MANAGE Agricultural Extension "Evening4Learning (E4L)" Webinar Series

Theme: "Innovative Technologies for Advancing Agricultural Extension"

Topic: "Enrichment of Agricultural Practices By the Power of Gamification"

Schedule:
27-12-2024, 19:00–19:45 PM

MANAGE - Center for Agricultural Extension Innovations, Reforms and Agripreneurship (MANAGE- CAEIRA)
National Institute of Agricultural Extension Management (MANAGE)
Rajendranagar, Hyderabad- 500 030, INDIA

About the Program

The MANAGE Agricultural Extension "Evening4Learning" Webinar Series is aimed at enhancing knowledge and professional engagement in the field of agricultural extension. The four day series is structured with each day focusing on a distinct topic under a common theme, allowing participants to gain comprehensive insights into key areas of extension. The programme is intended for a diverse audience, including postgraduate and doctoral students, agricultural faculty, and industry professionals. It covers broad themes ranging from entrepreneurship and sustainability to emerging technologies in agriculture.

Speaker

Mr. Altan Turel

Co-Founder & Managing Director

agriknow

altanturel@gmail.com

Mr. Altan Turel

About the Speaker

Mr. Altan Turel is the Co-Founder and Managing Director of agriknow and is also serving as the Product Manager at Lidea Girisim. He is a passionate advocate for leveraging technology and gamification to make agriculture more engaging, efficient, and sustainable. In his leadership roles, he spearheads innovative initiatives that integrate artificial intelligence and IoT technologies to transform agricultural practices. Through a strong blend of technology, creativity, and collaboration, he is committed to driving positive change in agri-food systems for the benefit of farmers and society at large.

What is Gamification?

Gamification refers to the application of game mechanics and game-design elements in non-game contexts to solve real-world problems by improving user engagement, participation, and behavioural change.

Key emphasis was placed on:

- Building intrinsic motivation
- Encouraging habit formation
- Designing systems that make complex or routine tasks engaging and meaningful.

Why Gamification Works

Gamification succeeds because it aligns with basic human psychology:

- Humans respond to rewards, feedback, and competition
- Dopamine-driven motivation encourages repeated engagement
- Social comparison and progress tracking enhance participation

As a result, gamification can significantly improve farmer participation, learning, and decision-making by making agricultural practices more engaging and interactive.

Need for Gamification in Agriculture

1. Increased Engagement

Many agricultural tasks are repetitive and often require continuous motivation. Gamification introduces incentives such as rewards, recognition, and achievement systems that encourage farmers to participate actively in farming activities, training programmes, and extension initiatives. This helps sustain interest and improves adoption of recommended practices.

2. Improved Training and Learning

Interactive challenges, quizzes, and simulation-based learning make agricultural training more effective. Gamified platforms help farmers understand new technologies, climate-smart practices, pest management techniques, and modern farming methods in a simple and practical manner, enhancing knowledge retention and skill development.

3. Better Data Collection and Decision-Making

Gamification motivates farmers to regularly input farm-related data such as crop yields, soil information, water usage, and pest incidence. Reward-based systems encourage accurate and timely data sharing, supporting evidence-based decision-making for both farmers and extension agencies.

4. Community Building and Collaboration

Leader boards, group challenges, and cooperative competitions strengthen social connections among farmers. Gamification promotes peer learning, teamwork, and knowledge exchange within farming communities and farmer producer organizations (FPOs). It also encourages collective problem-solving and community participation.

Gamification Mechanics in Action

Core gamification mechanics include:

- **Points**: Rewards for completing activities or sharing data like planting, weeding, updating records
- **Badges**: Recognition for achievements like adopting sustainable practices or reaching production milestones (e.g., Best Farmer of the Month)
- **Leaderboards**: Feedback systems displaying comparative performance in terms of yields, resource conservation or best practices.
- **Quests and Challenges:** Structured tasks aligned with farmer skill levels, including short term goals such as reducing plastic usage or pilot testing new seed varieties.

Implementing Gamification in Agriculture

A step-by-step approach includes:

- Identify clear goals (e.g., sustainability, yield improvement, collaboration)
- Design meaningful rewards aligned with farming contexts
- Pilot test and Iterate the model and collect farmer feedback and refine based on user responses
- Measure impact in terms of productivity, resource use, and satisfaction

User-Centric Design and Persona Building

- Effective gamification requires a deep understanding of the farmer, including:
- Demographics and location
- Cropping systems and economic status
- Media usage and social behavior
- Digital familiarity and motivations

The engagement journey includes:

- Discovery
- On boarding
- Behavioural loops
- Mastery level

A successful system ensures that a significant proportion of users reach the mastery stage, indicating strong habit formation.

Hook Model in Agricultural Gamification

The Hook Model is a behavioural design framework used to create user engagement and habit formation through repeated interactions. In agricultural gamification platforms, the Hook Model helps farmers remain actively involved in digital advisory systems, farm management applications, and extension services. The model consists of four key stages: Trigger, Action, Variable Reward, and Investment.

1. Trigger

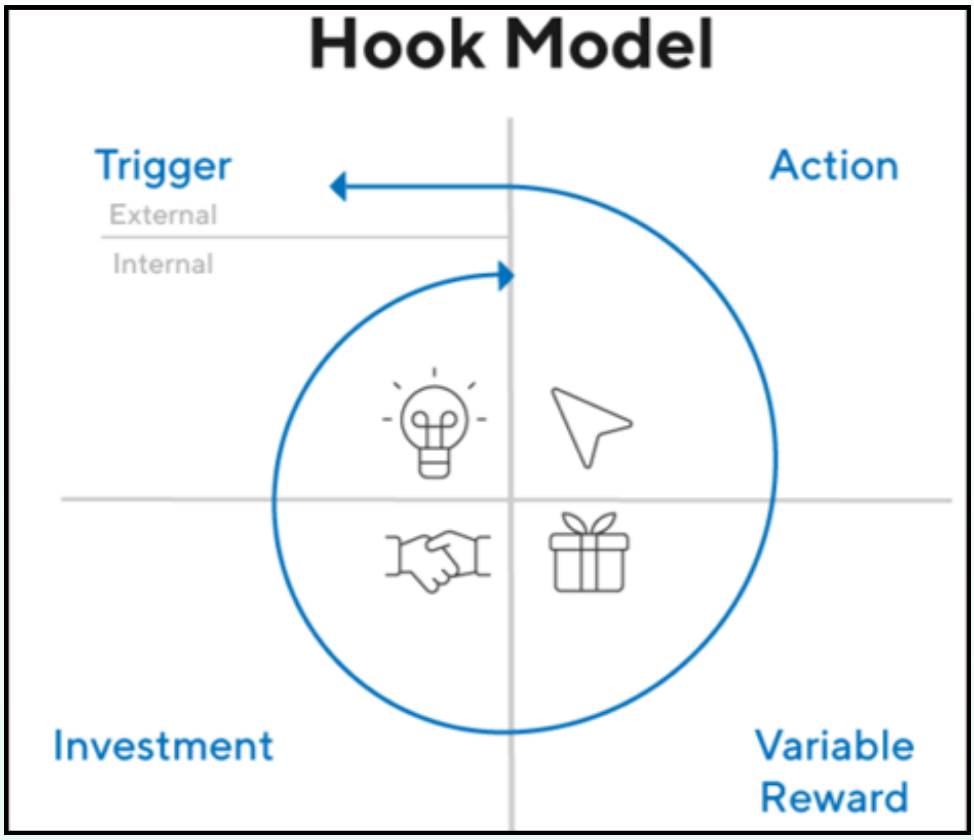
Triggers are stimuli that encourage users to take action. These can be external or internal.

External Trigger

An external trigger may include a push notification sent to a farmer's mobile device. For example, a notification may alert the farmer that soil moisture levels are low and immediate action is required to prevent crop stress.

Internal Trigger

Internal triggers arise from the farmer's own concerns, motivations, or aspirations. A farmer may feel worried about crop health or may wish to improve productivity and profitability. These internal motivations encourage regular use of the agricultural application.



2. Action

Action refers to the simple behaviour performed in response to the trigger. In this context, the farmer opens the farmer smart application after receiving the notification and views important information such as:

- Soil moisture status
- Weather forecasts
- Recommended agricultural practices
- Suggested corrective measures

The easier and more useful the action, the more likely the farmer is to repeat the behaviour.

3. Variable Reward

Variable rewards provide motivation by offering useful and sometimes unexpected benefits. These rewards keep users engaged because the outcomes are not always predictable.

Upon checking the application, the farmer may receive:

- A new tip on sustainable pest management
- Information about a potential buyer interested in their produce
- A success story from another farmer using improved seed varieties
- Recognition points, badges, or achievements within the platform

Such rewards create curiosity and encourage repeated use of the application.

4. Investment

Investment occurs when users contribute their own time, effort, or information into the platform.

In the agricultural context, farmers may:

- Enter fertilizer usage details
- Record pest observations
- Upload crop performance data
- Customize crop plans and schedules

By contributing personal farm data, the application becomes more tailored and relevant to the farmer's needs. This improves the accuracy and usefulness of recommendations while strengthening the farmer's attachment to the platform.

Importance of the Hook Model in Agriculture

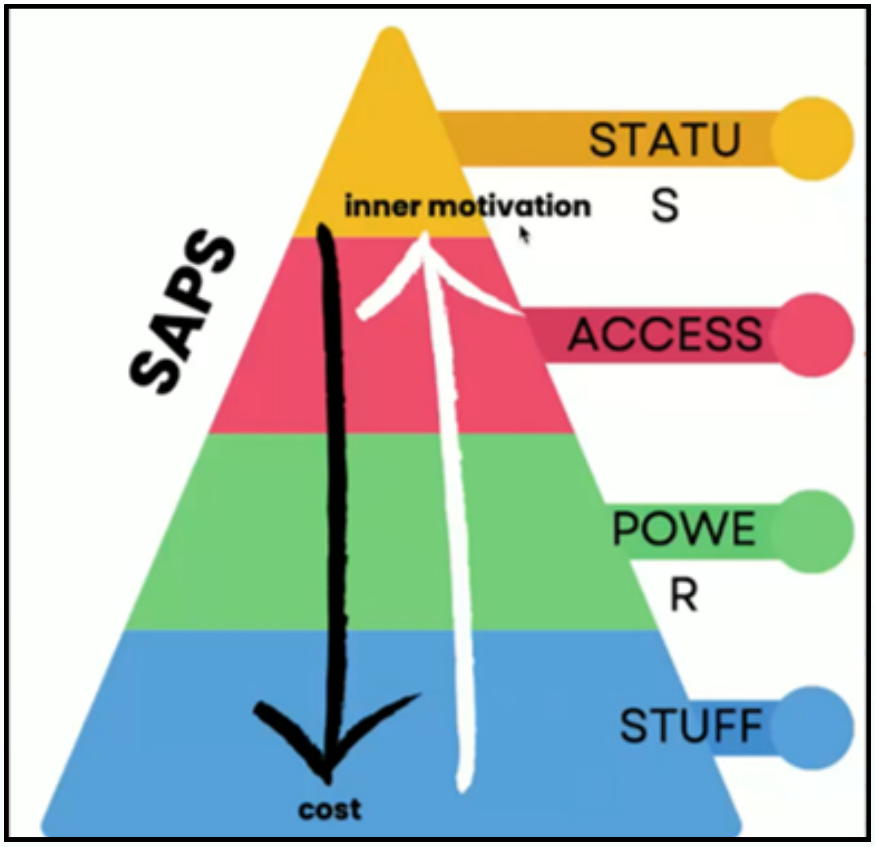
- The Hook Model can significantly improve digital agricultural extension services by:
- Enhancing farmer engagement and participation
- Encouraging continuous learning and technology adoption
- Supporting data-driven farm management
- Promoting personalized advisory services
- Building long-term user commitment to agricultural platforms

By combining meaningful triggers, simple actions, attractive rewards, and user investment, agricultural platforms can encourage sustained farmer participation and improve decision-making, productivity, and overall agricultural development.

Reward Design: The SAPS Framework

The SAPS Pyramid of rewards includes:

- **Status**: Recognition, certificates, titles (most sustainable), badges
- **Access**: Early access to seeds, services, or information and participation in expert-web webinars
- **Power**: Opportunities for highly engaged farmers to participate in discussion forums, suggest new features, and co-create policy recommendations.
- **Stuff**: Physical incentives such as soil testing kits or discounted fertilizers for farmers achieving sustainability milestones.



Case Studies

Agriknow Platform

Agriknow is an AI-based gamified agriculture application designed to engage farmers through daily challenges, leader boards, achievements, and rewards. Farmers earn points by uploading crop data, recording soil conditions, and taking weather-based actions, while competing with peers in their region. By unlocking badges such as “Soil Expert” or “Water Saver” and receiving rewards like input discounts or access to premium knowledge, the platform promotes consistent data sharing and adoption of sustainable farming practices.

Stoller Turkey

Stroller Turkey use gamification to support internal team performance and business growth. The objective is to sustain strong growth in a fast-paced market by keeping employees motivated, aligned, and focused on organizational goals. Gamified digital tools integrated into daily work processes help employees internalise objectives, strengthen collaboration, and make routine tasks more engaging, thereby improving productivity and sustained performance.

These cases demonstrated measurable benefits in engagement, learning, and business outcomes.

Challenges in Gamification Adoption

Key challenges include:

- Technological barriers such as limited internet access, unreliable electricity, and high device costs
- Cultural acceptance: Resistance from older farming populations
- Cost and scalability constraints
- Data privacy and security concerns

Future Outlook

Future developments in agricultural gamification will involve:

- Integration of emerging technologies such as AI, block chain, and next-generation connectivity
- Greater participation of younger generations to bridge generational gaps and attract new talents
- Bridging knowledge gaps between older and younger farmers
- Promoting sustainable and regenerative agriculture through task-based incentives

Key Highlights

1. Gamification enhances engagement and motivation by applying game elements like points, badges, challenges, and leader boards to non-game agricultural activities, encouraging habit formation and intrinsic motivation among farmers.

2. It improves learning and adoption of best practices through interactive training methods such as quizzes, simulations, and challenges, making complex agricultural knowledge easier to understand, retain, and apply.

3. Gamification supports better data collection and decision-making by incentivizing farmers to regularly share accurate farm data (soil, yield, water, pests), enabling evidence-based advisory services and improved farm management.

4. Community building and collaboration are strengthened via social mechanics like group challenges and leader boards, promoting peer learning, cooperation, and collective problem-solving within farming communities and FPOs.

5. Behavioral design models and reward frameworks drive long-term impact, using tools like the Hook Model (Trigger–Action–Reward–Investment) and SAPS rewards (Status, Access, Power, Stuff) to ensure sustained engagement, personalized advisory services, and measurable improvements in productivity and sustainability.

Interactive discussion

1. How can we measure the effectiveness of a gamification intervention in agriculture in terms of better technology adoption or improved yield outcomes?

The effectiveness of gamification interventions is best measured through systematic data collection. In agriculture, gamification should be designed in two interconnected layers.

First, the primary gamification layer targets clear outcomes such as improved yields, better farm practices, or increased technology adoption.

Second, a supporting gamification layer focuses on encouraging data sharing. Since farmers are often cautious about sharing information, using gamification elements like rewards, incentives, recognition, and the hook model increases their willingness to provide accurate and timely data.

By motivating data sharing first, reliable evidence on practices and adoption can be collected, enabling objective assessment of how effectively gamification improves technology adoption and productivity.

2. How can gamification systems prevent or detect false reporting by farmers who aim to earn rewards without actual implementation?

Gamification systems can prevent and detect false reporting by combining GPS-based location verification with AI-driven data analytics. GPS validation ensures that data is submitted from the farmer's own field rather than from another location. At the same time, AI algorithms analyze submissions to detect unusual patterns or outliers that deviate from expected field conditions or historical trends. Together, these mechanisms help flag or eliminate false reports, ensuring data integrity and fairness in reward-based gamification systems.

3. Can gamification be used in animal husbandry or livestock management?

Yes, gamification can be effectively applied in animal husbandry and livestock management. When designed well, it can support areas such as animal health monitoring, timely vaccination, feed management, and record keeping.

The key first step is defining a clear goal and problem that requires behavioural change. Once this is established, gamification becomes a practical solution.

Successful implementation also depends on choosing the right focus area, which may include:

- Computer science and software engineering
- Behavioral science and psychology
- UI/UX design
- Marketing and business

YouTube link: https://youtu.be/XKqrbBKi1NI

E4L Report Prepared by:
Dr. Vavilala Priyanka
MANAGE Fellow