

**EFFECTIVENESS OF VIDEO-BASED EDUCATION IN TRAINING DAIRY FARMERS: ALITERATURE
REVIEW AND CROSS-SECTIONAL STUDY**

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BY

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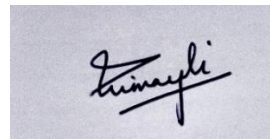
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I declare that this thesis, "**EFFECTIVENESS OF VIDEO-BASED EDUCATION IN TRAINING DAIRY FARMERS: A LITERATURE REVIEW AND CROSS-SECTIONAL STUDY**", submitted for the award of Master of Science to **THE UNIVERSITY OF TRANS-DISCIPLINARY HEALTH SCIENCES AND TECHNOLOGY**, Bengaluru, is my original work, conducted under the supervision of Dr Kumar SK. I confirm that no part of the work reported herein has been submitted for a degree or examination at any other university. References, funding, and material obtained from other sources have been duly acknowledged, and no part of this dissertation has been plagiarized.

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CERTIFICATE FROM THESIS SUPERVISOR/S

This is to certify that the work incorporated in this thesis, “**EFFECTIVENESS OF VIDEO-BASED EDUCATION IN TRAINING DAIRY FARMERS: A LITERATURE REVIEW AND CROSS-SECTIONAL STUDY**” submitted by Himanjali Dimri, was carried out under my supervision. No part of this thesis has been submitted for a degree or examination at any other university. References, help and material obtained from other sources have been duly acknowledged. I confirm the originality of the work and that there is no plagiarism in any part of the thesis.

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SUMMARY

This thesis, titled "Effectiveness of Video-Based Education in Training Dairy Farmers: A Literature Review and Cross-Sectional Study," aims to investigate the potential of video-based education for training dairy farmers. It has three primary objectives: synthesizing existing research on video-based education for dairy farmers, exploring the correlation between adult learning theories and training program design, and developing a cross-sectional study questionnaire for an ongoing Knowledge, Attitudes, and Practices (KAP) project (

The literature review reveals limited research on video-based education tailored explicitly to dairy farmers. However, the findings indicate that video-based education can effectively disseminate knowledge and enhance dairy farmers' skills.

The study also examines the potential correlation between adult learning theories and training program design for dairy farmers. Integrating adult learning principles is suggested to enhance the effectiveness of video-based training interventions in the dairy farming sector.

In addition, a cross-sectional study questionnaire is developed to supplement the findings of an ongoing KAP project. This questionnaire investigates the impact of animal health management and good dairy practices videos produced by Access Agriculture on dairy farmers' knowledge, attitudes, and practices. It aims to gather valuable insights into the training preferences of dairy farmers within the intervention group.

Despite limited existing literature, the findings suggest that video-based training holds promise in enhancing dairy farmers' knowledge and skills. The development of the cross-sectional study questionnaire provides an opportunity to gain insights into dairy farmers' training preferences and tailor programs better to meet their needs for training programs in the future. Further research in this field can offer valuable guidance for effectively implementing video-based training initiatives in the dairy farming industry.

PERSONAL REFLECTION

While working on this thesis, I discovered the art of focusing amidst the constant bombardment of information. I needed to filter out the important details and focus on my objectives. There were moments when my mind wandered, seeking solace in trivial matters. Still, I swiftly redirected my attention—as an adult learner and an eternal student, diving into adult learning principles bestowed upon me some invaluable insights.

In this journey, I experienced the remarkable phenomenon of teaching as a catalyst for personal growth. I harboured a burning curiosity, yearning to comprehend how diverse individuals could absorb and interpret the same information uniquely. This thirst for understanding propelled me to explore the depths of adult learning theories.

The joy of language acquisition has forever enchanted me, yet fluency eludes me when practice falters. With her recommendations of Dr Rajkumar's movies, Anitha unravelled the beauty of the Kannada language and culture. Now I can get the context, but speaking fluently? Well, that's a different story.

Venturing into the village, the gracious women dairy farmers greeted me warmly and kindly. In those moments, a dormant desire to contribute to the realm of education awakened within me. In an era marked by artificial intelligence, I find myself consumed by apprehensions regarding the future of education.

Through the trials and triumphs of this Master's project, I have developed resilience and unwavering determination. Roadblocks may have hindered my path, but the conviction to seek solutions never wavered. This journey has instilled the confidence to overcome obstacles and paved the way for a future where I aspire to make a meaningful impact in the field of education.

Table of Contents

1.	INTRODUCTION	1
1.1	DAIRY SECTOR AND STAKEHOLDERS	1
1.2	STRUCTURE OF DAIRY SECTOR.....	1
1.3	CHALLENGES FACED BY THE DAIRY SECTOR	3
1.4	ADULT LEARNING THEORIES.....	4
1.5	THE KAP STUDY: ACCESS AGRICULTURE	6
1.5.2	Accomplishments of Access Agriculture.....	8
2.	MATERIAL AND METHODOLOGY	10
2.1	KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) STUDY.....	10
	<i>Evaluation of Impact on Capacity Building of Dairy Farmers in Adopting Heritage for Animal Health Management (EVP) through Video Based Pedagogy - A Pilot Study.....</i>	<i>10</i>
	OBJECTIVES:.....	10
2.1.1	VIDEO SUMMARY	10
A)	Calcium Deficiency in cows.....	10
B)	Keeping milk free from antibiotics	12
C)	Herbal medicines against fever in livestock	13
D)	Herbal medicines against mastitis.....	14
E)	Pure milk is good milk.....	15
F)	Making balanced feed for dairy Cows	15
2.1.2	MERGE SOFTWARE	17
2.1.3	MILK SAMPLE ANALYSIS EQUIPMENT	18
2.1.4	PARTICIPANT INFORMATION SHEET.....	19
2.1.5	INFORMED CONSENT FORM.....	21
	Informed Consent Form :	21
2.1.6	BASELINE SURVEY (ENGLISH).....	22
2.1.7	BASELINE SURVEY (KANNADA).....	29
2.2	LITERATURE SURVEY.....	36
2.3	CROSS-SECTIONAL SURVEY.....	37
3.	RESULTS AND DISCUSSIONS	39
3.1	Baseline Survey Results:.....	39
3.1.1	Gowdhalli (Control) Baseline Survey responses :	39
3.1.2	Kakkehalli (Intervention) Baseline Survey responses.....	40
3.1	LITERATURE REVIEW.....	42
3.2	CROSS-SECTIONAL SURVEY:.....	44
3.2.1	Cross-Sectional Questionnaire	44
3.2.2	ASSUMPTIONS.....	46
3.2.3	DATA ANALYSIS	48

3.3	PROPOSED TRAINING PROGRAM	48
4.	CONCLUSION	51
5	REFERENCES	52

1. INTRODUCTION

1.1 DAIRY SECTOR AND STAKEHOLDERS

India is the world's largest milk-producing country accounting for 24 per cent of global milk production (*Dairy Production and Products: Production, 2021.*). Furthermore, it directly employs over 80 million farmers. India is the leading country in milk production, accounting for 23% of the global output. Over the years, the country has experienced steady growth in milk production, with a compound annual growth rate of approximately 6.2 per %. As a result, the production volume rose from 146.31 million tonnes in 2014-15 to an impressive 209.96 million tonnes in 2020-21 (*Page 277 - Economic_survey_2021-2022, 2022.*).

1.2. STRUCTURE OF DAIRY SECTOR

The dairy sector is a vital part of the Indian economy. It provides employment to millions of people and contributes significantly to the country's GDP. The sector is made up of a number of different stakeholders, including milk producers, dairy cooperatives, government agencies, private companies, and consumers.

The operation flood programme, launched in 1970 in India, brought the rural dairying in India to the forefront and helped empower the dairy farmers by giving them control of the resources they create in their own hands.

Kaira District Milk Producers Ltd. Anand (popularized as 'AMUL" has acted as a practical live lab and guide to other cooperative milk unions in the country. In India, the milk producers cooperatives form a three-tier system consisting of village, district, and state levels. This system ensures a consistent and profitable market for all the surplus milk produced by their members throughout the year.

The Village Milk Cooperative (VMC) is an organization that facilitates milk procurement within a village and its surrounding hamlets. They establish a centralized location where milk producers

can deliver their milk. The district milk union, on the other hand, ensures the efficient and cost-effective transportation of milk from all member village cooperatives in the district. They determine the most economical transport routes, considering factors such as distance, safe time limits, and minimizing route overlaps on a day-to-day basis throughout the year. This system minimizes the overall milk souring at the district headquarters dairy plant.

The organization, being owned by rural milk producers themselves, extends its services to even those in remote areas. They set up chilling centers strategically to collect chilled milk in bulk from scattered hamlets. This milk is then transported directly to the district milk plants using milk tankers. This approach aims to uplift underprivileged milk producers from these hamlets who were previously exploited by middlemen offering low prices for their milk. By integrating them into the mainstream socio-economic development, these producers can receive a uniform and remunerative price for their milk, leading to a positive impact on their milk production economy.

The village milk cooperatives collaborate with their district-level milk union to access processed and value-added milk products. These district unions, in turn, come together to form state-level federations that provide centralized marketing services, purchase facilities, product development, quality control, engineering and system support.

Overall, this hierarchical structure of cooperative organizations enables milk producers to benefit from centralized services and support, ensuring fair prices for their milk and promoting the development of value-added milk products.

The National Dairy Development Board (NDDB) has played a significant role in strengthening the cooperative movement in India. Through 'Operation Flood', the Indian Dairy Corporation (IDC) has supported the expansion of the union's activities, providing a solid foundation for the formation of the federation (Gupta, 2019).

In India, rural dairying is an essential component of the traditional and diverse agricultural system, which now operates in a mutually beneficial and sustainable relationship with farming. The country's population is predominantly rural, with over 75% residing in villages. Approximately 80% of the rural population depends on agriculture and related activities for their livelihoods. These rural areas are economically disadvantaged, with cultivators holding an

average land size of 1.68 hectares. Around 75% of farmers own land below 2.0 hectares. As a result, for the majority of farmers, land availability poses a constraint on improving their family income and employment prospects solely through crop production. Additionally, the number of land holdings is increasing while their sizes continue to decrease each year

1.3. CHALLENGES FACED BY THE DAIRY SECTOR

The dairy sector in India faces several challenges that impact its sustainability and growth in the short and long term

Some of these challenges include:

- 1. Fluctuating Milk Prices:** Volatility in milk prices can significantly affect the profitability of dairy farmers and processors. Factors such as changes in demand, supply imbalances, and government policies can lead to price fluctuations, making it challenging for stakeholders to plan and manage their operations effectively.
- 2. Feed Availability and Cost:** The availability and affordability of quality feed for dairy animals are crucial for maintaining milk production levels. Fluctuations in feed prices, inadequate supply, and issues related to feed quality can pose challenges to dairy farmers, impacting their herd health and productivity.
- 3. Environmental Challenges:** Environmental factors like water scarcity, climate change, and natural disasters can directly impact the dairy sector. Extreme weather events, including droughts and floods, can disrupt feed availability, compromise animal health, and affect milk production.
- 4. Disease Outbreaks:** Disease outbreaks among dairy animals, such as foot-and-mouth disease, mastitis, and bovine tuberculosis, can have severe implications for the dairy industry. These outbreaks impact animal health and welfare and disrupt milk production and quality. The recent disease Lumpy Skin Disease outbreak resulted in huge losses to the farmers.
- 5. Market Competition and Changing Consumer Preferences:** The dairy sector faces competition from alternative milk sources, such as plant-based milk, which are gaining popularity among consumers. Changing consumer preferences, including a shift towards

healthier and sustainable options, can impact the demand for traditional dairy products.

1.4 ADULT LEARNING THEORIES

Adult learning theories provide valuable frameworks for understanding how adults acquire knowledge, develop skills, and enhance their abilities. These theories offer insights into adult learners' unique characteristics and motivations, allowing educators, trainers, change agents and policymakers to design effective and engaging learning experiences for adults in various stages of their learning journey(“What Is Adult Learning Theory: Definition, Principles and Models,” n.d.).

1. Andragogy Theory:

- **Concept:** Andragogy, developed by Malcolm Knowles, emphasizes self-directed learning and recognizes the distinct characteristics of adult learners, such as their need for relevance, practicality, and internal motivation.
- **Limitations:** Critics argue that the theory oversimplifies the unique traits of adult learners and neglects the influence of individual differences and contextual factors.
- **Application Areas:** The principles of Andragogy can be applied in various educational settings, including adult education programs, professional development, and workplace training.

2. Transformational Learning Theory:

- **Concept:** Transformational learning, proposed by Jack Mezirow, focuses on the transformative process through which adults critically reflect on their experiences, challenge their assumptions, and reframe their perspectives.
- **Limitations:** Critics argue that the theory may not fully account for the role of emotions, social context, and cultural factors in adult learning and transformation.
- **Application Areas:** Transformational learning theory applies to adult education, counselling, leadership development, and social change initiatives (Mezirow, 2006;

Mezirow-Transformative-Learning, 1997).

3. Experiential Learning Theory:

- Concept: Experiential learning, developed by David Kolb, posits that adults learn through a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation (Woodward et al., 2016).
- Limitations: Critics suggest that the theory may not adequately address the cognitive and emotional aspects of learning and may oversimplify the complexity of adult learning processes.
- Application Areas: Experiential learning theory is commonly applied in vocational training, leadership development programs, and outdoor/adventure education.

4. Self-Directed Learning Theory:

- Concept: Self-directed learning emphasizes adults' ability to take responsibility for their learning, set goals, and engage in independent and lifelong learning.
- Limitations: Critics argue that self-directed learning may only be suitable for some individuals, as it requires a high degree of self-motivation, self-regulation, and access to resources.
- Application Areas: Self-directed learning theory applies to adult education, online learning environments, and professional development initiatives.

5. Social Constructivism:

- Concept: Social constructivism, influenced by theorists like Lev Vygotsky, emphasizes the social and collaborative nature of learning, where adults construct knowledge and meaning through interaction with others and cultural tools.
- Limitations: Critics suggest that social constructivism may not fully address individual cognitive processes and may overlook the role of individual agency in adult learning.
- Application Areas: Social constructivism is applied in adult literacy programs, community-based learning, and collaborative workplace learning initiatives.

Adult learning theories offer diverse perspectives on how adults learn and grow. Each theory

presents unique concepts, acknowledges certain limitations, and finds applications in specific contexts. Understanding these theories and their implications is essential for designing effective

learning environments and facilitating meaningful learning experiences for adult learners in various educational and professional settings. (Mukhalalati & Taylor, 2019).

1.5 THE KAP STUDY: ACCESS AGRICULTURE



Figure 1: Access Agriculture logo

Access Agriculture is a renowned non-profit organization promoting sustainable agriculture and rural development in low-income countries. Founded in 2012, Access Agriculture has been working tirelessly to empower small-scale farmers and rural communities by providing them with quality agricultural training videos in local languages.

History of Access Agriculture: Access Agriculture was established in response to the lack of relevant and accessible agricultural knowledge for smallholder farmers in developing countries. The organization was founded by a group of professionals from different agricultural and development backgrounds who recognized the need for high-quality training materials tailored to the specific needs of local farmers. The founders aimed to bridge the knowledge gap by utilizing digital technologies to provide information in local languages.

The non-profit platform strives to achieve the following key goals:

- a. **Knowledge Sharing:** The organization aims to facilitate the exchange of agricultural knowledge and experiences among farmers, extension agents, and rural communities. By doing so, they empower farmers to adopt sustainable and innovative farming practices.
- b. **Capacity Building:** Access Agriculture aims to enhance the skills and capabilities of farmers by equipping them with practical training materials that are easily understandable and relevant to their local contexts.
- c. **Multilingual Approach:** Recognizing the linguistic diversity in rural areas, Access Agriculture focuses on translating and dubbing training videos into numerous local languages. This approach ensures that knowledge is accessible to farmers with limited literacy or who speak languages other than the majority.
- d. **Partnerships and Collaboration:** Access Agriculture collaborates with local and international partners, including agricultural research institutions, NGOs, and development agencies. This collaborative approach helps create a strong network for sharing expertise and resources and reaching a wider audience.

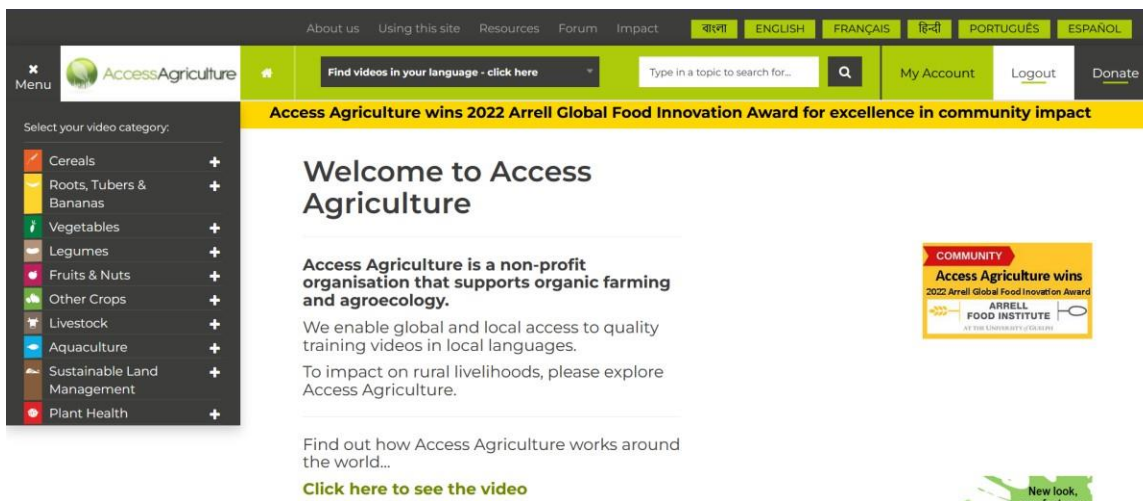


Figure 2: Access Agriculture website

1.5.2 Accomplishments of Access Agriculture



Figure 3: Different training video modules for dairy farmers

a. Extensive Video Library: The organization has developed an extensive collection of agricultural training videos in over 100 languages. These videos cover various topics, including crop production, pest management, soil fertility, post-harvest handling, and livestock management. The videos are designed to be informative, engaging, and visually appealing, making it easier for farmers to grasp complex concepts.

b. Farmer-to-Farmer Learning: Access Agriculture encourages the farmer-to-farmer learning approach, promoting sharing of experiences and knowledge among farmers. This approach fosters a sense of ownership and encourages the adoption of sustainable practices within local communities.

c. Website Presentation: Access Agriculture's website is a comprehensive platform for accessing its vast agricultural training videos. The website's user-friendly design has intuitive navigation and search features, making it easy for users to find the necessary videos. The website also provides additional resources such as downloadable documents, training manuals, and success stories, further enhancing its value to the farming community.

d. Impact and Reach: Access to Agriculture has substantially impacted rural communities worldwide. Their training videos have reached millions of farmers, extension workers, and educators, enabling them to improve their agricultural practices and livelihoods. The organization's work has been recognized globally and has received numerous awards and accolades for its contributions to sustainable agriculture and rural development.

Access Agriculture has successfully addressed the knowledge gap in agricultural practices through its innovative and inclusive approach. By leveraging digital technologies and embracing multilingualism, the organization has empowered farmers in low-income countries with relevant and practical knowledge. Its website is vital for accessing valuable training resources, further amplifying its impact. Access Agriculture's dedication to knowledge sharing, capacity building, and collaborative partnerships has made it a leading non-profit organization in sustainable agriculture and rural development.

2. MATERIAL AND METHODOLOGY

2.1 KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) STUDY

Evaluation of Impact on Capacity Building of Dairy Farmers in Adopting Heritage for Animal Health Management (EVP) through Video Based Pedagogy - A Pilot Study

OBJECTIVES:

1. To examine the impact of capacity building among dairy farmers on their knowledge, attitudes, and practices regarding Veterinary Ayurveda and Ethnoveterinary medicines.
2. To conduct a comparative analysis of the reduction in the usage of antimicrobials and other chemical drugs for primary healthcare of dairy animals through Veterinary Ayurveda and Ethnoveterinary practices in intervention and control groups.
3. To analyze the impact of video demonstrations on Veterinary Ayurveda and Ethnoveterinary practices on the pedagogy of intervention.

2.1.1 VIDEO SUMMARY

The following videos have been chosen to be screened as part of the KAP project:

A) Calcium Deficiency in cows

The video highlights the challenges faced when feeding livestock due to insufficient green fodder and expensive feed. It emphasizes the negative consequences of calcium deficiency, such as poor growth, delayed lactation, and impaired reproduction in dairy cows. Symptoms of calcium deficiency include reduced appetite, cold body temperature, fatigue, and difficulty standing. If left untreated, calcium-deficient cows may die.

The video stresses the importance of vitamin D and calcium for proper cow health. Cows store calcium in their bones and horns, while vitamin D facilitates calcium absorption. Exposure to sunlight enables the cow's skin to produce vitamin D. Legume fodders like alfalfa, as well as tree leaves, are rich sources of calcium. Calcium can also be obtained

from cotton seeds, sea shells, and egg shells. However, excessive calcium intake can be harmful, and maize fodder contains limited calcium. The video provides practical recommendations to provide and treat calcium deficiency in dairy cows. These include avoiding dehorning cows and allowing them to bask in the sun. It is recommended to keep cows in the sun during cooler hours. For optimal health, it is recommended to feed each cow 2 kg of legume fodder and 2 kg of maize fodder daily. If maize fodder is unavailable, it is advised to use silage.

Additionally, providing leaves from plants such as moringa or other options twice a week is beneficial. Soaking organic cotton seeds overnight and feeding each cow half a kilogram of cotton seed daily, or providing organic cotton cake, is also suggested. Incorporating 40 to 50 grams of a mineral mixture into drinking water or feed daily is encouraged.

Further recommendations involve giving a basket full of grass after milking, providing 2 kg of concentrate feed daily during the last three months of pregnancy, and offering 200 to 500 grams of Azolla. After calving, the cow should be given 250 grams of concentrated feed per litre of milk. Another feeding option is preparing a mixture of one kg of coarse powder from finger millet, half a kg of jaggery or raw sugar and feeding it to the cow. Alternatively, half a kg of okra can be given. Betel leaves (20 per day) or aloe vera leaf can also be provided up to one month after calving.

For treatment, the video suggests washing sea shells or egg shells, boiling, drying, and grinding them into powder. One tablespoon of this powder can be mixed with half a litre of water and given to the cow. Another option is soaking half a kilogram of powdered limestone in a clay pot or plastic container overnight in five litres of water, taking the upper clear lime water, and incorporating about half a litre of it into feed or water.

In cases of severe symptoms, immediate consultation with a veterinary doctor is recommended to ensure proper diagnosis and treatment. The video serves as a valuable resource for dairy farmers, aiming to enhance their Knowledge, Attitudes, and Practices regarding the management of calcium deficiency in dairy cows.

B) Keeping milk free from antibiotics

The video titled "Keeping Milk Free from Antibiotics" highlights the importance of maintaining the quality and safety of milk produced by healthy cows. It acknowledges that cows can fall ill and require special attention, and it emphasizes the need for proper diagnosis and treatment to ensure effective care. Cattle owners, including experienced Fulani herders, are urged to exercise caution when administering modern drugs, as incorrect medication or administration methods can harm the cows' health, potentially leading to their death.

Consulting a veterinarian is strongly recommended to avoid administering the wrong medication. If an antibiotic is prescribed, it can be purchased from an agro-vet shop. Antibiotics are medicines that effectively treat certain diseases in animals and humans. However, their usage should be limited to specific diseases and must be approached with caution, mainly when administered through injections.

The video explains that when antibiotics are injected into a cow, they enter the bloodstream and reach the udder, contaminating the milk. Consequently, milk from treated cows should not be consumed for at least five days after treatment due to its potential adverse effects on human health.

To avoid using antibiotics unknowingly, it is recommended that people who buy medicines from agro-vet shops without consulting a veterinarian should ask if the product contains antibiotics. The entire family should be well-informed about cow treatment to avoid mistakes that could compromise their health. The video stresses that antibiotics entering a cow's udder can render future antibiotic treatment less effective, potentially exacerbating illnesses.

Once the treatment is concluded, antibiotics may remain in the cow's body and milk for several days. During this period, it is prohibited to consume or sell milk from the treated cow. Only after all antibiotics have cleared the cow's system, typically one week after the injection ceases, is the milk safe for consumption. Dairy companies rigorously test the milk they purchase to ensure it is antibiotics-free. Contaminated milk is promptly destroyed, and records allow for tracing back to the supplying family. The dairy company highlighted in the video, Friesl and Campina, trains its farmers on proper drug administration—violation of the five-day waiting period before supplying milk results in a one-week suspension of milk purchasing.

Repeated violations lead to longer suspensions and, ultimately, a permanent ban on supplying milk.

The video concludes by emphasizing the importance of maintaining milk free from antibiotics to protect human health and sustain the milk business. Proper adherence to guidelines safeguards the welfare of cows and the income of milk producers.

C) Herbal medicines against fever in livestock

Fever in livestock indicates underlying health issues or poor condition, often caused by germs or excessive heat. Symptoms include increased body temperature, reduced appetite, dry muzzle, drooping ears, altered water consumption, restlessness, and decreased milk production.

Treatment Approach:

1. Provide a cool, well-ventilated environment for the animal.
2. Sponge the animal's body with a wet cloth or drape a wet gunny bag over it.
3. Ensure access to clean, cool water with added salt and sugar.
4. Consult experienced livestock keepers for herbal remedies. Dry and grind specific tree barks, storing the powder in an airtight container.
5. For cattle, mix 3 tbsp of bark powder with 3 cups of water or buttermilk, administering twice daily for 2-3 days.
6. For small ruminants, mix 1 tbsp of bark powder with 1 cup of water or buttermilk, giving twice daily for 2-3 days.

Fever in livestock is a sign of underlying issues. To manage it, create a suitable environment, sponge the animal, provide adequate water with salt and sugar, and consider herbal remedies from specific tree barks. Administer the remedies according to the recommended dosages. Seek advice from experienced livestock keepers for effective treatment.

D) Herbal medicines against mastitis

The video titled "Herbal Medicine Against Mastitis" sheds light on the symptoms, causes, prevention, and treatment of mastitis in cows using herbal remedies. Mastitis is a condition where cows display reluctance to be milked, exhibit kicking behavior when the udder is touched, experience painful teats with potential cracks, have a hot and swollen udder, and consume less fodder. If left untreated, mastitis can spread to other teats and cause damage to the udder. The milk from an affected cow is unsuitable for consumption, and dairy companies may reject it, particularly if the cow has recently been treated with antibiotics.

The primary causes of mastitis are poor hygiene practices in the cattle shed and rough milking techniques, which can bruise the udder and create openings for germs to enter. After milking, the teat canal remains open for approximately 40 minutes, during which germs can easily penetrate if the cow lies down.

To prevent and treat mastitis, several measures are recommended. Regular removal of spilled food and dung from the cattle shed is crucial. Milking should be performed in a separate area from where the cows sleep or rest. It is essential to wash hands with clean water and soap before and between milking sessions. Cleaning the udder with water and drying it thoroughly with a clean cloth before and after milking is also important. Ensuring complete drainage of the udder during milking is vital, as residual milk can harbor germs. Feeding the cows immediately after milking is advised to prevent them from lying down. Additionally, incorporating a weekly feeding of a handful of medicinal leaves can boost the cows' immune system. Applying cold compresses to infected teats in the morning and evening can provide soothing relief. For treatment, the video suggests boiling two handfuls of guava leaves or neem leaves with two liters of water until half the water evaporates. The lukewarm liquid can be used for massaging or applying compresses to the udder and teats. Alternatively, a mixture of one tablespoon of butter or oil, half a tablespoon of turmeric powder, and one tablespoon of camphor can be prepared and applied to the infected teats twice a day immediately after milking. This treatment should be repeated until the cow shows signs of improvement. The video provides valuable insights into the use of herbal medicine

as an alternative approach to combating mastitis in cows, offering practical solutions to manage and treat this condition effectively.

E) Pure milk is good milk

The issue of water adulteration in milk is addressed in the video titled "Buyers Reject Milk Mixed with Water" by Access Agriculture. The video emphasizes the negative consequences of adding water to milk during the sale process, particularly at the end of the dry season when cows produce less milk. While such practices may initially deceive buyers, they quickly become aware of the deception.

The video highlights that modern dairy plants only accept pure, fresh milk for the production of milk powder, cheese, yoghurt, and other dairy products. Water adulteration ruins the quality of milk and renders it unsuitable for further processing. Skilled milk transporters can easily identify water-adulterated milk, as it appears very white with a layer of water on top.

Workers at milk collection centers can also detect water adulteration by comparing the weight and fat content of pure milk with that of mixed milk. They employ a simple instrument called a lactometer to quickly identify any tampering. If any additives are found, the milk company will reject the entire milk supply from the offending family. Repeat offenses may lead to a permanent refusal to purchase milk from that source.

The video emphasizes the importance of delivering pure milk without any adulteration. It urges all milk producers to cooperate in selling unadulterated milk, thereby ensuring the trust of customers, sustaining the business of the milk company, and maintaining a healthy supply of milk from cattle owners.

F) Making balanced feed for dairy Cows

The video titled "Making Balanced Feed for Dairy Cows" emphasizes the detrimental effects of poor nutrition on milk production, productivity, and overall health in cows. Feed consisting

primarily of rice bran, wheat bran, or maize flour lacks essential proteins, minerals, and vitamins. Cows suffering from inadequate nutrition often face challenges in conceiving, become infertile, exhibit weakness, and lose their appetite.

Importance of Balanced Feed: Balanced feed plays a crucial role in providing cows with the necessary nutrients. It contains an appropriate balance of carbohydrates, proteins, minerals, and vitamins. Carbohydrates, derived from forage grasses, grains, and straw, provide energy to the cows. Proteins, sourced from mustard cake, fodder crops, legume husks, and crop residues, enhance milk production. Minerals and vitamins strengthen bones, reduce infertility, and promote increased milk yield.

Composition of Balanced Feed: A properly balanced feed typically consists of 72% cereals, 25% legumes, 2% mineral mixture, and 1% salt. The inclusion of salt aids digestion and encourages cows to drink sufficient water, ensuring proper hydration.

Preparing Balanced Feed: To make balanced feed, it is advisable to utilize locally available feed ingredients. Store these ingredients in appropriate containers such as polythene or jute bags, plastic or metal bins, while keeping them on a flat wooden plank above the ground. The feed should be prepared on a daily basis or every three days, using fresh ingredients and consumed within a month.

For a 10 kg batch of balanced feed, combine 5 kg of maize flour, 2.2 kg of rice bran, 1.5 kg of lentil and pea husk, and 1 kg of crushed mustard cake. Additionally, incorporate 200 grams of mineral and vitamin powder, along with 100 grams of salt. Mix all the ingredients thoroughly in a bucket, either manually or using a feed mixer.

Feeding Recommendations: A milking cow requires a daily intake of 1.25 kg of balanced feed for survival, plus an additional 1 kg for every 2.5 liters of milk produced. Therefore, it is crucial to calculate the appropriate amount of balanced feed based on the milk yield of each cow. For example, if a cow produces 5 liters of milk per day, it necessitates 3.25 kg of balanced feed.

Supplementing with Green Grass: To augment milk quantity and facilitate digestion, it is essential to provide cows with green grass as part of their daily diet. This additional feeding

practice complements the balanced feed regimen.

2.1.2 MERGE SOFTWARE

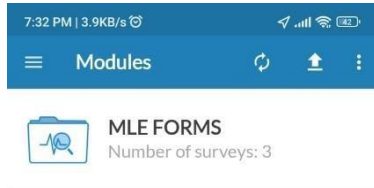


Figure 4 : Screenshot of the Merge app



Figure 5: Digisoft video projector for screening the videos

During video projection sessions conducted as part of a **Knowledge, Attitudes, and Practices** (KAP) study, a mobile application monitor was employed to effectively capture essential information. This includes general participant details such as names, genders, organizations, and contact information. Additionally, information regarding the video projector, venue, and equipment used was recorded. The level of participation will be analyzed based on gender and age groups. A comprehensive summary of the interaction during the projection session will be documented, along with participants' impressions and any suggestions or concerns they may have. In particular instances, where certain data cannot be immediately entered on spot, hard copy forms will be integrated on spot. The enumerators are encouraged to enrich the study by attaching at least three photographs, including one of the audiences engaged in the video, one displaying the video's title at the beginning (if possible), and one showcasing the list of participants. Prior to saving the data, enumerators will have the opportunity to cross-check and edit the entered information for accuracy. In the event that the enumerator is unable to utilize the application at a specific time, an alternative channel for data dissemination is available via the web form at https://surveys.mergdata.com/take_survey/1274/t6.

2.1.3 MILK SAMPLE ANALYSIS EQUIPMENT



Figure 6: APP088 Read Sensor 2

APP088- Read Sensor 2 reader is an innovative instrument for reading immunochromatographic dipstick tests manufactured by Unisensor. This reader can make a rapid detection, with high sensitivity and repeatability, avoiding reading mistakes by eyes. It is a user-friendly operating system and has an easy and simple detection procedure. The detection time is less than 10 seconds, and multifunction, various software compliance to different test cards, unique function of qualitative detection

The Read sensor 2 device detects samples as positive or negative (concentration) by measuring the reflection of light intensity of Test lines (ex. antibiotic family) and Control line (CTRL).

2.1.4 PARTICIPANT INFORMATION SHEET

A participant information sheet (PIS) is a document that is given to potential participants in a research study. It provides information about the study, including the purpose of the study, the procedures involved, the risks and benefits of participating, and the participant's rights. The PIS is an important part of the informed consent process, which ensures that participants are aware of the risks and benefits of participating in the study before they decide whether to take part. The PIS should be written in a clear and concise language that is easy for the potential participant to understand. It should be free of jargon and technical terms. The PIS should also be free of bias and should not try to persuade the potential participant to participate in the study.

Participant Information Sheet

Title: Impact Assessment on capacity building of dairy farmers in Adapting ethnoveterinary practices for animal health management through video-based pedagogy.

Aim of the study:

1. To study the impact of intervention in the form of videos depicting good dairy practices for primary healthcare management of dairy cows.
2. To check for the reduction in the usage of antimicrobial drugs like Tetracycline, Beta-Lactams and Chloramphenicol for primary healthcare of dairy cows.

Do I have to participate in this study?

You have the voluntary choice to participate in the above-mentioned study.

What am I supposed to do?

You are eligible for this study, if you are a dairy farmer and own more than one cow. You are required to come every Wednesday at 10:30 am to Kakkehalli dairy cooperative. You have to watch the videos shown and then try to practice whatever you understand from the demonstration. The milk from your cow will be tested for antibiotic drug residues twice- once at the beginning of the study and once towards the end. Lastly, you are required to answer questions from the questionnaire truthfully.

What are the benefits of participating in this study?

1. Acquisition of new Knowledge on how to take care of cows using locally available natural resources.
2. Awareness about the unnecessary use of antibiotics and the development of antimicrobial resistance.
3. Understanding Calcium deficiency in cows and the ways to increase calcium content in their daily food intake.
4. Understanding how to provide primary healthcare in the form of herbal medicine against fever in cows.
5. Understanding how to provide primary healthcare in the form of herbal medicine against mastitis in cows.
6. Understanding how to make a balanced feed for cows to prevent any nutritional deficiency.

What are the disadvantages of participating in this study?

There are no known disadvantages to participating in this study.

Will the data collected from this study be confidential?

Yes, the intention of this study is to understand the gaps that exist between acquiring knowledge and its implementation in the dairy sector. The data collected in this study is purely for scientific purposes and not for any commercial purposes.

What happens if I want to withdraw from the study?

You only need to inform the investigator of your intention to withdraw from the research. You will not be penalized for your withdrawal.

What is the source of funding? Access Agriculture is a non-profit organization that supports organic farming and agroecology (<https://www.accessagriculture.org/>)

For additional queries, please contact:

Dr Kumar S K

Principal Investigator

The University of Transdisciplinary Health Sciences and Technology (TDU)

74/2 Jarakabande Kaval post Attur via Yelahanka, Bengaluru, PIN : 560064

+91 98451038038

2.1.5 INFORMED CONSENT FORM

An informed consent form is a document that is used to explain the details of a research study to potential participants and to obtain their voluntary agreement to participate.

Informed Consent Form :

Project title: Impact Assessment on capacity building of dairy farmers in adapting Veterinary Ayurveda (EVP) for animal health management through video based pedagogy- A pilot study

I, Mr./Ms. son/daughter of..... fully understand the objectives of the aforesaid study. I have been informed in detail about the procedures of the study through the -- Participant Information Sheet supplied to me well before my initiation to the study. I am convinced that it will be useful in enhancing knowledge and will help in introducing me to traditional animal health management practices which will help me improve the quality of the milk while taking better care of the dairy cows.

I am willing to participate in the survey to share my understanding that is developed from watching the videos by the researchers. I am also aware that the milk from my cows will be tested for the presence of antibiotic residues. I understand that my participation in this study is voluntary and that I have the right to refuse or withdraw my consent at any time during its tenure by informing the investigator. I also understand that my identity will not be revealed to third parties or to the media (electronic or otherwise). I shall not restrict the use of any data or result obtained from this study, provided such usage is only for scientific purposes. Lastly, I am fully aware that I will not be paid to participate in this research, nor

will I be charged for the same. The contents of this Informed Consent Form have been explained to me to my satisfaction in the language I am conversant with. Hence, I am signing this document out of my free volition, thus consenting to participate in the study.

Signature of the investigator

Signature of the participant

Name of the investigator

Name and Address

2.1.6 BASELINE SURVEY (ENGLISH)

12 questions on knowledge, 12 Questions on Attitude, 12 Questions on Practice

A) Calcium deficiency in dairy cows

1. Calcium deficiency affects the production of milk (Knowledge)

A - Yes

B - No

2. A pregnant cow needs double quantity of calcium (Attitude)

A - Agree

B - Disagree

3. Grazing animal will have better nutrition (Attitude)

A - Agree

B – Disagree

4. I feed legumes regularly (Practice)

A - Yes

B – No

5. Dehorning is not a good practice leads to calcium deficiency (Practice)

A - Yes

B - No

6. Azolla is a good source of calcium (Knowledge)

A - Agree

B – Disagree

Making balanced feed for dairy cows

7. Balanced feed gives good nutrients to the cows for better milk production (Knowledge)

A - Yes

B - No

8. Balanced feed contains the correct proportion of carbohydrates, proteins,

Minerals (Knowledge)

A - Agree

B - Disagree

9. We prepare feed by using local available resources (Practice)

A - Yes

B - No

Herbal medicine against fever in livestock

10. Fever can deteriorate the production status of the animal (Knowledge)

A - Agree

B - Disagree

11. Extra care has to be given when the animal is having fever

(Attitude)

A - Agree

B - Disagree

12. Fever may not be a disease it's a sign showing the sickness and poor condition of the animal (Attitude)

A - Agree

B - Disagree

13. Wrapping a wet cloth around the horns reduces body temperature (Practice)

A - Agree

B - Disagree

Herbal medicine against mastitis

14. Mastitis is caused by germs (Knowledge)

A - Agree

B - Disagree

15. Mastitis can be caused by poor hygiene (Knowledge)

A - Agree

B - Disagree

16. Animals that are poorly fed are more prone to get mastitis (Knowledge)

A - Agree

B - Disagree

17. Rough milking bruises the teat and can let germs enter the udder (Knowledge)

A - Agree

B - Disagree

18. When some milk remains in the udder and teats after milking, germs can grow in that milk (Knowledge)

A - Agree

B - Disagree

19. After milking, the teat canal remains open for up to 40 minutes. That's why the cow will be taken for walking (Practice)

A - Agree

B - Disagree

20. When a cow has mastitis, her milk is infected, and is not good to drink (Attitude)

A - Agree

B - Disagree

21. Antibiotics end up in the meat and milk, which can be harmful for your health (Attitude)

A - Agree

B - Disagree

22. Only antibiotics can cure mastitis (Attitude)

A - Agree

B - Disagree

23. Herbal medicines cannot effectively cure mastitis (Attitude)

A - Agree

B - Disagree

24. Before and after milking each animal, I wash my hands, teat and milking machines with clean water and soap (Practice)

A - Yes

B - No

25. I clean the udder with clean water and wipe it dry with a clean cloth before and after milking (Practice)

A - Yes

B - No

26. I feed the cattle immediately after milking them, so they will not lay down (Practice)

A - Yes

B – No

27. I use antibiotics to cure mastitis (Practice)

A - Yes

B – No

28. I use herbal medicines to cure mastitis (Practice)

A - Yes

B - No

Keeping milk free from antibiotics

29. Cattle owners are happy when their animal produces good quantity milk during sickness also (Attitude)

A - Yes

B - No

30. After the administration of antibiotics should not consume and pour the milk from such animals for a few days to a few weeks (practice)

A - Agree

B - Disagree

31. Antibiotics should be used with caution (Attitude)

A - Yes

B - No

32. Consulting a veterinarian is not a must to treat the animal with antibiotics (Attitude)

A - Yes

B - No

33. After stopping the antibiotic treatment, the antibiotic will stay in the cow's body and milk for some days (Knowledge)

A - Agree

B - Disagree

Pure milk is good milk

34. Good quality milk is free from germs, Free from antibiotics, Having good SNF Without adulteration of water and other (Knowledge)

A - Agree

B - Disagree

35. Adding water and diluting the milk is not a good choice for good quality milk. (Attitude)

A - Agree

B - Disagree

36. The lasting relationships are built on changing the practices of animal management for quality milk production (Practice)

A - Yes

B - No

2.1.7 BASELINE SURVEY (KANNADA)

ವೀಡಿಯೋ ಆಧಾರಿತ ಶಿಕ್ಷಣಶಾಸ್ತ್ರದ ಮೂಲಕ ಪ್ರಾಣಿಗಳ ಆರೋಗ್ಯ ನಿರ್ವಹಣೆಗಾಗಿ ಪಾರಂಪರಿಕ (EVP) ಅನ್ನು
ಅಳವಡಿಸಿಕೊಳ್ಳುವಲ್ಲಿ ಡೈರಿ ರೈತರ ಸಾಮರ್ಥ್ಯದ ನಿರ್ಮಾಣದ ಮೇಲೆ ಪ್ರಭಾವದ ಮೌಲ್ಯಮಾಪನ -
ಪ್ರಾಯೋಗಿಕ ಅಧ್ಯಯನ

ಹಾಲುಣಿಸುವ ಹಸುಗಳಲ್ಲಿ ಕ್ಯಾಲಿಯಂ ಕೊರತೆ

1. ಕ್ಯಾಲಿಯಂ ಕೊರತೆ ಹಾಲಿನ ಉತ್ಪಾದನೆಯ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರುತ್ತದೆ (ಜ್ಞಾನ)

A-ಹೌದು

B-ಇಲ್ಲ

2. ಗರ್ಭಿಣಿ ಹಸುವಿಗೆ ದ್ವಿಗುಣ ಕ್ಯಾಲಿಯಂ ಅಗತ್ಯವಿದೆ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

3. ಮೇಯಿಸುವ ಪ್ರಾಣಿಯು ಉತ್ತಮ ಪೋಷಣೆಯನ್ನು ಹೊಂದಿರುತ್ತದೆ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

4. ನಾನು ನಿಯಮಿತವಾಗಿ ದ್ವಿದಳ ಧಾನ್ಯಗಳನ್ನು ನೀಡುತ್ತೇನೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

5. ಕೊಂಬು ತೆಗೆಯುವುದು ಒಳ್ಳೆಯ ಅಭ್ಯಾಸವಲ್ಲ ಕ್ಯಾಲಿಯಂ ಕೊರತೆಗೆ ಕಾರಣವಾಗುತ್ತದೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

6. ಅಜೋಲಾ ಕ್ಯಾಲಿಯಂನ ಉತ್ತಮ ಮೂಲವಾಗಿದೆ (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

ಡೈರಿ ಹಸುಗಳಿಗಾಗಿ ಸಮತೋಲನವುಳ್ಳ ಮೇವನ್ನು ತಯಾರಿಸುವುದು

7. ಸಮತೋಲಿತ ಆಹಾರವು ಉತ್ತಮ ಹಾಲು ಉತ್ಪಾದನೆಗೆ ಹಸುಗಳಿಗೆ ಉತ್ತಮ ಪೋಷಕಾಂಶಗಳನ್ನು ನೀಡುತ್ತದೆ. (ಜ್ಞಾನ)

A-ಹೌದು

B-ಇಲ್ಲ

8. ಸಮತೋಲಿತ ಫೀಡ್ ಕಾರ್ಬೋಹೈಡ್ರೇಟ್‌ಗಳು, ಪ್ರೋಟೀನ್‌ಗಳು, ಖನಿಜಗಳ ಸರಿಯಾದ ಪ್ರಮಾಣವನ್ನು ಹೊಂದಿರುತ್ತದೆ

(ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

9. ಸ್ಥಳೀಯ ಲಭ್ಯವಿರುವ ಸಂಪನ್ಮೂಲಗಳನ್ನು ಬಳಸಿಕೊಂಡು ನಾವು ಫೀಡ್ ಅನ್ನು ತಯಾರಿಸುತ್ತೇವೆ (

ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

10. ಪ್ರಾಣಿ ಪ್ರತಿ ವರ್ಷವೂ ಹಾಲನ್ನು ನೀಡದಿದ್ದರೆ ಮತ್ತು ಸಂತಾನೋತ್ಪತ್ತಿ ಮಾಡದಿದ್ದರೆ ನಾವು ಅಂತಹ ಪ್ರಾಣಿಗಳನ್ನು ಇಟ್ಟುಕೊಳ್ಳಲು ಸಾಧ್ಯವಿಲ್ಲ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

ಜಾನುವಾರುಗಳಲ್ಲಿ ಜ್ವರ ತಡೆಯಲು ಗಿಡಮೂಲಿಕೆಗಳ ಔಷಧಿ

11. ಜ್ವರವು ಪ್ರಾಣಿಗಳ ಹಾಲು ಉತ್ಪಾದನಾ ಸ್ಥಿತಿಯನ್ನು ಹದಗೆಡಿಸುತ್ತದೆ (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

12. ಪ್ರಾಣಿಗೆ ಜ್ವರ ಬಂದಾಗ ಹೆಚ್ಚಿನ ಕಾಳಜಿಯನ್ನು ನೀಡಬೇಕು (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

13. ಜ್ವರವು ರೋಗವಲ್ಲದಿರಬಹುದು, ಇದು ಪ್ರಾಣಿಗಳ ಅನಾರೋಗ್ಯ ಮತ್ತು ಉತ್ಪಾದನಾ ಸ್ಥಿತಿಯನ್ನು ಕುಂದಿಸುವ ಸಂಕೇತವಾಗಿದೆ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

14. ಕೊಂಬುಗಳಿಗೆ ಒಡ್ಡೆ ಬಟ್ಟೆಯನ್ನು ಸುತ್ತುವುದರಿಂದ ದೇಹದ ಉಷ್ಣತೆ ಕಡಿಮೆಯಾಗುತ್ತದೆ (ಅಭ್ಯಾಸ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

15. ಜ್ವರದ ಸಮಯದಲ್ಲಿ ಪ್ರಾಣಿಗಳಿಗೆ ಬೇಕಾಗಿರುವಷ್ಟು ನೀರನ್ನು ನೀಡಬೇಕಾಗುತ್ತದೆ (ಅಭ್ಯಾಸ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

ಕೆಚ್ಚಲ ಬಾವಿಗೆ ಮೂಲಿಕೆ ಔಷಧಿ

16. ಕೆಚ್ಚಲಬಾವು ರೋಗಾಣುಗಳಿಂದ ಉಂಟಾಗುತ್ತದೆ (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

17. ಕಡಿಮೆ ನೈರ್ಮಲ್ಯದಿಂದ ಕೆಚ್ಚಲಬಾವು ಉಂಟಾಗಬಹುದು (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ
B-ಒಪ್ಪುವುದಿಲ್ಲ

18. ಕಳಪೆ ಆಹಾರವನ್ನು ನೀಡುವುದರಿಂದ ಪ್ರಾಣಿಗಳು ಕೆಚ್ಚಲ ಬಾವಿಗೆ ಹೆಚ್ಚು ಒಳಗಾಗುತ್ತವೆ (ಜ್ಞಾನ)

A- ಒಪ್ಪುತ್ತೇನೆ
B - ಒಪ್ಪುವುದಿಲ್ಲ

19. ಒರಟಾದ ಹಾಲುಕರೆಯುವಿಕೆಯು ಮೊಲೆಗಳ ಗಾಯಗಳನ್ನು ಮಾಡುತ್ತದೆ ಮತ್ತು ಸೂಕ್ಷ್ಮಾಣುಗಳನ್ನು ಕೆಚ್ಚಲು ಪ್ರವೇಶಿಸಲು ಬಿಡಬಹುದು (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

20. ಹಾಲುಣಿಸಿದ ನಂತರ ಸ್ವಲ್ಪ ಹಾಲು ಕೆಚ್ಚಲು ಮತ್ತು ಮೊಲೆಗಳಲ್ಲಿ ಉಳಿದಾಗ, ಆ ಹಾಲಿನಲ್ಲಿ ಸೂಕ್ಷ್ಮ ಜೀವಿಗಳು ಬೆಳೆಯಬಹುದು (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

21. ಹಾಲುಕರೆಯುವ ನಂತರ, ಮೊಲೆಗಳ ರಂಧ್ರವು 40 ನಿಮಿಷಗಳವರೆಗೆ ತೆರೆದಿರುತ್ತದೆ. ಅದಕ್ಕಾಗಿಯೇ ಹಸುವನ್ನು ನಡೆದಾಡಿಸಲು ಕರೆದೊಯ್ಯಲಾಗುತ್ತದೆ. (ಅಭ್ಯಾಸ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

22. ಹಸುವಿಗೆ ಕೆಚ್ಚಲಬಾವು ಇದ್ದಾಗ, ಅದರ ಹಾಲು ಸೋಂಕಿಗೆ ಒಳಗಾಗುತ್ತದೆ ಮತ್ತು ಕುಡಿಯಲು ಒಳ್ಳೆಯದಲ್ಲ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

23. ಪ್ರತಿಜೀವಕಗಳು ಮಾಂಸ ಮತ್ತು ಹಾಲಿನಲ್ಲಿ ಉಳಿದುಕೊಳ್ಳುತ್ತವೆ, ಇದು ನಿಮ್ಮ ಆರೋಗ್ಯಕ್ಕೆ ಹಾನಿಕಾರಕವಾಗಿದೆ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

24. ಪ್ರತಿಜೀವಕಗಳು ಮಾತ್ರ ಕೆಚ್ಚಲಬಾವು ಅನ್ನು ಗುಣಪಡಿಸಬಹುದು (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

25. ಪಾರಂಪರಿಕ ಔಷಧಿಗಳು ಕೆಚ್ಚಲಬಾವು ಅನ್ನು ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಗುಣಪಡಿಸಲು ಸಾಧ್ಯವಿಲ್ಲ (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

26. ಪ್ರತಿ ಪ್ರಾಣಿಗಳಲ್ಲಿ ಹಾಲು ಕರೆಯುವ ಮೊದಲು ಮತ್ತು ನಂತರ, ನಾನು ನನ್ನ ಕೈಗಳನ್ನು, ಮೊಲೆ ಮತ್ತು ಹಾಲುಕರೆಯುವ ಯಂತ್ರಗಳನ್ನು ಶುದ್ಧ ನೀರು ಮತ್ತು ಸಾಬೂನಿನಿಂದ ತೊಳೆಯುತ್ತೇನೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

27. ನಾನು ಕೆಚ್ಚಲನ್ನು ಶುದ್ಧ ನೀರಿನಿಂದ ಸ್ವಚ್ಛಗೊಳಿಸುತ್ತೇನೆ ಮತ್ತು ಹಾಲು ಕರೆಯುವ ಮೊದಲು ಮತ್ತು ನಂತರ ಸ್ವಚ್ಛವಾದ ಬಟ್ಟೆಯಿಂದ ಒರೆಸುತ್ತೇನೆ. (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

28. ನಾನು ದನಕರುಗಳಿಗೆ ಹಾಲು ಕರೆದ ತಕ್ಷಣ ಆಹಾರ ನೀಡುತ್ತೇನೆ, ಆದ್ದರಿಂದ ಅವು ಮಲಗುವುದಿಲ್ಲ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

29. ಕೆಚ್ಚಲಬಾವು ಅನ್ನು ಗುಣಪಡಿಸಲು ನಾನು ಪ್ರತಿಜೀವಕಗಳನ್ನು ಬಳಸುತ್ತೇನೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

30. ಕೆಚ್ಚಲಬಾವು ಅನ್ನು ಗುಣಪಡಿಸಲು ನಾನು ಗಿಡಮೂಲಿಕೆ ಔಷಧಿಗಳನ್ನು ಬಳಸುತ್ತೇನೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

ಹಾಲನ್ನು ಪ್ರತಿಜೀವಕಗಳಿಂದ ಮುಕ್ತವಾಗಿಡುವುದು

31. ಜಾನುವಾರು ಮಾಲೀಕರು ತಮ್ಮ ಪ್ರಾಣಿಯು ಅನಾರೋಗ್ಯದ ಸಮಯದಲ್ಲಿಯೂ ಕೂಡ ಉತ್ತಮ ಪ್ರಮಾಣದ ಹಾಲನ್ನು ಉತ್ಪಾದಿಸಿದಾಗ ಸಂತೋಷಪಡುತ್ತಾರೆ (ವರ್ತನೆ)

A-ಹೌದು

B-ಇಲ್ಲ

32. ಪ್ರತಿಜೀವಕಗಳ ಉಪಯೋಗಿಸಿದ ನಂತರ ಕೆಲವು ದಿನಗಳಿಂದ ಕೆಲವು ವಾರಗಳವರೆಗೆ ಅಂತಹ ಪ್ರಾಣಿಗಳಿಂದ ಹಾಲನ್ನು ಸೇವಿಸಬಾರದು ಮತ್ತು ಮಾರಾಟ ಮಾಡಬಾರದು (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

33. ಪ್ರತಿಜೀವಕಗಳನ್ನು ಎಚ್ಚರಿಕೆಯಿಂದ ಬಳಸಬೇಕು (ವರ್ತನೆ)

A-ಹೌದು

B-ಇಲ್ಲ

34. ಪ್ರಾಣಿಗಳಿಗೆ ಪ್ರತಿಜೀವಕಗಳ ಮೂಲಕ ಚಿಕಿತ್ಸೆ ನೀಡಲು ಪಶುವೈದ್ಯರನ್ನು ಸಂಪರ್ಕಿಸುವುದು ಅನಿವಾರ್ಯವಲ್ಲ (ವರ್ತನೆ)

A-ಹೌದು

B-ಇಲ್ಲ

35. ಪ್ರತಿಜೀವಕ ಚಿಕಿತ್ಸೆಯನ್ನು ನಿಲ್ಲಿಸಿದ ನಂತರ, ಪ್ರತಿಜೀವಕವು ಹಸುವಿನ ದೇಹ ಮತ್ತು ಹಾಲಿನಲ್ಲಿ ಕೆಲವು ದಿನಗಳವರೆಗೆ ಇರುತ್ತದೆ (ಅಭ್ಯಾಸ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

36. ರೈತರು ಪಶು ವೈದ್ಯರ ಸಲಹೆ ಇಲ್ಲದೆ ಪ್ರತಿಜೀವಕಗಳನ್ನು ಖರೀದಿಸುತ್ತಾರೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

ಉತ್ತಮ ಹಾಲೆಂದರೆ ಶುದ್ಧ ಹಾಲು

37. ಉತ್ತಮ ಗುಣಮಟ್ಟದ ಹಾಲು ಸೂಕ್ಷ್ಮಜೀವಿಗಳಿಂದ ಮುಕ್ತವಾಗಿದೆ, ಪ್ರತಿಜೀವಕಗಳಿಂದ ಮುಕ್ತವಾಗಿದೆ, ಉತ್ತಮ SNF ಹೊಂದಿದೆ ನೀರು ಮತ್ತು ಇತರ ಕಲಬೆರಕೆ ಇಲ್ಲದೆ (ಜ್ಞಾನ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

38. ನೀರನ್ನು ಸೇರಿಸುವುದು ಮತ್ತು ಹಾಲನ್ನು ಕಲಬೆರಕೆಗೊಳಿಸುವುದು ಗುಣಮಟ್ಟದ ಹಾಲಿಗೆ ಉತ್ತಮ ಆಯ್ಕೆಯಲ್ಲ. (ವರ್ತನೆ)

A-ಒಪ್ಪುತ್ತೇನೆ

B-ಒಪ್ಪುವುದಿಲ್ಲ

39. ಗುಣಮಟ್ಟದ ಹಾಲು ಉತ್ಪಾದನೆಗಾಗಿ ಪ್ರಾಣಿಗಳ ನಿರ್ವಹಣೆಯ ಅಭ್ಯಾಸಗಳನ್ನು ಬದಲಾಯಿಸುವುದರ ಮೇಲೆ ಶಾಶ್ವತ ಸಂಬಂಧಗಳನ್ನು ನಿರ್ಮಿಸಲಾಗಿದೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

40. ರೈತರು ಹಾಲು ಸಂಗ್ರಹ ಕೇಂದ್ರದಲ್ಲಿ ಹಾಲು ಮಾರಾಟ ಮಾಡುವ ಮೂಲಕ ನಿಯಮಿತ ಆದಾಯವನ್ನು ಹೊಂದಲು ಇಷ್ಟಪಡುತ್ತಾರೆ (ವರ್ತನೆ)

A-ಹೌದು

B-ಇಲ್ಲ

41. ಪ್ರತಿ ಹಾಲು ಸಂಗ್ರಹಣಾ ಕೇಂದ್ರವು ಲ್ಯಾಕ್ಟೋಮೀಟರ್‌ನೊಂದಿಗೆ ಹಾಲಿನ ಗುಣಮಟ್ಟವನ್ನು ಪರಿಶೀಲಿಸುತ್ತದೆ (ಅಭ್ಯಾಸ)

A-ಹೌದು

B-ಇಲ್ಲ

2.2 LITERATURE SURVEY

The literature search was carried out on the following databases: Researchgate, Google Scholar and PubMed. The search was conducted with a combination of the following keywords: Video-based education, Video-based intervention, training dairy workers and training dairy farmers. All specified search terms were used in different combinations using Boolean operators/connectors (AND/OR) as appropriate to the respective databases. Terms were searched anywhere within the publication (no restriction to title, abstract, or body of publication). The criteria for inclusion of publication were books or articles electronically available in their entirety, published in English from January 2000 to December 2021, concerning the application of video-based interventions. The number of eligible articles and the selection process are demonstrated in the four-step Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart, as shown in Figure 6.

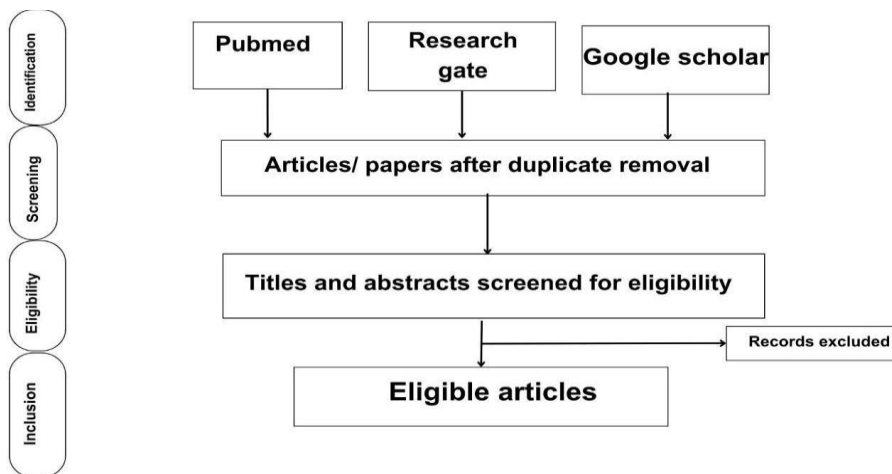


Figure 7: PRISMA flow chart

The literature review was not a systematic review because it aimed to explore the learning theories and take their ideas and insights to design and implement more effective video-based training for dairy farmers.

A literature review requires a synthesis of different subtopics to better understand the state of

knowledge on a more critical topic intended to be discussed. Each argument represents a piece of a puzzle that must be assembled to reveal the complete state of knowledge. Keeping the research organized while reading; one can encounter information overload as one dives deep into the topic. A synthesis matrix was used to combat the mixing up of information, as shown in Fig 2. At the top of the chart are spaces to record sources, and along the side are the spaces to record the main points of arguments on the topic. The column is read vertically, belonging to that source, and information about each significant idea is recorded. A similar pattern is followed for subsequent entries. As new information about the main idea kept popping up, it was added to the relevant row.

Topic: _____

	Source #1	Source #2	Source #3	Source #4
Main Idea A				
Main Idea B				

Figure 8: A synthesis matrix

2.3 CROSS-SECTIONAL SURVEY

The prospective study aims to investigate the effectiveness of video training in improving the Knowledge, Attitudes and Practices (KAP) of dairy farmers. This research endeavours to assess the impact of video training intervention on enhancing the participant's understanding, attitudes and implementation of best practices in dairy farming. The methodology employed to conduct a cross-sectional study includes validating and analyzing data obtained from the questionnaire.

A cross-sectional study will be adopted, allowing for a snapshot assessment of the KAP of dairy farmers at a specific point in time. This design facilitates the evaluation of the video

training intervention's immediate impact on the participants' knowledge, attitudes and practices.

1. Sampling Strategy: Random sampling technique will be employed to select study participants. The sample size is determined using statistical calculations, ensuring adequate representation and generalizability of ethical considerations such as informed consent forms and confidentiality will be strictly adhered to throughout the study.
2. Questionnaire development: A comprehensive questionnaire is designed to collect data on the participant's demographic information, baseline KAP and exposure to video training interventions. The questionnaire will consist of close-ended and open-ended questions, enabling qualitative and quantitative data collection.
3. Data Validation: The interviewer will review the questionnaire for completeness and consistency after the interview. If possible, any missing or ambiguous responses will be clarified with the participants. In case of any discrepancies, they will be resolved by referring back to the original questionnaire.
4. Data Analysis: Quantitative data collected from the questionnaire will be analyzed using appropriate statistical methods such as descriptive statistics. The analysis will assess the relationship between video training intervention and the participant's KAP scores. Qualitative data from open-ended questions will be subjected to thematic analysis to gain in-depth insights into the participants' perspectives and experiences.

3. RESULTS AND DISCUSSIONS

3.1 Baseline Survey Results:

3.1.1 Gowdhalli (Control) Baseline Survey responses :

Evaluation of Impact on Capacity Building of Dairy Farmers in Adopting Heritage for Animal Health Management (EVP) through Video Based Pedagogy - A Pilot Study																
Sl No	Name of the Farmer	Age	Village	Mobile Number	Year of Expertise	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
1	Mr Nayan	24 years	Gowdhalli	9591819620	4 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
2	Mr Krishnamurthy	38 years	Gowdhalli	9980682601	18 years	Yes	Agree	Agree	Yes	No	Agree	Yes	Agree	Yes	Agree	Agree
3	Mr Narayan Swamy	45 years	Gowdhalli	9916553988	25 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
4	Mr H Nagaraju	55 years	Gowdhalli	9900383987	25 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	No	Agree	Agree
5	Mr Manjunatha	45 years	Gowdhalli	8095222752	20 years	Yes	Agree	Agree	Yes	No	Agree	Yes	Agree	Yes	Agree	Agree
6	Mr Anjanappa	20 years	Gowdhalli	9964091067	4 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
7	Ms G R Shobha	25 years	Gowdhalli	8722806624	5 years	Yes	Agree	Agree	Yes	Yes	Disagree	Yes	Agree	No	Agree	Disagree
8	Mr Krishnamurthy	29 years	Gowdhalli	8217080460	9 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
9	Ms Nagaveni	37 years	Gowdhalli	8496083368	17 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
10	Mr Chenappa	45 years	Gowdhalli	9591049519	20 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
11	Mr Doddayya	56 years	Gowdhalli	9916553988	20 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
12	Mr Manu K	27 years	Gowdhalli	9916553988	7 years	Yes	Agree	Agree	No	No	Agree	Yes	Agree	No	Agree	Agree
13	Mr Muni Raju	50 years	Gowdhalli	9591591981	15 years	Yes	Agree	Agree	Yes	No	Agree	Yes	Agree	Yes	Agree	Agree
14	Mr Sonne Gowda	53 years	Gowdhalli	9886994464	41 years	Yes	Agree	Disagree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
15	Mr Ravi Kumar P	46 years	Gowdhalli	9591017311	30 years	Yes	Agree	Agree	Yes	No	Agree	Yes	Agree	Yes	Disagree	Agree
16	Mr Shivanna	75 years	Gowdhalli	7760061864	50 years	Yes	Agree	Agree	Yes	Yes	Agree	No	Agree	Yes	Disagree	Agree
17	Mr Muni Raju	40 years	Gowdhalli	9380238565	8 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
18	Mr Janardhanachar	20 years	Gowdhalli	9591819620	2 years	Yes	Agree	Disagree	No	Yes	Disagree	Yes	Agree	No	Agree	Agree
19	Mr Kempana	75 years	Gowdhalli	9591819620	50 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
20	Mr Srinivasa	46 years	Gowdhalli	8884020414	20 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
21	Mr Marakka	51 years	Gowdhalli	9880858389	30 years	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Agree	Disagree
22	Mr G K Chanakeshava	35 years	Gowdhalli	9164968487	14 years	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Agree	Agree
23	Mr Gopikrishna M	22 years	Gowdhalli	9916553988	2 years	Yes	Agree	Agree	Yes	No	Agree	Yes	Agree	Yes	Agree	Agree
24	Mr Venkatesh	35 years	Gowdhalli	8105897632	15 years	Yes	Agree	Disagree	Yes	No	Agree	Yes	Agree	Yes	Disagree	Agree
25	Mr Srinivasa	57 years	Gowdhalli	8197344586	25 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
26	Mr Yallappa	56 years	Gowdhalli	8105318119	25 years	Yes	Agree	Agree	Yes	No	Agree	Yes	Agree	Yes	Agree	Agree
27	Mr M Ragu	55 years	Gowdhalli	9916553988	40 years	Yes	Agree	Disagree	Yes	No	Agree	Yes	Agree	No	Agree	Disagree
28	Mr Nanjondappa	56 years	Gowdhalli	9739640923	35 years	Yes	Agree	Agree	Yes	Yes	Agree	Yes	Agree	Yes	Agree	Agree
29	Mr Yallappa	40 years	Gowdhalli	9916553988	23 years	No	Agree	Agree	Yes	Yes	Agree	Yes	Agree	No	Disagree	Agree

Study														
	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23
3	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree
4	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree
5	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Disagree
6	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree
7	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
8	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
9	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
10	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
11	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
12	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
13	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
14	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree
15	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
16	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree
17	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree
18	Disagree	Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Agree
19	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
20	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree
21	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
22	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
23	Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree
24	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
25	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree
26	Disagree	Agree	Agree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Disagree	Agree	Disagree	Agree	Agree
27	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
28	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
29	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Agree	Agree
30	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
31	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree

Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41
Disagree	Disagree	Yes	Yes	Yes	Yes	Yes	No	Agree	Yes	No	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Disagree	Yes	Yes	Yes	Yes	Yes	No	Agree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Agree	Disagree	Yes	Yes	Yes	Yes	Yes	No	Agree	Yes	No	Disagree	No	Agree	Agree	Yes	No	Yes
Agree	Disagree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	No	Agree	No	Agree	Agree	No	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	No	Agree	Disagree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	No	Agree	Disagree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	No	Yes	No	Yes	Disagree	Yes	Yes	Agree	No	Agree	Disagree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	No	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	No	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	No	Yes	Agree	Yes	No	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	No	Yes	Yes	Yes	Agree	Yes	Yes	Disagree	No	Agree	Agree	Yes	Yes	Yes
Agree	Disagree	Yes	Yes	Yes	Yes	Yes	No	Disagree	Yes	No	Agree	Yes	Agree	Disagree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Disagree	Agree	Yes	No	Yes	Yes	Yes	Yes	Disagree	Yes	Yes	Agree	No	Agree	Agree	Yes	No	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	No	Agree	Yes	Yes	Agree	Yes	Disagree	Disagree	Yes	Yes	Yes
Agree	Disagree	Yes	Yes	No	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Disagree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Disagree	Agree	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Agree	Yes	Disagree	Disagree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Disagree	Disagree	Yes	Yes	Yes
Disagree	Agree	Yes	No	Yes	No	Yes	Yes	Disagree	Yes	No	Disagree	Yes	Disagree	Agree	Yes	Yes	Yes
Agree	Disagree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Disagree	Disagree	Yes	Yes	Yes	No	Yes	Yes	Agree	Yes	No	Disagree	No	Agree	Agree	Yes	Yes	Yes
Agree	Disagree	No	Yes	Yes	No	Yes	Yes	Agree	No	No	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Agree	No	Yes	Yes	Yes	Yes	No	Agree	Yes	Yes	Disagree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	No	No	Yes	No	Agree	Yes	Yes	Disagree	No	Agree	Disagree	Yes	No	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Agree	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Agree	Yes	Yes	Agree	No	Agree	Disagree	Yes	Yes	Yes

3.1.2 Kakkehalli (Intervention) Baseline Survey responses

Sl No	Name of the Farmer	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
1	Smt. Lalithamma	Yes	Disagree	Agree	No	Yes	Agree	Yes	Agree	No	Disagree	Disagree	Agree
2	Smt. Nagratna	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Disagree	Disagree	Agree
3	Smt. Savitha	Yes	Agree	Agree	No	No	Agree	Yes	Agree	No	Agree	Agree	Agree
4	Smt. Padma Jayramaiha	Yes	Agree	Agree	No	No	Agree	Yes	Agree	No	Agree	Agree	Agree
5	Smt. Lakshmaamma	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Disagree	Agree	Agree
6	Smt. Radha	No	Agree	Disagree	No	Yes	Agree	Yes	Agree	No	Disagree	Agree	Agree
7	Smt. Kamakshi	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Agree	Agree	Agree
8	Smt. Anuradha	Yes	Agree	Agree	No	No	Agree	No	Agree	No	Agree	Agree	Agree
9	Smt. Anitha M	Yes	Agree	Agree	No	Yes	Agree	No	Agree	No	Agree	Agree	Agree
10	Smt. Jayalakshmi S	Yes	Agree	Agree	Yes	No	Disagree	Yes	Agree	No	Agree	Disagree	Agree
11	Smt. Laxmaamma	Yes	Yes	Agree	No	Yes	Agree	No	Agree	Yes	Agree	Agree	Agree
12	Smt. Lakshmi	Yes	Agree	Agree	No	Yes	Agree	No	Agree	No	Agree	Agree	Agree
13	Smt. Rajamma	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Disagree	Disagree	Agree
14	Smt. Sorojamma	Yes	Agree	Agree	No	Yes	Agree	No	Agree	No	Disagree	Agree	Agree
15	Smt. Venkatalaxamma	Yes	Agree	Agree	No	Yes	Agree	No	Agree	No	Disagree	Disagree	Agree
16	Mr. Krishnappa	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Disagree	Disagree	Agree
17	Smt. Chikaamma	Yes	Agree	Agree	No	No	Agree	Yes	Agree	No	Agree	Agree	Agree
18	Smt. Muniratnamma	Yes	Agree	Agree	No	No	Agree	Yes	Agree	No	Agree	Agree	Agree
19	Smt. Lavanya KH	Yes	Agree	Agree	No	No	Agree	Yes	Agree	No	Agree	Agree	Agree
20	Smt. Pramila	No	Agree	Agree	Yes	Yes	Agree	Yes	Agree	No	Agree	Agree	Agree
21	Smt. Muniyamma	No	Agree	Agree	Yes	No	Disagree	Yes	Agree	Yes	Disagree	Agree	Agree
22	Smt. Gowamma	Yes	Agree	Agree	No	Yes	Agree	Yes	Agree	No	Agree	Agree	Agree
23	Smt. Chandrakala	Yes	Agree	Agree	Yes	No	Disagree	Yes	Disagree	Yes	Disagree	Agree	Agree
24	Smt. Shardamma	Yes	Agree	Agree	No	No	Disagree	Yes	Disagree	Yes	Disagree	Agree	Agree
25	Smt. Yashodha	Yes	Agree	Disagree	No	Yes	Agree	Yes	Agree	No	Agree	Agree	Agree
26	Smt. Bhagyamma	No	Agree	Agree	No	No	Disagree	Yes	Agree	Yes	Disagree	Agree	Agree

Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29
Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Agree	Yes	No	Yes	No
Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Agree	Yes	No	Yes	No
Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Disagree	Disagree	No	No	No	No
Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Yes	No	No	Yes
Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Yes	Yes	No	Yes
Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Disagree	Disagree	Disagree	No	No	Yes	Yes
Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Disagree	Disagree	Disagree	Yes	No	Yes	No
Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	No	No	No	Yes
Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	No	No	Yes	Yes
Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	No	No	Yes	Yes
Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Yes	No	Yes	Yes
Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	No	No	Yes	No
Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree	Disagree	Agree	No	No	Yes	No
Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Disagree	Disagree	No	No	Yes	Yes
Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Disagree	Disagree	No	No	Yes	Yes
Agree	Disagree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Yes	No	No	No
Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	No	No	Yes	No
Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Agree	Disagree	No	No	No	Yes
Agree	Agree	Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Disagree	Yes	No	Yes	Yes
Disagree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Agree	Disagree	Agree	Agree	Disagree	Disagree	Yes	Yes	No	No
Agree	Disagree	Agree	Agree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree	Disagree	Yes	No	Yes	No
Agree	Agree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Disagree	Agree	Agree	Yes	Yes	Yes	No
Agree	Agree	Agree	Disagree	Agree	Disagree	Agree	Agree	Agree	Disagree	Disagree	Agree	Agree	Yes	Yes	Yes	No
Agree	Agree	Agree	Agree	Agree	Disagree	Agree	Agree	Disagree	Disagree	Agree	Disagree	Agree	Yes	Yes	Yes	Yes
Disagree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Agree	Agree	Agree	Agree	Disagree	Disagree	Yes	Yes	No	No

Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41
Yes	Yes	Disagree	Yes	No	Disagree	Yes	Disagree	Agree	Yes	Yes	Yes
Yes	Yes	Disagree	Yes	No	Disagree	Yes	Disagree	Agree	Yes	Yes	Yes
No	Yes	Disagree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	No	Disagree	Yes	No	Disagree	No	Agree	Disagree	No	Yes	Yes
Yes	Yes	Disagree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	No	Agree	Yes	No	Agree	Yes	Agree	Disagree	No	Yes	Yes
Yes	Yes	Agree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Agree	Yes	No	Agree	No	Disagree	Agree	Yes	Yes	Yes
No	Yes	Agree	Yes	No	Agree	No	Disagree	Agree	No	Yes	Yes
No	No	Agree	Yes	No	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Agree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Disagree	Yes	No	Disagree	Yes	Disagree	Agree	Yes	Yes	Yes
Yes	No	Agree	Yes	No	Agree	No	Disagree	Agree	Yes	Yes	Yes
Yes	No	Agree	Yes	No	Agree	No	Disagree	Agree	Yes	Yes	Yes
Yes	Yes	Disagree	Yes	No	Disagree	Yes	Disagree	Agree	Yes	Yes	Yes
Yes	Yes	Disagree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Agree	Yes	No	Agree	Yes	Agree	Disagree	Yes	Yes	Yes
Yes	Yes	Disagree	Yes	No	Agree	No	Disagree	Agree	Yes	Yes	Yes
No	Yes	Agree	Yes	No	Disagree	No	Agree	Agree	Yes	No	Yes
Yes	Yes	Agree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Agree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Agree	Yes	Yes	Agree	Yes	Disagree	Disagree	No	Yes	Yes
Yes	Yes	Agree	Yes	Yes	Agree	Yes	Disagree	Disagree	No	Yes	Yes
No	Yes	Agree	Yes	No	Agree	Yes	Agree	Agree	Yes	Yes	Yes
Yes	Yes	Agree	Yes	No	Agree	No	Agree	Agree	Yes	Yes	Yes

A literature review was conducted to examine the existing knowledge on video-based education in the context of training dairy farmers. The aim was to gain insights into the advantages and disadvantages of using video-based methods in this specific domain for educational purposes.

Furthermore, the survey sought to explore the potential application of adult learning theories,

particularly on action learning. By examining the components and principles shared among various schools of learning, including action learning, the objective was to propose effective training programs tailored to the needs of dairy farmers. This approach aimed to ensure that the design of the programs aligned with the principles of adult learning and facilitated optimal knowledge transfer and skill development.

To further enhance the understanding and effectiveness of the proposed training programs, a cross-sectional survey was proposed as part of the ongoing Knowledge, Attitudes, and Practices (KAP) study. The survey is specifically targeted the intervention group in the study, comprising dairy farmers from the Kakkehalli village. The cross-sectional survey aimed to gather valuable insights regarding the intervention group's experiences with the current format and delivery of video-based education. By capturing their perspectives, the survey aimed to identify areas of improvement and provide recommendations for refining the training program.

By accomplishing these objectives, the project aims to contribute to the existing literature on video-based education for dairy farmers, highlight the relevance of adult learning theories in program design and gather valuable feedback from the intervention group to enhance the ongoing KAP study and optimize the delivery of video-based education to dairy farmers.

3.1 LITERATURE REVIEW

Video-based education offers numerous advantages for training dairy farmers. Firstly, it improves accessibility and reach, enabling farmers to access educational content regardless of their geographical location, particularly in areas with limited internet access. Secondly, videos provide a multi-sensory learning experience by effectively conveying information and demonstrating practical techniques through visual and auditory means. This enhances the overall learning process for farmers. Additionally, video-based education allows for flexibility, enabling farmers to learn at their own pace and convenience (Paltasingh & Goyari, 2018; Ralte, n.d.; Sharma, 2016a, 2016b; Winder et al., 2018).

However, it is important to recognize the limitations of video-based education. Relying solely on videos for training can lead to a lack of interaction and limited feedback, potentially hindering retention and complete understanding of the material (Alanis et al., 2022). Language and cultural barriers may also exist, necessitating the localization of content to ensure better comprehension

in diverse regions. Technological challenges, such as limited internet access, poor video quality, and a lack of skilled extension agents, can further impede the effectiveness of video training initiatives (Bentley et al., 2016; Vidya et al., 2010)

To address these limitations, I turned to adult learning theories to design an instructional program that considers the learning preferences and receptivity of dairy farmers. Action learning, which emphasizes hands-on practical activities and group discussions, aligns well with the nature of dairy farming practices. By integrating video-based education within this framework, I aim to create a comprehensive learning experience for farmers.

The proposed training program would encompass a combination of videos, practical demonstrations, and interactive group sessions. Videos would serve as foundational resources, providing theoretical knowledge and showcasing best practices. Practical demonstrations would allow farmers to apply their learning in real-life scenarios, fostering a deeper understanding of concepts. Group sessions would facilitate peer-to-peer learning, collaboration, and the sharing of experiences, thereby enhancing the overall effectiveness of the program.

By leveraging the strengths of video-based education and integrating it with action learning principles, the instructional program holds the potential to cater to the unique needs of dairy farmers, ensuring effective knowledge dissemination and skill development in the context of their farming practices.

3.2 CROSS-SECTIONAL SURVEY:

To assess the effectiveness of the current video-based training program and understand dairy farmers' receptivity and learning preferences, a cross-sectional survey involving interviews with participants from the intervention village is proposed. The questionnaire will be administered in an interview format to gather comprehensive insights into dairy farmers' perceptions, experiences, and preferences related to video-based education. The survey emphasizes using adult learning principles and seeks to enhance the training program for dairy farmers.

3.2.1 Cross-Sectional Questionnaire

Part 1 : Demographics

1. Name:
2. Age:
3. Education Level:
4. Number of Years of Experience as a Dairy Farmer:

Part II: Participation in the Study

5. What motivated you to participate in this study?
6. How did you first learn about this program?
7. Did you voluntarily choose to participate in the program?
8. Were you provided with any incentives to participate?

Part III: Adult Learning Principles

Relevance and Practicality

9. How do you see the relevance of video training to your dairy farming practices?
10. How do you think video training will improve your practical knowledge and skills as a dairy farmer?

Self-Directed Learning

11. To what extent do you actively seek out resources and opportunities for self-directed learning in your dairy farming profession?

Experiential Learning

12. How valuable do you find hands-on experiences in acquiring new knowledge or skills related to dairy farming?

Collaborative Learning

13. Do you participate in discussions or knowledge-sharing platforms with other dairy farmers? (Yes/No)

14. How open are you to learning from the experiences and insights of your peers in the dairy farming community?

Perception of Video Training

15. Did you find the video content informative and applicable to your dairy farming practices?

16. Were you able to easily follow and understand the video training materials?

Part IV: Utilization of Video Training

17. Do you actively participate in discussions or activities following the video screenings?

18. Have you implemented any changes or modifications in your dairy management practices as a result of the video training?

Part V: Recommendations and Feedback

19. What is your overall opinion of the video education extension program for dairy farmers?

20. What specific benefits do you anticipate gaining from participating in this study and utilizing video training?

21. Would you prefer additional physical demonstrations to complement the video materials?

22. Have you encountered any challenges or barriers while participating in this program?

EXPECTED OUTCOMES

The expected outcomes of the proposed cross-sectional study on the impact of video-based education on dairy farmers' knowledge, attitudes, and practices can be summarized as follows:

1. Evaluation of dairy farmers' receptivity towards video-based education as an effective learning tool.
2. Identification of factors influencing their acceptance and utilization of video-based resources.
3. Understanding the preferred learning methods and channels of dairy farmers, such as video-based instruction, peer learning, or demonstration-based training.
4. Insights into the most effective approaches for delivering agricultural extension services to maximize learning outcomes.
5. Identification of contextual factors that influence the effectiveness of video-based education, such as language barriers, cultural norms, and access to technology.
6. Insights into strategies for tailoring educational interventions to specific contexts and target audiences.

By examining these expected outcomes, the cross-sectional study will provide valuable insights into the impact and feasibility of video-based education in improving dairy farmers' knowledge, attitudes, and practices. The findings will contribute to the body of knowledge in agricultural extension and education, informing the development of more targeted and effective interventions for sustainable agricultural development.

3.2.2 ASSUMPTIONS

The questionnaire is developed based on the following assumptions:

1. Assumption of Participant Honesty:
 - Participants will provide honest and accurate responses to the questionnaire.
 - Their answers will reflect their authentic experiences, perceptions, and opinions regarding video-based education for dairy farmers.
2. Assumption of Skilled Interviewer:
 - The interviewer administering the questionnaire is experienced and proficient in conducting interviews.

- The interviewer possesses effective communication and probing skills to elicit detailed and insightful participant responses.

These assumptions are crucial for ensuring the validity and reliability of the collected data.

Acknowledging and addressing these assumptions during the data collection process is essential to minimize potential biases and ensure the data's integrity. The questionnaire's design and the interviewer's interview competence are vital in obtaining reliable and meaningful insights from participants, contributing to the overall validity and credibility of the study's findings.

3.2.3 DATA ANALYSIS

The study's data will consist of quantitative and qualitative components. The quantitative data will primarily focus on capturing participants' demographics and provide a numerical summary of the characteristics of the sample population. This information will include variables such as age, education level, and years of experience as a dairy farmer. The quantitative data will be analyzed using statistical techniques to identify patterns, trends, and associations.

On the other hand, the researcher gathered qualitative data through interviews conducted with the participants. These interviews will provide a rich and detailed exploration of participants' experiences, perspectives, and insights related to video-based education for dairy farmers. The qualitative data will explore participants' motivations, perceptions, attitudes, and practices regarding using video resources in their learning process. The researcher will utilize open-ended questions to encourage participants to express their thoughts in their own words, allowing for a comprehensive understanding of their experiences.

The qualitative data collected from the interviews will be analyzed using rigorous qualitative analysis techniques. This will involve identifying themes, patterns, and recurring ideas in the participants' responses. The data analysis will entail coding and categorizing the answers, searching for connections and relationships between different themes, and deriving meaningful interpretations from the data.

By combining both quantitative and qualitative data, the study will provide a comprehensive and nuanced understanding of the effectiveness and impact of video-based education for dairy farmers. The quantitative data will offer a quantitative summary of the participants' characteristics, while the qualitative data will provide in-depth insights into their experiences and perceptions. Integrating these two data types will strengthen the findings and contribute to a more comprehensive understanding of the research topic.

3.3 PROPOSED TRAINING PROGRAM

The selection of the instructional design model, particularly the ADDIE model, for the creation of a training program targeting Indian dairy farmers stems from its systematic and structured

approach to instructional design. Comprising five distinct phases, namely Analysis, Design, Development, Implementation, and Evaluation, the ADDIE model serves distinct purposes, collectively ensuring the effectiveness and efficiency of the training program.

For this particular training program, which aims to educate Indian dairy farmers using video-based education infused with action learning principles, the ADDIE model is an appropriate choice. Each phase is explained below :

1. **Analysis:** The Analysis phase involves identifying the needs and goals of the training program and understanding the target audience. By conducting a needs analysis, a deeper understanding of their needs, such as improving milk production, and animal health will be gained. This phase helps in defining the scope and objectives of the training program.
2. **Design:** The Design phase focuses on creating a detailed plan for the training program. In this case, video-based education effectively engages dairy farmers and provides visual demonstrations and explanations of various concepts. The training program will encourage hands-on learning experiences and problem-solving within the dairy farming context by integrating action learning principles. Designing the program with these principles ensures that farmers can immediately apply the knowledge they acquire.
3. **Development:** The training program is created based on the design specifications in the Development phase. This involves producing video content (based on Mayer's e-learning principles), designing supporting materials and developing interactive exercises or quizzes to enhance the learning experience. The content should be tailored to the specific needs of Indian dairy farmers, addressing their challenges, and providing practical solutions.
4. **Implementation:** During the Implementation phase, the training program is launched and delivered to the target audience. The videos and supporting materials can be made accessible through online platforms, mobile applications, or distributed offline through cooperatives. The action learning component can be facilitated through on-site visits or workshops where farmers can apply their learning in real-life situations under the guidance of action-learning trained training facilitator. This phase requires effective communication, logistical planning, and support to ensure the successful delivery of the program.

5. Evaluation: The Evaluation phase aims to assess the effectiveness of the training program. In this case, a cross-sectional survey can be conducted to collect feedback regarding video learning and discussions from the dairy farmers. The survey can measure the farmers' knowledge gain, ability to apply the learning in their daily practices, and overall satisfaction with the program. The survey data will be valuable for analyzing the program's impact and identifying areas for improvement in future iterations.

To sum up, the ADDIE model provides a systematic approach to designing and developing a training program for Indian dairy farmers incorporating video-based education and action learning principles. By adhering to the sequential framework of the ADDIE model, a well-structured training program can be developed, tailored to the distinctive needs of the target audience, while allowing for continual enhancement based on evaluation feedback. The application of this model intends to facilitate the creation of an inclusive and comprehensive training program specifically designed for dairy farmers in India.

ADDIE model

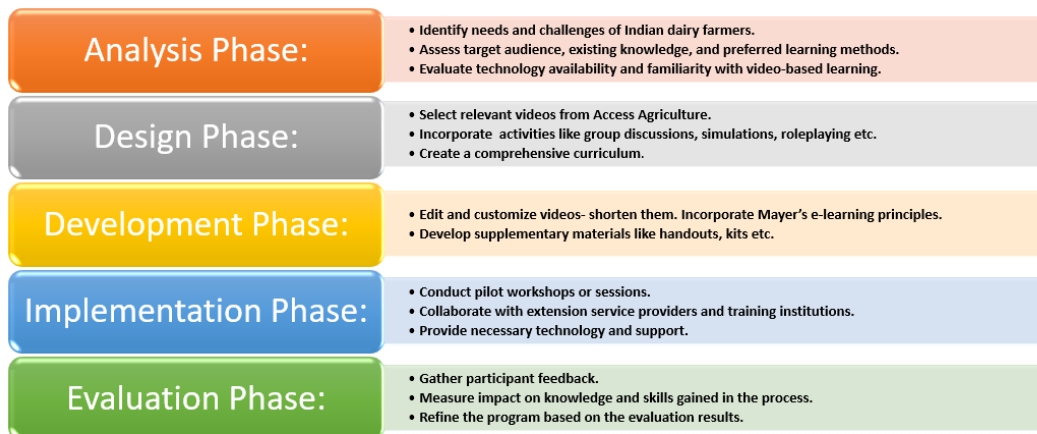


Figure 9: Illustration of an ADDIE model of a training program for dairy farmers

4. CONCLUSION

- Video-based education provides enhanced accessibility and reach, thus allowing dairy farmers to access educational content regardless of their geographical location.
- The visual and auditory nature of videos effectively convey information and demonstrate practical techniques, facilitating a rich learning experience for farmers.
- Visual learning is particularly valuable for farmers with limited literacy skills, as they can observe and understand farming practices through visual demonstrations and illustrations.
- With growing concerns of Antimicrobial resistance (AMR), and interest in learning ethnoveterinary practices to combat these concerns, video based education offers a cost-effective solution to dairy farmers.
- Cross-sectional survey informed by adult learning principles has the potential to assist in the design of farmer-centered training programs by obtaining valuable insights into their specific learning needs and preferences.

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