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Knowledge gain and retaining abilities of dairy farmers on fodder crops: A Post training analysis

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Abstract

Farming community in India is normally endowed with fragmented land holdings, containing marginal and small sectors to the maximum, the affordability, accessibility and possibility to travel a long distance and to hunt the information is seldom possible. As the traditional agriculture is transforming into hi-tech agriculture, the need for updated information is also essential for agricultural production and productivity, eventually giving a lucrative yield and income to the farming community. Livestock play multifunctional role to rural livelihoods. The market for livestock products, especially milk, is not volatile unlike for vegetables and other commercial crops. The livestock rearing remained as one of the most stable household enterprise of rural India. But cost of feeding accounts nearly 70 percent of the total cost of livestock rearing. The full genetic potential of better breeds of livestock reared by farmers could not be realised in terms of higher milk yield mainly due to poor feeding. Considering its prime importance, newness and demand from the farmers, the farmer friendly e-training tools developed on 'Green fodder production throughout the year' as most needed information and hence tools were developed covering information on this specific need with the combination of audio, video, visuals, etc. The study was therefore conducted in northern Karnataka (India) with the sample size of 120 farmers. Effectiveness of e-training tools was assessed through three treatments, namely power point presentation, video screening and whatsapp video. The result indicated that power point presentation, resulted in maximum mean knowledge gain followed by others. Further the study result indicated that farmers had positive opinion regarding the power point presentation as a tool to solve farmers' problem. The developed video will help in supplementing the efforts of the extension personnel and can be used effectively by various organizations involved in dairy development for quicker transfer of information.

Keywords: e-training tools, knowledge Gain, Karnataka, livestock

Introduction

Access to information and improved communication is a crucial requirement for sustainable agricultural development. Modern communication technologies when applied to conditions in rural areas can help improve communication, increase participation, and disseminate information and share knowledge and skills. However, it is observed that the rural populations still have difficulty in accessing crucial information in order to make timely decisions. There is a concern that the gap between the information rich and information poor is getting wider. It is essential that information availability is demand driven rather than supply driven. The challenges are not only to improve the accessibility of communication technology to the rural population but also to improve socio-economic status and its relevance to local development (Balit *et al.*, 1997) [2]. India has the largest number of livestock, representing over 17 per cent of the world population. It accounts for about 57.3 per cent of the world's buffalo population and 14.7 per cent of the cattle population. There are about 71.6 million sheep and 140.5 million goats in the country (Anonymous, 2013).

While cattle and buffaloes are maintained for milk and animal power, sheep and goat are maintained mainly for meat, with milk and wool as secondary sources of income. Cattle and buffaloes, which are considered as Milch animals, are large in size, partly stall fed and require

substantial quantity of feed and fodder for economic management. Farmers in humid and irrigated areas prefer cows and buffaloes, while sheep and goats are popular in arid and semi-arid regions. In recent years, with greater awareness about genetic improvement and good feeding practices, cattle and buffaloes are also becoming popular in semi-arid regions as a primary source of livelihood for small and poor farmers. During the last two decades, studies in drought prone, distressed districts of Karnataka have revealed that the incidences of farmers committing suicide were mostly 1 confined to families exclusively dependent on rainfed agriculture, while rural families dependent partly or fully on dairy husbandry for their livelihood were able to face the stress successfully. Thus livestock is an important and integral part of Indian agriculture and rural economy.

Information and Communication Technology (ICT) has emerged as ray of hope with dramatic impact on achieving specific social and economic development goals in the national development. The power of ICTs has reached the villages signalling a new dawn of an easier and faster communication access for the rural people. Rural knowledge connectivity is a new participatory interactive communication process fostered by putting rural communities themselves in the driving seat with facilitators taking the passenger seats.

Methodology: Development of e-training tools

Dharwad taluk of Dharwad district was selected for treatment imposition. Five villages namely Nigadi, Baada, Mansur, Marewada, and Bogur were selected of which in four village's treatments were administered and one village was kept as control. These villages were purposively selected based on the accessibility to contact farmers who are regularly in touch with IGFRI and were ready to extend assistance for treatment imposition for the study. 'Before-After with control group' experimental design was employed to find out the effectiveness of e-training tools in terms of gain and retention of knowledge. The pretest and post-test was administered to treated groups. Tool was developed on "Year-round green fodder production" was the subject matter selected for the study based on information need analysis. Three e-training tools viz, educational video screening, sharing video through whatsapp and power point presentation-all three having almost same content and similar pictures were developed. These tools acted as treatments for the study. Educational video in Nigadi, power point presentation in Baada and video through WhatsApp in Mansur and Marewada villages were administered. Hence, different tools were used as treatments. From each village 30 farmers were selected hence total sample size for the study was 90 and hence interviewed for knowledge gain and retention. This standardized interview schedule was used for final data collection which was done through personal interview technique.

Collected data were tabulated and analyzed by using frequency, percentages, and one way Anova, statistical tools were used for the study.

Effectiveness of e-training tools in terms of Knowledge Gain

Table 1 revealed that gain in knowledge was more in power point presentation (54.44%) followed by whatsapp video (48.33%) and video screening (42.38%). The results are in line with Susskind (2005)^[12] and Szabo and Hastings (2000)^[13], who reported that lecture delivered with Power point presentation is more organized and systematic which might assist students to understand the content better. In other way, students might be more attracted by the design of the slides, and hence, they would pay more attention during the lecture. In power point presentation containing text and relevant photographs, human intervention of delivering lecture might have helped respondents to connect to the topic in a better way than other two treatments where personalised human intervention was lacking. Human intervention helps to illuminate a speaker's points, to capture and hold an audience's attention. Bartsch and Cobern (2003)^[4] reported that power point can be beneficial, but material that is not pertinent to the presentation can be harmful to students' learning. In the present study, care was taken to include very pertinent text along with relevant photographs.

Among whatsapp video and video screening, knowledge gain was more in the former. Over the past year, the high infiltration of smartphones into the market has initiated growing use of whatsapp as a communication platform. Whatsapp has advantages over other technological tools employed by the education system, such as low cost, simplicity, accessibility, efficiency, and natural language (Church and de Oliveira, 2013)^[6]. Until recently there was no technological tool which was used naturally by adults and students alike. Learning anytime anywhere were top two advantages of learning through whatsapp with 86.72 per cent and 86.55 per cent students agreeing to it (Gon and Ravekar, 2017)^[7]. Plana *et al.* (2013)^[10], studied the use of whatsapp in English language among students in Spain and reported a rise in motivation and a greater enthusiasm for reading in a foreign language. Amry (2014)^[1] also demonstrated the effectiveness of whatsapp social networking in comparison with face-to face learning in the Classroom established that people remember only 10% of what they read, 20% of what they hear, 30% of what they see and 50% of what they hear and see. With the advent of such technologies which combines images, texts and audio all in one can make the percentage even higher than 50%. Whatsapp video and video screening both have advantages of seeing and hearing. But in the former treatment learners can see it in their comfort zone and time convenient for them. Further Bansal and Joshi (2014)^[3] reported in their study that 73 per cent students found learning anytime, anywhere convenient.

Table 1: Extent of knowledge gained by respondents immediately after exposure to e-training tools, n=90

Sl. No	Treatment	Mean knowledge score		Mean knowledge gain	% Gain in knowledge	Paired 't' value
		Before exposure	Immediately after exposure			
1	Video screening (n=30) T ₁	12.06	29.86	17.8	42.38	14.61**
2	Power point presentation(n=30) T ₂	08.86	31.73	22.87	54.44	19.44**
3	Whatsapp video (n=30)T ₃	12.00	32.3	20.3	48.33	16.68**

**0.1% level of significance

It could be seen from Table 1 that all the three treatments namely power point presentation (T₁), video screening (T₂) and whatsapp video (T₃). Had highly significant values. This

indicates that all the three treatments were effective in terms of imparting knowledge to the subjects.

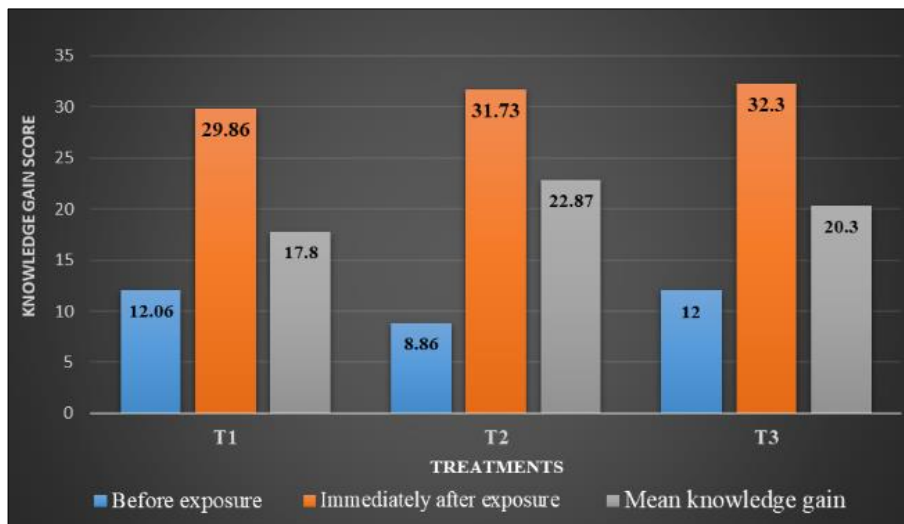


Fig 1: Mean knowledge gain due to exposure to the treatments

Effectiveness of e-training tools in terms of Knowledge retention

Knowledge retention after 15 days of exposure was more in T₂ (36.11%) followed by T₃ (28.26%) and T₁ (26.83%). After 30 days also T₂ resulted in more knowledge retention (31.67%) followed by T₁ (25.64%) and T₃ (17.22%). So T₃ retained second position in terms of its effectiveness both for knowledge gain and knowledge retention at 15 days. But it subsequently dropped to secured 3rd position in retention of knowledge after 30 days of exposure. So as time progressed retention of knowledge dew to whatsapp decreased. However powerpoint presentation (T₂) remained at first position both at knowledge retention after 15 and 30 days of exposure. The calculated ‘F’ value (0.30) for knowledge retention after 15 days of exposure was non-significant indicating there was no significant difference between the treatments. However highly significant difference (F=8.705) was found for knowledge retention after 30 days of exposure.

Whatsapp video though has many advantages as was enumerated by many studies mentioned in previous

paragraphs but when it comes to retention of knowledge its effectiveness had decreased. Among three treatments whatsapp is a social media platform which thus witnesses flooding of messages resulting in information glut and data smog. This results in distraction and also ‘cognitive offloading’ where in people tend to refer back for the information that is already available rather than attempting to answer from a memory (remembering the knowledge) reported that memory is changing. Our research shows that as we use the Internet to support and extend our memory, we become more reliant on it. Whereas before we might have tried to recall something on our own, now we don’t bother. As more information becomes available via smartphones and other devices, we become progressively more reliant on it in our daily lives.” Information flooding, social media platform and cognitive offloading could be the strong reasons for less retention of knowledge in whatsapp video treatment as compared to other two treatments.

Table 2: Extent of knowledge retained after exposure to selected e-training tools at two intervals, n=90

Treatments	M K score IAE	% Gain in K	After 15 days				After 30 days			
			MK score	Difference	% loss	% retention	MK score	Difference	% loss	% retention
T ₁	29.86	42.38	23.33	6.53	15.55	26.83	22.83	7.03	16.74	25.64
T ₂	31.73	54.44	24.03	7.7	18.33	36.11	22.16	9.57	22.77	31.67
T ₃	32.3	48.33	23.86	8.44	20.07	28.26	19.23	13.07	31.11	17.22

(%-Percentage)

Both T₁ and T₂ have visuals. The things they see in a process make more lasting impressions and they experience considerably less difficulty in recalling the process with increased accuracy. The mental images created by pictorial stimuli are easy to recall, because of intense interest at the time of reception. The present findings of the study were supported by the findings of Kinder (1959) [8] that, the use of audio-visual materials makes far more permanent learning. Philip *et al.* (1999) [9] in their study stated that “one picture is worth of thousand words”, efforts are needed in using visuals appropriately, suitably, timely, clearly and cogently in video programme production in agriculture.

Table 3: Analysis of variance for the retention of knowledge after 15 days of exposure as influenced by e-training tools

Source of variation	SS	DF	MSOS	F	F critical value
Between treatment	8.022	2	4.0111	0.30NS	3.101
Within treatment	1141.100	87	13.116		
Total	1149.122	89			

NS - Non-significant

It was also clear from the present study that longer the interval to recall, more would be the per cent of knowledge loss. In all the selected e-training tools, the knowledge loss was higher after 30 days of exposure than the 15 days of exposure. If the interval of time is long, one may forget the

response to be made. There is a tendency to forget as time passes by. These findings are in line with the findings of Biradar (1997)^[5] and Sawant (1999)^[11].

The data were subjected to one-way analysis of variance to ascertain the difference if any, in retention of knowledge after 15 days of exposure to e-training tools on “Year-round green fodder production” and results are presented in table 3. The calculated ‘F’ value (0.30) was non-significant indicating thus there was no significant difference between the treatments.

Table 4: Analysis of variance for the retention of knowledge after 30 days of exposure as influenced by e-training tools

Source of variation	SS	df	MSOS	F	F critical value
Between treatment	220.088	2	110.044	8.705**	3.101
Within treatment	1099.700	87	12.640		
Total	1319.788	89			

** 0.1% level of significance

Results on the mean difference in retention of knowledge after 30 days of exposure as influenced by different e-training tools was given in Table 4. The ‘F’ value (F= 8.705) was highly significant at 1 per cent level indicating existence of difference in retention of knowledge after 30 days of exposure to different treatments.

Conclusion

This research accomplished its goal. In this research, the study sheds light on knowledge gain and knowledge retention in enriching the knowledge of the dairy farmer through e-training tools. The study can be concluded that the power point presentation (T₂) tool had imparted high knowledge gain and retention followed by video screening (T₁) and whatsapp (T₃). From the results, it is evident that power point presentation could be used as an effective tool for the dissemination of farm technologies to farmers. The similar type of studies may be undertaken in other modes of presentation with other advanced software to make it interactive.

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