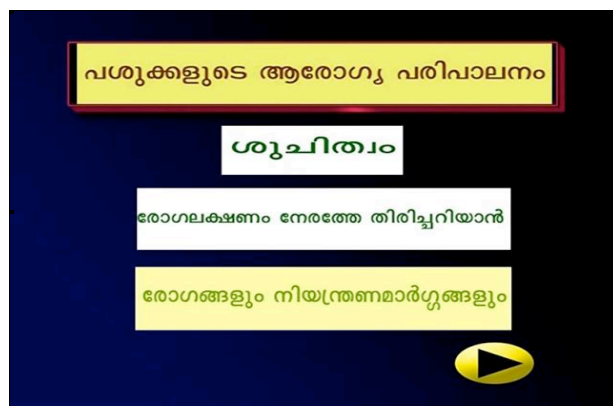


Figure 1: First page of the main menu

Similarly, the design for second page consisted of three titled on-screen buttons and a go to previous button (Figure 2). A link was also designed for providing DVD information on DVD-video developers. Since the chapter on "Disease Prevention and Control" had further subdivisions, a sub-menu was designed for the same with six links viz., bacterial diseases, viral diseases, parasitic diseases, metabolic diseases and, mastitis and other diseases (Figure 3). In this way, classification of the contents of the interactive video - DVD facilitated branching navigation.

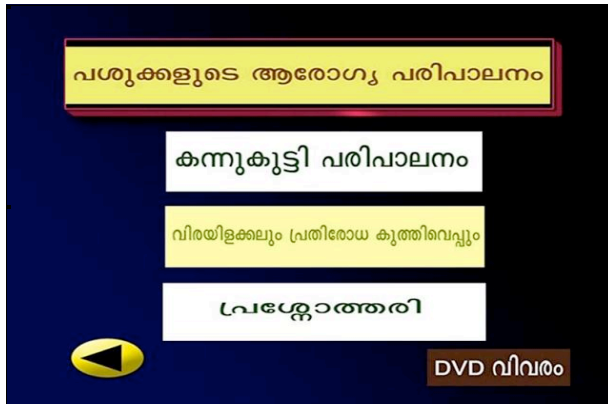


Figure 2: Second page of the main menu



Figure 3: Submenu on “diseases” chapter

The quiz section was essentially designed as a menu page for each of the ten questions with three alternative answers. Selection of one of the answer would lead to a title page where the answer selected was either shown right or wrong as the case may be (Figure 4). The ten questions were linked linearly and on the last question a link to main menu was designed. This quiz section was essentially designed to help the learners of the interactive video - DVD to evaluate themselves.

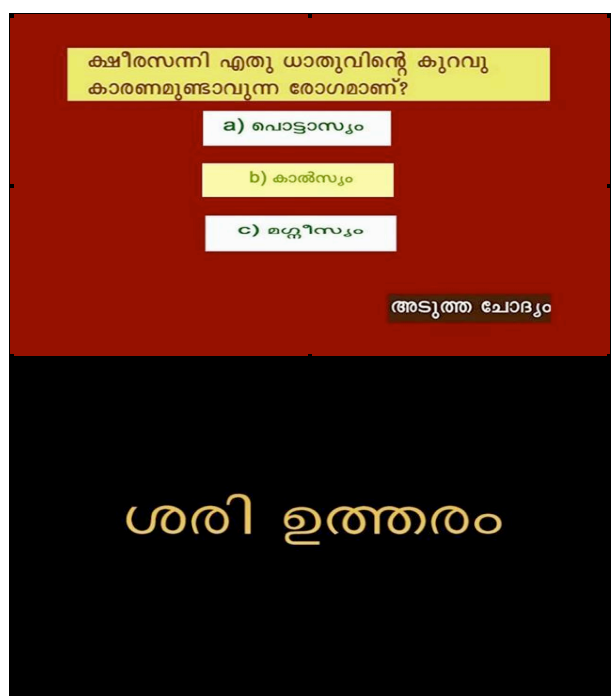


Figure 4: Selection of one of the answer leading to a title page where the answer selected shown right

Collection of video clippings, editing, audio recording, movie making and disc authoring

The resources available at the video laboratory of Tamil Nadu Veterinary and Animal Sciences University were utilized for creation of the educational interactive video - DVD. Necessary video scenes, photographs, illustrations etc., as per the script developed were first captured and assembled according to the story board created using Pinnacle Studio version-9 video editing software. The audio for the off-camera narration was recorded and edited using Sound Forge version-8.0 audio editing software. Then the assembled video clippings were edited and incorporated with off-camera narration audio, background music, sound effects and menu links. The developed movie was finally authored as an interactive video - DVD which was extremely user-friendly and effortless in providing interactive links to various segments of the content. The time period for developing the video – DVD was four months, with one month for preparation of the video script and three months for video editing and disc authoring.

Field testing

The developed interactive video-DVD was then tested among dairy farmers in the purposively selected Kannur district of Kerala state. Out of the 9 blocks in the district, one block namely Kannur block was selected for the study on the basis of higher milk handling capacity. Among the six milk co-operative societies existed in the block, four milk cooperative societies namely, Mayyil, Kannur, Chirakkal and Kannadiparamba societies were selected based on highest quantity of milk procurement per day. From the list of member dairy farmers who possessed DVD player and television in each of the dairy co-operatives selected, a total of 60 dairy farmers were selected by proportionate random sampling technique which constituted the sample for the study. As per the research design, data were collected from the respondents before and after the exposure of the educational component with the help of a well structured interview schedule which consisted of

18 questions relevant to the subject matter content taught in the developed educational interactive video-DVD on dairy health management practices. Gain in knowledge was assessed by obtaining the difference between the knowledge levels at pre-exposure and post-exposure stages of the educational interactive video DVD. To ensure that the information reaches the intended audience effectively, the degree of effectiveness of the developed educational interactive video-DVD had been assessed through level of satisfaction of the respondents. It is assumed that greater the perception of the educational interactive video-DVD by the viewers in terms of satisfaction derived, greater would be the conviction of the respondents towards the practices taught. The satisfaction of the dairy farmers towards the different aspects of the interactive video-DVD had been obtained on a four point continuum of 'most satisfied', 'satisfied', 'least satisfied' and 'not satisfied' and results interpreted.

RESULTS AND DISCUSSION

Distribution of respondents according to their knowledge level on dairy health management practices at pre – exposure and post – exposure stages of the educational interactive video-DVD

The distribution of the respondents according to their knowledge level on dairy health management practices at pre – exposure and post – exposure stages is presented in Table 1. It could be observed that majority (71.67 per cent) of the respondents possessed medium level of knowledge on dairy health management practices prior to the exposure of the interactive video-DVD followed by just above one-fourth (26.67 per cent) in low and meager (1.67 per cent) in high level categories.

Table 1: Distribution of respondents according to their knowledge level on dairy health management practices at pre-exposure and post exposure stages

n=60

S.No.	Category	Pre - exposure		Post – exposure	
		Frequency	Percentage	Frequency	Percentage
1	Low (0 – 6)	16	26.67	-	-
2	Medium (7 – 12)	43	71.67	8	13.33
3	High (13 – 18)	1	1.67	52	86.67

However, the situation was completely changed upon exposure to the interactive video-DVD wherein, a high majority (86.67 per cent) of the respondents fell in high level category and the rest (13.33 per cent) belonged to medium level category. This clearly indicated the effectiveness of the developed interactive video-DVD in bringing about higher knowledge gain among the respondents. Similarly, Viswanathan (1997) reported that video is very effective in imparting knowledge and opined that extension administrators and trainers can effectively utilize the video medium for successful transfer of technology. Radhakrishnan (2000) in his study inferred that the distribution of respondents based on knowledge gain after exposure to Instructor Controlled Interactive Video showed that majority (82.00 per cent) of the respondents was in high category.

Differences in the mean scores of knowledge levels of the respondents at pre - exposure and post-exposure stages

The mean scores of the knowledge level of the respondents at pre - exposure and post-exposure stages were analysed through Paired 't' test and the results are presented in the Table 2.

Table 2: Mean knowledge score at pre - exposure and post-exposure stages

	Pre - exposure	Post-exposure
Mean score	7.98	14.91
Mean difference	6.93	
't' value	21.45**	

n=60

** Significant at 1 per cent ($P < 0.01$) level of probability

It could be observed from the Table 2 that the pre - exposure mean knowledge score was 7.98 and the mean knowledge score of the post-exposure stage was almost double since the mean value was 14.91. The mean score of difference was found to be 6.93. This implied that the knowledge gained by the respondents with regard to dairy health management practices was substantial because of the exposure to the developed interactive video-DVD. It has also been supported by the 't' value of 21.45 which was found to be statistically significant ($P < 0.01$). Thus, it could be concluded that the developed educational interactive video-DVD proved to be effective in terms of knowledge gain among the respondents. The findings were in accordance with the results obtained by Kadian and Gupta (2006) who stated that as compared to "lecture only", "audio only" and "literature only" educational methods, the Video Compact Disc (VCD) found to be most effective for imparting knowledge related to dairy calf management practices. Jayakumar (1992) and Selvaraj (1997) pointed out that video presentation had produced remarkable impact on gain in knowledge of the technology disseminated.

Level of satisfaction of the respondents towards the educational interactive video DVD on dairy health management practices

The Level of satisfaction of the respondents towards the educational interactive video DVD on dairy health management practices is presented in the Table 3. It could be exonerated from the table that a high majority (98.33 per cent) of the respondents were most satisfied with the overall visual quality and overall sound quality, while more than 80.00 per cent of the dairy farmers expressed 'most satisfaction' with regard to easiness in using the video-DVD (86.66 per cent) and to the visual effects provided (83.33 per cent). It could also be noticed that majority (70.00 per cent) of the respondents were most satisfied with the suitability of the contents to their needs as well as their level of understanding. Nearly two-third (63.33 per cent) of the respondents expressed their perception with regard to coverage of the contents as 'most satisfied'. More than a half (58.33 per cent) of the respondents revealed that the interactive links provided to each chapter were most satisfactory, while 36.66 per cent were satisfied in this regard. With respect to classification of content into chapters, just above a half (53.33 per cent) of the respondents felt satisfaction, while 40.00 per cent of them were most satisfied. Anandaraja (2002) in his study inferred that majority (62.6 per cent) of the farmers were highly satisfied about the Interactive Multimedia Compact Disc (IMCD) studied. Still, least percentage of the farmers expressed 'dissatisfied' perception about the IMCD. In a study on content analysis of a television program,

Nayak (2001) pointed out that clarity of the picture was reported to be good by majority of the farmers (75.00 per cent) and that the audio-visual combination was rated good by 78.00 per cent of the farmers.

Table 3: Level of satisfaction of the respondents towards the educational interactive video-DVD on dairy health management practices

n=60

S.No.	Item	Response category							
		Most satisfied		Satisfied		Least Satisfied		Not satisfied	
		f	%	f	%	f	%	f	%
1.	Suitability of the contents to your needs	42	70.00	18	30.00	0	0.00	0	0.00
2.	Coverage of the contents	38	63.33	22	36.66	0	0.00	0	0.00
3.	Suitability of the contents to your level of understanding	42	70.00	17	28.33	1	1.66	0	0.00
4.	Overall visual quality	59	98.33	1	1.66	0	0.00	0	0.00
5.	Visual effects provided	50	83.33	10	16.66	0	0.00	0	0.00
6.	Overall sound quality	59	98.33	1	1.66	0	0.00	0	0.00
7.	Classification of contents into chapters	24	40.00	32	53.33	3	5.00	1	1.66
8.	Interactive links provided to each chapters	35	58.33	22	36.66	3	5.00	0	0.00
9.	Easiness in using the video-DVD	52	86.66	8	13.33	0	0.00	0	0.00

The above findings indicated that on exposure to educational interactive video-DVD, majority of the respondents perceived various aspects of the video-DVD to be most satisfactory except for classification of the contents into chapters where the degree of perception expressed by most of the dairy farmers was 'satisfied'. This could be due to the fact that the dairy farmers might be new in knowing about the various diseases and their classification. This indicated that there exists a scope in improving the way of presentation of different diseases using similar type of tool so that the viewers are most satisfied.

CONCLUSION

Effectiveness of the developed interactive video-DVD in terms of knowledge gain and expression of highest satisfaction with regard to its overall quality implied that the interactive features of the video-DVD were proved to be effective and user-friendly which facilitate better manoeuvrability, easy information retrieval and storage and could attract large number of audience. Drawing a suitable strategy for its widespread use will go a long way in further strengthening the Veterinary and Animal Husbandry extension systems.

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