

Module 6: Basic Knowledge Management and Extension



LECTURER GUIDE

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Module 6: Basic Knowledge Management and Extension

Pre-assessment

Answer the following questions without going through the learning content. This is to determine how much you already know about the subject. You will also be asked to complete a post-assessment after you have worked through the learning content.

	Question	Self-assessment				
		Low		High		
1	I am able to explain the different types of knowledge that exist.	1	2	3	4	5
2	I am able to identify different sources through which knowledge can be gained.	1	2	3	4	5
3	I understand the term knowledge management and what role it plays in agricultural extension.	1	2	3	4	5
4	I can identify different areas of knowledge that need to be integrated for successful innovation.	1	2	3	4	5
5	I can describe different communication models.	1	2	3	4	5
6	I am able to identify problems that may prevent effective communication.	1	2	3	4	5
7	I am aware that agricultural innovation has different levels of complexity.	1	2	3	4	5

	Question	Self-assessment				
		Low		High		
8	I can describe the different innovation intermediary roles and knowledge exchange encounters that take place in agricultural innovation.	1	2	3	4	5
9	I am aware that as an extension agent I have to act as a knowledge manager for farmers as well as keep my own knowledge up-to-date.	1	2	3	4	5
10	I am aware of the different forms of traditional and modern ICT communication media available for communicating innovation messages.	1	2	3	4	5

Answer: Learner's own answer.

Study unit 1: Different types of knowledge

Session 1.1: Different types and sources of knowledge

Activity 1.1 Individual activity: Knowledge types and sources

Study the following examples and choose the correct description of the type or source of knowledge.

1. Attending a course at the local further education and training (FET) college on the benefits of crop rotation. (2)
 - a. Formal knowledge
 - b. Explicit knowledge
 - c. Experiential knowledge
 - d. Implicit knowledge
 - e. Both 'a.' and 'b.'
 - f. Both 'c.' and 'd.'

Answer: e.

2. A baker's assistant working alongside an experienced baker in the bakery. (2)
 - a. Formal knowledge
 - b. Explicit knowledge
 - c. Experiential knowledge
 - d. Implicit knowledge
 - e. Both 'a.' and 'b.'
 - f. Both 'c.' and 'd.'

Answer: f.

3. A textbook on integrated pest management. (2)
- a. Formal knowledge
 - b. Explicit knowledge
 - c. Experiential knowledge
 - d. Implicit knowledge
 - e. Both 'a.' and 'b.'
 - f. Both 'c.' and 'd.'

Answer: a.

4. You know what the best time of day is to go to your local farmer's market. (2)
- a. Formal knowledge
 - b. Explicit knowledge
 - c. Experiential knowledge
 - d. Implicit knowledge
 - e. Both 'a.' and 'b.'
 - f. Both 'c.' and 'd.'

Answer: d.

Total: 8 marks

Session 1.2: Communication to support appropriate flow of knowledge and learning

Activity 1.2 Group activity: Model of knowledge management

Answer the following question in groups of three to five individuals.

1. Discuss examples of the four modes of knowledge conversion, in your organisation, as outlined in the SECI model of knowledge management.

Answer: The answer may be relatively general as long as the main points given below are mentioned.

Socialisation

Examples: social interaction between co-workers, teamwork, informal communication, verbal explanations of tasks.

Externalisation

Examples: brainstorming between colleagues, physical demonstration of a task.

Combination

Examples: sorting, categorising, updating content, creating a database, writing reviews, writing reference material/books, creating training material.

Internalisation

Example: learning by doing and practicing a task repeatedly.

Session 1.3: Innovation as a process of collective learning and knowledge exchange

Activity 1.3 Group activity: Integrating different areas of knowledge

Complete the following activity in groups of three to five individuals.

1. Identify a relatively successful introduction of change and innovation you are familiar with and discuss if and how the integration of different kinds of knowledge and competencies have contributed to the intervention becoming effective.

Answer: The answer may be relatively general as long as one of the points given below are mentioned and discussed.

- *Issue related knowledge*
- *Knowledge about people and networks*
- *Social process knowledge*

Summative assessment: Unit 1

Answer the following questions in your own words.

1. Briefly define these terms: information and knowledge. (6)

Answer: Data is the raw numerical quantities or other elements resulting from observation, experimentation or calculation. (2)

Information is data in context, in other words data that has been processed, refined, interpreted and given a meaning. (2)

Knowledge is derived from information. The way we understand and interpret the world around us. (2)

2. Study the following examples and discuss the different sources and types of knowledge involved.

- 2.1. A high school student is studying for an upcoming Geography exam. During her studies she uses an atlas to look up the capital cities of all the countries on the African continent. What type of knowledge has she gained and what source of knowledge was involved? (2)

Answer: Explicit knowledge (capital cities) (1) gained through formal learning (high school, atlas). (1)

- 2.2. The same high school student asks her mother, a dressmaker, to help her to sew a traditional dress for her upcoming dance using a new pattern. What type of knowledge has she gained and what source of knowledge was involved? (4)

Answer: Tacit knowledge (1) is transferred from the mother to the daughter through experiential learning. (1) There is also explicit knowledge in the form of the new sewing pattern used to make the dress. (2)

3. What is knowledge management and why is it important for an extension agent? (3)

Answer: Knowledge management is the process of capturing, developing, sharing, and effectively using knowledge. (1)

Knowledge management is important for extensionists as extension services manage knowledge in an agricultural innovation system to support the progress of farmers. Extension services are responsible for the effective communication and exchange of new or existing knowledge. (2)

4. Name and briefly explain the four modes of knowledge conversion in the SECI model of knowledge management. (8)

Answer: Socialisation (1): Socialisation is when knowledge is shared through observation, imitation and practice. (1)

Externalisation (1): Externalisation involves the documenting of tacit knowledge to make it interpretable and sharable. (1)

Combination (1): Combination is the process of reorganising and combining knowledge to form new concepts. (1)

Internalisation (1): Internalisation is when an individual learns by repeating and practicing certain activities. (1)

5. List the three main areas of knowledge that need to be integrated in order for successful innovation. (3)

Answer: Issue related knowledge, (1) knowledge about people and networks, (1) social process knowledge (1).

6. State whether the following statement is true or false and give a reason for your answer. (2)

Knowledge about past extension activities in a specific area will not significantly aid in the successful introduction of new technologies in that area.

Answer: False. (1)

Background knowledge, experiences and ideas regarding past innovation intervention efforts will add context to the current development problems in the area and enhance the implementation of new technologies. (1)

Total: 28 marks

Study unit 2: Different communication models and the intermediary role of the extensionist

Session 2.1: Different communication models

Activity 2.1 Individual activity: Communication models

Using the communication models discussed, look at the communication that takes place in your family. Which communication model best describes the communication between your family members?

Answer: The answer may be relatively general as long as one of the discussed communication models is mentioned.

Activity 2.2 Case study: Identify possible communication barriers

Read the following case study and discuss the possible communication barriers that extension agents may face when trying to implement this innovation.

Company X is an agricultural research and development organisation funded by industry and government. It has been operating for more than 15 years and has successfully developed several technologies for application in the beef industry. The organisation has a wide range of research and industry partners and is highly regarded for its genetic research.

They conduct research on DNA markers which are specific sequences of DNA that identify particular genes in an organism. In the beef industry, the commercialised markers show how many favourable copies of the gene an animal has for a particular production trait. For example, cattle have a number of genes that influence tenderness. One such gene is the Calpain gene. If the animal has two copies of the favourable form of this gene, it has the genetic potential to produce more tender beef than an animal with one positive and one negative form of the gene. In turn, an animal with one copy of the positive form of the gene will have a better chance of producing tender beef than an animal with zero copies of the favourable form of the gene.

This commercialised DNA marker test allows cattle producers to identify animals with the favourable genes by having hair, semen, blood or tissue samples tested. The results of the DNA marker analysis are sent to the producers in a report where the animal is ranked as 0, 1 or 2 stars for each gene (0 being no favourable forms of the gene and so on). The breeder is then able to select or mate cattle with a known genetic profile for that gene. The benefit of this over other selection methods is that it is a diagnostic tool, meaning that the specified DNA sequence is present or it is not and this

does not change over the lifetime of the animal. This means that the animal can be tested at an early age and its future can be determined prior to breeding, feeding or selling.

Answer: Answer should include at least one communication barrier. For example, information overload/fatigue, wavering attention, message not understood or interpreted correctly.

Session 2.2: Adapting communication models and intermediary roles to levels of agricultural innovation complexity

Activity 2.3 Individual activity: Different intermediary roles

Divide a piece of blank paper into four sections and label each section with the following headings:

- Information intermediary
- Knowledge broker
- Knowledge translator
- Innovation broker

Now try to think of ways you currently are or could be fulfilling these roles within your organisation.

Answer: The answer may be relatively general as long as at least one example is mentioned under each heading. Possible examples include:

- *Information intermediary: Searching for relevant information on a specific problem/innovation. Making sure the right information reaches the right people;*
 - *Knowledge translator: Rewrite complex information. Writing of practical advice using research.*
 - *Knowledge broker: Putting researchers into contact with farmers.*
 - *Innovation broker: Help with getting funding.*

Session 2.3: Extension as a knowledge management system

Activity 2.4 Individual activity: The extension agent as a knowledge manager

Answer the following question in your own words.

1. Fill in the missing words. (14)

It is very important for extension agents to have a _____ (a) knowledge management system in order to _____ (b) with current knowledge in the AIS. There are _____ (c) main avenues extension agents can use to optimise their skills and expertise. Extension agents can learn by exchanging knowledge with colleagues from the _____ (d) organisation using _____ (e) to store knowledge, _____ (f) and face-to-face informal and formal _____ (g). Secondly interaction with the _____ (h) allows extension agents to enhance their skills by _____ (i) learning (gaining implicit knowledge). Extension agents can also learn by forming _____ (j) with colleagues from _____ (k) _____ (l). Lastly extension agents can gain knowledge through _____ (m) interaction and cooperation with _____ (n).

Answer: (a) personal, (b) keep up-to-date, (c) four, (d) same, (e) databases, (f) in-house training, (g) teamwork, (h) farmers, (i) experiential, (j) networks, (k) other (l) organisations, (m) direct, (n) researchers.

Total: 14 marks

Summative assessment: Unit 2

Answer the following questions in your own words.

1. Briefly describe the main features of the following models of communication.

- 1.1. Sender-oriented model (3)

Answer: The sender (the information source) composes a message (information that needs to be communicated) (1) and transmits it through a channel (communication device like a telephone) to a receiver. (1) The sender and receiver will have identical information, unless something interferes with the message being carried through the channel (noise, distortion). (1)

- 1.2. Receiver-oriented model (2)

Answer: The sender encodes (composes) a message using their personal frame of reference. (1) This message is transmitted and reaches the receiver, who uses a different personal frame of reference to decode (interpret) the message. (1)

2. Identify the main communication model used in the following examples. (2)

- 2.1. Listening to the radio

Answer: Receiver-oriented model (1)

- 2.2. Two families negotiating who pays for what in an upcoming wedding celebration.

Answer: Social network or negotiation model (1)

3. List five possible communication barriers that could prevent an innovation message from reaching its intended audience. (5)

Answer: Any of the following five for five marks.

- *Inadequate choice of communication media.*
- *Information overload or fatigue.*

- *Wavering attention of the target audience.*
 - *The relationship between the communicating parties is strained (conflict, lack of trust); the audience may choose not to pay attention to a message.*
 - *The message is not understood or correctly interpreted.*
 - *The audience disagrees with the message. If one fails to consider the target audience's interests, aspirations, beliefs or culture, they may doubt the validity or integrity of the message.*
 - *The audience ignores the message, because of differences in audience's priorities, interests or pressures from the wider social or political environment.*
 - *Shortage of starting material.*
 - *The audience abandons the advice contained in the message.*
4. Name two different innovation intermediaries necessary for successful agricultural innovation and briefly explain their main role within innovation systems. (4)

Answer: Any of the following two for four marks.

- *Information intermediary (1): Information intermediaries enable the access to, and transfer of information from one source to another. They help with the gathering and effective transfer or exchange of knowledge.(1).*
- *Knowledge translator (1): A knowledge translator helps to make sense of, and interpret complex information and is involved in the translation and communication of knowledge and ideas.(1);*
- *Knowledge broker (1): Knowledge brokers help to build relationships between knowledge producers and users and improves the use of knowledge in decision making processes. A knowledge broker is mainly involved in networking and facilitating knowledge exchanging events. (1); and*

- *Innovation broker(1): Innovation brokers enable innovation and facilitate social learning. Through negotiation and collaboration create environments conducive to sustainable innovation. (1)*

5. Explain why it is important to be both a knowledge manager for farmers and to have a personal knowledge management strategy in agricultural extension. (4)

Answer: An extension agent is a knowledge manager for the farmer, ensuring that the farmer gets the appropriate knowledge in the appropriate form. They also need to facilitate communication between farmers and different members of the AIS. (2)

An extension agent should also have a personal knowledge management system, to ensure they stay informed of the latest developments in farming, and get the latest results from research in order to create the best advice. (2)

Total: 20 marks

Study unit 3: Communication media and tools to support knowledge management

Session 3.1: Different forms of communication media

Activity 3.1 Individual activity: Different forms of communication

Answer the following question.

1. Choose the term in column B that best matches the statement in column A. (6)

Column A	Column B
1. Communication media that can reach a large target audience	a. Written media
2. Communication media that is well-suited to an extension agent in a knowledge translator role	b. Verbal media
3. Communication between communication parties is immediate	c. Mass media
4. Communication media able to communicate explicit and implicit knowledge	d. Tactile/olfactory media
5. Communication media that can enhance experiential learning	e. Visual communication
6. Posters, training videos and television shows	f. Synchronous communication

Answer: 1c, 2a, 3f, 4b, 5d, 6e.

Total: 6 marks

Session 3.2: Using ICT to enhance knowledge management

Activity 3.2 Individual activity: Comparison of different media

Answer the following question in your own words.

1. Complete the table comparing traditional mass media, interpersonal media and modern ICT media. (15)

	Traditional mass media	Interpersonal media	Modern ICT media
Relative cost per person reached			
Possible size of target audience			
Storage capacity			
Synchronous/Asynchronous			
Time flexibility			

Answer:

	Traditional mass media	Interpersonal media	Modern ICT media
Relative cost per person reached	<i>Relatively low</i>	<i>Relatively high</i>	<i>Mostly in between</i>
Possible size of target audience	<i>Relatively large</i>	<i>Relatively small</i>	<i>Similar to mass media</i>
Storage capacity	<i>Relatively high</i>	<i>Relatively low</i>	<i>Similar to mass media</i>
Synchronous/ Asynchronous	<i>Asynchronous</i>	<i>Synchronous</i>	<i>Both, depending on situation</i>
Time flexibility	<i>Differential, depending specific communication medium</i>	<i>Within limits, depending on situation</i>	<i>Similar to mass media</i>

Total: 15 marks

Summative assessment: Unit 3

Answer the following questions in your own words.

1. Explain the following terms in relation to the study material. (8)

1.1 Asynchronous communication

Answer: When communicating parties are involved in the communication process at different times and cannot respond to each other immediately. (2)

1.2 Tactile communication

Answer: Communication through the sense of touch. (2)

1.3 Spatial flexibility

Answer: The possibility of adjusting the physical environment in which an innovation message is delivered to the preferences of the audience. (2)

1.4 Time flexibility

Answer: When the time that an innovation message is received by an audience can be adjusted to suit the preference of the specific audience. (2)

2. List two possible merits and two possible limitations of mass media to communicate a message. (4)

Answer: Any of the following two merits and two limitations for four marks.

Mass media	Interpersonal Media
<i>High potential to reach a large target audience</i>	<i>Limited potential to reach a large target audience</i>
<i>Relatively high potential to attract attention to an issue</i>	<i>Relatively low potential to attract attention to an issue</i>
<i>Asynchronous communication</i>	<i>Synchronous communication</i>
<i>Relatively non-specific message</i>	<i>Relatively specific, tailor-made message</i>
<i>Differential spatial flexibility</i>	<i>High spatial flexibility</i>
<i>Differential time flexibility</i>	<i>Time flexibility within limits</i>
<i>Relatively low cost</i>	<i>Relatively high cost</i>
<i>High storage capacity</i>	<i>Low storage capacity</i>
<i>Low potential to stimulate experiential learning</i>	<i>High potential to stimulate experiential learning</i>
<i>Low potential to develop personal relationship with target audience</i>	<i>High potential to develop personal relationship with target audience</i>

3. Provide two examples of each of the following communication media. (6)

3.1 Written communication

Answer: Newspaper articles, leaflets, technical notes, guides, brochures, factsheets. (2)

3.2 Verbal communication

Answer: Presentations to groups, group discussions, multi-stakeholder platforms, interactive theatre, one-on-one discussions, rural radio. (2)

3.3 Visual communication

Answer: Training videos, participatory videos, television shows, posters. (2)

4. Briefly explain why mobile phone applications can be a useful and cost-effective way to transfer and share innovation knowledge. (2)

Answer: Mobile phone applications are especially useful in rural areas where reliable Internet connections are not always available or other ICTs (computers, laptops, tablets) are not a viable option.

5. Discuss two limitations faced when using modern ICTs in agricultural extension and innovation systems. (4)

Answer: Any of the following two limitations for four marks.

- *Insufficient connectivity (1): Most modern ICTs need reliable and relatively fast internet connections and many resource poor and rural areas lack such connectivity (1).*
- *Limited access to hardware tools (1): Many farmers and extension organisations may lack the capital needed to invest in ICT hardware such as, smartphones, tablets or laptops (1).*
 - *Cultural barriers (1): Certain cultural barriers such as, age of farmers may prevent the optimal use of modern ICT tools and applications (1).*

Total: 24 marks

Post-assessment

Now that you have gone through the learning content, complete the following post-assessment.

	Question	Self-assessment				
		Low		High		
1	I am able to explain the different types of knowledge that exist.	1	2	3	4	5
2	I am able to identify different sources through which knowledge can be gained.	1	2	3	4	5
3	I understand the term knowledge management and what role it plays in agricultural extension.	1	2	3	4	5
4	I can identify different areas of knowledge that need to be integrated for successful innovation.	1	2	3	4	5
5	I can describe different communication models	1	2	3	4	5
6	I am able to identify problems that may prevent effective communication.	1	2	3	4	5
7	I am aware that agricultural innovation has different levels of complexity.	1	2	3	4	5
8	I can describe the different innovation intermediary roles and knowledge exchange encounters that take place in agricultural innovation.	1	2	3	4	5
9	I am aware that as an extension agent I have to act as a knowledge manager for farmers as well as keep my own knowledge up to date.	1	2	3	4	5

	Question	Self-assessment				
		Low		High		
10	I aware of the different forms of traditional and modern ICT communication media available for communicating innovation messages.	1	2	3	4	5

Answer: Learner's own answer.