



# Effectiveness of Multimedia Compact Disc on Dissemination of Knowledge Regarding Different Practices for Dairy Calf Management

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## ABSTRACT

Compact disc-read only memory (CD-ROM) is a popular electronic media which makes learning easy, interesting, multisensory and leaves a long lasting impression on the trainee. Therefore, this study aimed to develop a compact disc-read only memory on scientific calf management practices and to analyze its effectiveness in terms of knowledge gain as well as level of satisfaction among exposed dairy farmers. The study was conducted at Ludhiana where 120 dairy farmers were randomly selected among the various dairy trainings conducted from 2016-17. The CD-ROM was designed and contents were validated in consultation with subject matter specialists from the fields concerned. Suitable modifications were also introduced. Dairy farmers were exposed to it in order to measure their knowledge gain. There was significant ( $P \leq 0.01$ ) increase in the knowledge score from  $5.74 \pm 0.14$  at pre-exposure stage to  $12.68 \pm 0.14$  at post exposure stage. Moreover, 76.67 per cent farmers were satisfied with respect to the suitability of contents of CD-ROM to their needs. The results of the study clearly indicated the importance of prepared CD-ROM in transfer of knowledge about scientific calf rearing practices.

**Key words:-** CD-ROM, Knowledge score, Scientific calf rearing practices, Level of satisfaction.

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## INTRODUCTION

The scientific knowledge about any enterprise imparted through training, is crucial for the success of that enterprise. Effective communication is required to provide knowledge for correct application of technology and ensuring its maximum adoption. In an effort to make dairy farmers better informed in the use of an innovation, suitable communication devices are must for an extension worker to overcome the barriers of illiteracy and traditions which are prominent among the resource poor farmers (Hai *et al*, 2003).

Extension work cannot be thought complete without effective and efficient communication media. Among those available, the many benefits

offered by interactive video CD-ROM has made it very promising in bringing desired change in behavior of audience. Laaser (2004) has pointed out that many communication tools wear out but CD-ROMs hold their place for a long time in addition to having a superior picture quality and several times the information storing capacity. He further states that better colour resolution, easy portability and superior data storage of CD-ROM besides its capacity to store information in layers and that too on both sides makes it far better than other tools if we compare the cost and size of these tools. A CD-ROM requires a personal computer but a recordable CD-ROM has many advanced feature like advanced menu systems, with subtitles and also still pictures

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which can be easily played by CD-ROM players. Therefore the advantages of interactive video – CD-ROM along with its affordability make it one of the most powerful communication device for information dissemination.

CD-ROM is a storage medium that together with a microcomputer offers rapid access to a very large volume of data like text, sound, computer graphics, animation, slides and motion video in a synchronized manner. Other advantages of CD-ROM can be its great storage capacity, durability and data safety, easy transportability, usability and above all low cost to suit all stakeholders. Multimedia CD-ROM (compact disc-read only

memory) is a popular electronic media which makes learning easy, interesting, multisensory and leaves a long lasting impact on the trainee. Further it has capacity to reduce the cost and time involved for the same activity. As an instructional device, it helps in dissemination of exact information. Such resources once prepared in a careful manner can be multiplied easily and distributed for learning across wider sections of population in a relatively short time. Kadian and Gupta (2006) designed a Video Compact Disc (VCD) on dairy calf management practices and on comparing it with other methods of instruction i.e. lecture only, audio only and literature only, found that VCD was far more superior in

**Table I. Measure of Appropriateness of Multimedia elements for CD-ROM on Calf management.**

Sr.No.	Multimedia elements	Mean score (out of 4)	Mean score
Content/Text			
1.	Font size	3.8	3.65
2.	Font colour	3.5	
Visuals/Stills			
3.	Illustrativeness	3.7	3.7
4.	Sharpness	3.8	
5.	Placement	3.6	
6.	Rationality	3.7	
Videos			
7.	Clarity	3.8	3.67
8.	Rationality	3.7	
9.	Duration	3.5	
Graphics			
10.	Understandable	3.5	3.6
11.	Rationality	3.7	
Audio			
12.	Rationality of manuscript	3.7	3.66
13.	Pronunciation	3.6	
14.	Speed	3.7	
15.	Pause	3.6	
16.	Emphasis	3.7	
17.	Synchronization	3.8	
18.	Background music	3.5	
Over all mean score		3.66	3.66

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knowledge dissemination. Vidya and Manivannan (2010) in a study on development of an educational interactive video CD-ROM on dairy health management practices clearly demonstrated that video CD-ROM was very successful in its mandate to equip the respondents with more awareness and higher knowledge. 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. Therefore, this study was carried out by GADVASU, Ludhiana to see the effectiveness of developed CD-ROM on scientific calf rearing practices.

### MATERIALS AND METHODS

For developing the manuscript on calf management, available articles in various journals, magazines, book chapters and websites were searched thoroughly. The concerned teachers from various departments were also consulted. Then the manuscript was written and suggestions from various experts were invited. Thereafter the contents were modified according to the feedback received. In order to motivate the trainees for enhanced understanding as well as adoption of suitable calf management practices, the information was arranged in a logical sequence and cohesive manner. The salient feature of instructional modules were as under-

- a) The text was typed neatly with the use of Microsoft office word software in Punjabi font AnmolLipi for benefit of majority learners so that they can benefit without requiring the services of an instructor as in a self learning module.
- b) Clear images and video content were added at appropriate places to increase the grasp of learners and making the content more effective and attractive. The graphics were produced by clicking photos and scanning of photographs, slides, textbooks or internet images. Majority of the video shooting was done in the dairy farm of the Department of animal Breeding

and Genetics. The audio element of the video commentary and background narration were recorded in vernacular language i.e. Punjabi. The audio files were synchronized with text and video for cohesiveness. Background music was inserted with text to make light mode learning and to break the monotony. Once the multimedia elements are developed, the screen was designed by using background colours and design for brightness.

- c) Tables and bold column messages were also inserted according to need for enhanced understanding.

For multimedia application, the script was developed before final setting of text, tables, graphics, images and illustrations, audio and video elements. The script was developed by making the blueprint for the requirement of graphics, video etc as per the content need. After the topic was decided storyboards were prepared logically for presenting information. Consequently the screen wise description of sequences of text along with image, illustration, tables, video and soundtracks were mixed and arranged in order. All these multimedia elements like text, graphics, videos and audio were developed separately according to the need and manner of the developed story board contents.

Multimedia instructional CD-ROM for awareness about calf management practices in dairy animals was prepared with the basic aim of having an instructional, soft form, resource material for wider use by the dairy farmers and other users. After using different software for creating the multimedia files, editing and integration, the raw CD-ROM was prepared. Care was also taken while authorizing the software that the text, graphics, audio files and digitized video files that were developed by using other software got imported into the final software and hence smooth running was ensured. Different software used in development of CD-ROM were Adobe Premier CS-5 Pro for video editing, Sony Sound Forge-10 for audio editing, Adobe Premier CS-5 Pro for animation and Adobe Photoshop for

photos and special effects. Separate questionnaire was prepared covering different aspects of scientific calf management practices in dairy animals and all the related knowledge was provided in the prepared CD-ROM. The questionnaire consisted of 20 questions each of one mark. One hundred and twenty respondents were selected from the trainings conducted on Dairy farming at Guru Angad Dev University of Veterinary and Animal Sciences (GADVASU), Ludhiana. The trainees were tested for their knowledge on calf management practices in dairy animals, before and after exposure to prepared CD-ROM.

The scores obtained by the respondents and mean of the scores before and after exposure to CD-ROM were calculated. Percentage analysis of change in scores was done to calculate the impact of learning. CD-ROM developed on calf management practices in dairy animals was validated after development, as follows:

- a) The contents were validated by the subject matter specialists of the department of Veterinary and Animal Husbandry Extension Education and Livestock Production Management.
- b) The validity of the working script along with the graphic illustrations including photographs, illustrations was done by the experts from Department of Veterinary and Animal Husbandry Extension Education and Livestock Products Management.
- c) Multimedia elements used in the CD-ROM were evaluated by faculty of department of Veterinary and Animal Husbandry Extension Education and subject matter specialists, using a marking scale out of 4.
- d) Thereafter an overall rating score (out of 4) based on the five attributes was given to the prepared CD-ROM.

On the basis of suggestions and feedback from experts after validation, suitable modifications were made and final CD-ROM was prepared for further use. The collected data were carefully

examined for completeness and correctness before tabulation. For analysis, simple tabular techniques and appropriate statistical methods like frequency and percentage analysis, mean and standard error, repeated measures ANOVA analysis were employed by using SAS version 9.3

## RESULTS AND DISCUSSION

### Appropriateness of multimedia elements used for designing CD-ROM

Multimedia elements of a video include various components like audio, video, stills, developed graphics and various other depictions etc. which are rendered in specific sequence and manner to produce a meaningful message for the viewer and audience. The better quality and efficient execution of the multimedia elements of a video based instructional device determine its success in achieving target of effective delivery of message. The appropriateness of the multimedia elements was evaluated on 18 attributes by subject matter experts from Department of Veterinary and Animal Husbandry Extension Education and department of Livestock Products Management, GADVASU, Ludhiana. The attributes were related to text, visuals, videos, graphics and audio used in CD-ROM.

These attributes included font size and colour, illustrativeness and sharpness of visuals, clarity, rationality and duration of video, complexity and appealing value of graphics, pronunciation speed, pause, emphasis, synchronization and background music/voice of audio used in CD-ROM. The results regarding the appropriateness of multimedia elements used for CD-ROM on calf management practices have been presented in Table I.

The mean score of different aspects of multimedia elements as judged by experts ranged from 3 to 4, with an average of 3.66 out of 4. The maximum individual score of 3.8 was assigned to font size of content, sharpness of visuals, clarity of videos as well as synchronization of audio. The minimum score of 3.5 was obtained by font colour

## Effectiveness of Multimedia Compact Disc

**Table 2. Effectiveness of developed CD-ROM on calf management.**

Sr.No.	Parameter	Pre-exposure (n=120)	Post exposure to CD-ROM
1	Knowledge score(Mean±S.E.)	5.74 <sup>a</sup> ±0.14	12.68 <sup>b</sup> ±0.14
2	Range of knowledge score	3-9	10-16

Figures with different superscripts in a row differ significantly (P<.01)

of content, duration of videos, understandability of graphics and background music in the CD-ROM. The mean scores of all the multimedia elements were more than 85 percent. Content/text score averaged 3.65 (91.25 %), attributes of still photographs had average score of 3.7 (92.50 %), videos attributes scored 3.67 (91.75 %), graphics scored 3.6 (90 %) and audio attributes got 3.66 (91.50 %) score. The overall mean score of 3.66 (91.50 %) assigned to all the multimedia elements, proved that developed CD-ROM possessed all the qualities of a standard video based instructional device. Similar results had been observed by Singh (2012) who designed a CD-ROM on dairy enterprise and reported that mean score of the multimedia elements as rated by the subject matter experts was 3.67 (out of 4). Sharma (2015) designed a CD-ROM on abortion in dairy animals and reported mean score of the multimedia elements as rated by the subject matter experts was 3.74 (out of 4). Kasrija (2016) designed two DVDs, one on repeat breeding with a mean score of rated multimedia elements of 4.41 (out of 5) and another on anoestrus with a mean score of 4.47.

### Effectiveness of developed CD-ROM on calf management

There was significant (P<.01) increase in the knowledge score (Table 2) from 5.74 ± 0.14 to 12.68 ± 0.14 after exposure to CD on calf management indicating its effectiveness for education gain. Singh (2012) reported an initial score of 10±0.48 and final score of 15.42 ± 0.4 after exposure to CD-ROM on dairy enterprise and also an average impact of learning to be 58.12±6.07. Block *et al* (2000) who developed a CD-ROM for nutrition reported that 80 % of the respondents (n=284) reported learning something new about nutrition. Sharma (2015) also reported a gain of 71.77 % in knowledge about overall aspects of abortion in dairy animals.

### Level of satisfaction among farmers after exposure to CD-ROM

The level of satisfaction among farmers was noted on three point continuum. The data (Table 3) indicated that for suitability of contents to the need – 76.67 per cent farmers were satisfied, 20 per cent were satisfied to a little extent and 3.33 per cent

**Table 3. Level of satisfaction among farmers after exposure to CD-ROM on Calf management.**

Sr.No.	Parameter	Response (n=120)		
		Satisfied	Satisfied to a little extent	Not satisfied
1	Suitability of the contents to your needs	92 (76.67)	24 (20.0)	4 (3.33)
2	Coverage of the contents	87 (72.5)	28 (23.33)	5 (4.17)
3	Level of understanding of contents	78 (65.0)	36 (30.0)	6 (5.0)
4	Overall visual quality	82 (68.33)	34 (28.33)	4 (3.33)
5	Visual effects provided	79 (65.83)	36 (30.0)	5 (4.17)
6	Overall sound quality	81 (67.5)	33 (27.5)	6 (5.0)
7	Easiness in using the CD-ROM	95 (79.17)	22 (18.33)	3 (2.5)

Figure in parenthesis indicate percentage.

were not satisfied. Only 5.0 per cent of farmers were unsatisfied with level of understanding of contents and 4.17 per cent were not satisfied with coverage of contents as well as visual effects provided. For easiness in using the CD, only 2.5 per cent were unsatisfied. This indicated that the developed CD-ROM is quite farmer friendly and meets the satisfaction level of majority farmers. Kasrija (2016) in a study on DVD for repeat breeding developed by him reported that majority farmers were most satisfied with the suitability of contents to their needs (62.96%), coverage of contents (60.74%), level of understanding of contents (62.22%), overall visual quality (64.44%) and easiness in using the video-DVD (75.56%). Corresponding values for another DVD on anoestrus developed by Kasrija (2016) were 66.67, 59.26, 51.85, 62.96 and 74.07 per cent. Similarly, Meena *et al* (2014) who developed an educational DVD on improved dairy farming practices and tested its effectiveness on 90 dairy farmers reported that majority respondents were satisfied regarding its usefulness in enhancing knowledge, suitability of the information to field situation and logical presentation of information.

### CONCLUSION

In an effort to make dairy farmers better informed in the use of an innovation, suitable communication devices are must for an extension worker to overcome the barriers of illiteracy and old traditions prevalent among resource poor farmers. The multimedia CD-ROM regarding calf management practices will help dairy farmers in reducing calf mortality in a cost effective manner thereby making dairy enterprise more profitable as calf is the future of dairy and it is always best to invest in future.

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