KINDLER'SLEARNING POSTULATION AND LEARNING ABILITY OF FARMING HOUSEHOLDS IN CHIKUN LGA, KADUNA STATE

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ABSTRACT

Farmers' performance ability vis a vis improved extension delivery is a function of cognitive skill performance or learning ability of farming population or household. The study therefore examined the use of print and electronic media (PEM) by extension personnel to determine learning abilities of farming households in conformity with Kindler's assertion in Kaduna State. It specifically assessed available prints and electronic media, learning with the use of PEM and compared with Kindler's learning principle and constraints to the use of print and electronic media. Proportionate sampling was used to select a sample of 60 respondents using structured questionnaire and interview schedule. Frequency, percentages and mean score was used to analyze the data. Findings indicate that the (47%available print and electronic media was television. Out of 6 available PEM for use among the respondents, phone, bulletin and television were highly utilized the use of radio, internet and newspaper was low. The study further revealed that higher percentage (62.25%) of learning took place by what people heard than by what they have seen which is contrary to Kindler's postulation. The perceived constraints to the use of PEM were poor finance and erratic electricity supply. The study concludes that farmers in Kaduna State have higher cognitive skill than Kindler's learning postulation. Thus, Kindler principle cannot be used to evaluate learning ability among farmers in Kaduna State, Nigeria. It therefore recommended that strategies such as training that will improve cognitive skill vis-à-vis visual and auditory learning should be promoted.

Keywords: Kindler's postulation, Learning, Learning ability, Farming household, Kaduna State

Introduction

Agricultural extension is faced with the challenge of making farmers learn and be abreast with current information arising from latest research findings while at the same time saddled with the task of alerting researchers with farmers' need. The success of agricultural practice therefore depends on the services rendered by extension practitioners. In order to achieve success, a systematic teaching and learning process coupled with performance management evaluation is central to extension delivery. That is, the practical evaluation which helps the extension personnel the learning ability of their subject, the farmers. The technique of determining learning ability through the systematic utilization of a full range of learning resources and management of these processes is called educational technology. The Association for educational communications and Technology (1972) defines "educational technology as a field of study involved in the facilitation of human learning through systematic identification, development, organization and utilization of a full range of learning resources and through the management of these processes".

Moreover, Spector (2015) gave a more succinct definition of educational technology to mean "the disciplined application of knowledge for the purpose of improving learning, instruction and or performance". From the foregoing, it is obvious that learning ability can be measured easily through the instrumentality of educational technology and cognitive skill. Cognitive skills are mental skills that are used in the process of acquiring knowledge (Oxfordlearning.com). When cognitive skills are weak, learning becomes a struggle. In the later years of life, a lack of cognitive skills (poor concentration), the inability to focus, and memory loss is a common problem that emanates. It should be noted that irrespective of age, cognitive skills can be improved with the right training to enhance learning.

Learning is the process of acquiring new, or modifying existing, knowledge, behavior, skills, values, or preferences (Mayer, 2001). Some learning is immediate, induced by a single event, but much skill and knowledge accumulate from repeated experiences. The nature and processes involved in learning are studied in many fields including educational psychology. Research in such fields has led to the identification of various types of learning. For example as a result of habituation, operant conditioning or as a result of play. These sorts of learning are represented in this study as learning by hearing and sight.

From the time of creation, myriad of means have been used to enhance learning especially through sight and hearing. Also symbols, stones and stories have been used in Medieval and prehistoric ages to make people learn. However, with advancement in the fields of science and technology evolved the use of radio, television, newspaper, to pass or communicate important information to people. Thus, these media of communication became useful in agricultural extension communication to enhance learning among farmers.

Given the recent explosion in media, the urgent need for current Agricultural Knowledge and Information System (AKIS) by farmers, the use of these conventional communication for disseminating agricultural information as entrenched in the T and V extension approach is becoming less effective. Recent researches has proved that they are preferred learning sources in certain quarters among many farmers. For instance in a study to assess the role of mass media in dissemination of agricultural technologies among farmers in Kaduna state, Ariyo (2013) found that radio, television, telephone, internet, newspaper and bulletin have different accessibility. Also Farinde and Soetan (1999) reported that majority (60%) of farmersin Oyo State received agricultural information from radio, 21% from television and 19 % from newspapers. These results gave credence to the fact that print and electronic media are quite relevant to agricultural information dissemination but did not indicate cognitive skill or learning performance of the learners.

The cognitive skill or learning performance reveals how much of the teaching the learners are able to recall after certain number of days. Such knowledge becomes important because instructional experiences among farmers in developing countries are limited to hearing due to ignorance, poverty and inexperience in the field of media technology (Soremekun, 1988). However, reverse is the case in the developed countries where the senses of the extension personnel and farmers are actively engaged and made responsive in the learning and teaching processes (Soremekun, 1988).

Thus, Kindler as quoted in Akinyemi (1984) asserts, that learners generally remember after three days: 10% of what they read, 20% of what they hear, 30% of what they see; 50% of what they hear and see; 70% of they say and 90% of what they say as they do a thing. But this assertion may not be a representative of agrarian society such as Kaduna State because of electricity, physical condition, and availability of technical personnel, memory and perception which influence the sight and audio learning abilities. Moreover, various researches have stated that as much as eighty percent of all learning take place through the eye; while within 24 hours one forgets eighty percent of what one has learned. With

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reference to farmers in Kaduna State, their learning abilities are yet to be documented in extant literature. In order to ease the performance of farmers and enhance extension delivery, this study was carried out to ascertain the cognitive skill performance of farming householdswith appropriate recommendation for future performance.This is with a view to test Kindler's assertion and ascertain if it can be generalised to include learning abilities of farming households in Kaduna State. The study therefore specifically focused on identification of available print and electronic media, examine the level of PEM usage and its conformity to Kindler's postulation; and describe the constraints to PEM usage in the study area.

Methodology

The Study area

The study was carried out in Chikun Local Government area of Kaduna State. Chikun Local Government is located in Kaduna State, Nigeria, with its headquarters in the town of Kujama. The Local Government Area is located on the longitude 10º55'N and latitude 7º34'E and 8º13'E with an area of 4,645 km2 and population of 368,250 persons at the 2006 census (NIPOST, 2009). Sequel to the projected population growth rate of 3.18% per year, the population of the area is 532194.9 persons in 2020 (NIPOST, 2009). Chikun falls under Birnin Gwari Agricultural zone and consist of 16 villages which are; Bagado, Chikun, Doga-Maijama, Gayan, Kakau, Kashebo, Kotarma, Mafoina, Matari-Kujama, Mai Jama'a, Narayi, Rido, Sabon-Tasha, SabonYelwa, Tsaunim Kura, Unguwan Sunday. Their main occupation is farming and they plant rice, yam, maize, pepper, cassava, guinea-corn millet. They also rear ruminant animals such as goat, sheep, and cattle. They practice traditional and modern agro-forestry system.

Sampling procedure

A multistage sampling technique was used to select respondents for the study. Purposive sampling was used to select six out of sixteen villages in the local government because of the prevalence of farmers and extension agents. The villages chosen were Kakau, Rido, Narayi, Sabon-Tasha, Goni-Gora, Unguwan Sunday. From the six (6) villages that were chosen, proportionate sampling was used to select 10 respondents from each of the villages which gave a total of sixty (60) respondents.

Data collection and Measurement of variables

Primary data were collected through the use of interview schedule. A four-point Likert-type scale with responses ranging from "highly used" to "not used at all" and scaled 3 to 0 respectively, was used. Likert scale is a measuring instrument usually at ordinal level of measurement (Akinbile, 1997). Memory recall was used to determine the learning ability (cognitive skill) of six respondents purposively selected on account of past farming experience, innovativeness good neighborliness characteristics and adequate coverage of the study areas. The procedure lasted for nine days because each test was allowed three days to mature. Two areas of learning ability tested were visual memory, auditory memory. Visual memory, which is defined as a person's ability to remember what he has seen; while auditory memory, is a person's ability to remember what he has heard while test of learning ability of say implies learners' ability to remember what he said in the course of learning a thing. These types of memory were determined thus; eight statements related to procedures for pond construction and fishery were constructed.

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(e.g topography of the land, Water supply, Accessibility to water supply, Market for agricultural produce, Availability of labour, Pond construction, Species of fish, Fertilizer application). Pond construction activity was chosen because it was the commonest back yard farm family farming operation at the time of this research. For visual memory test, the activity were written in eight statements on the board for respondents to see only and after three days were asked to write down in sequence the eight processes and the result were recorded. For auditory (heard test), respondents were asked to listen only, not allowed to write, after three days the result from each respondent was recorded. In case of say, respondents were asked to memorize by saying aloud the statements that were written for them individually and after three days were tested and the results recorded. The percentage of recall (Y) was found as the number of statements able to read after three days over the total number of statements multiplied by 100.

$$Y = \frac{X}{Z}$$

Y = the number of statements respondents were able to read after three days

X = the number of statement recalled after three days

Z = maximum number of statements (eight statements).

Objective 3 was measured by listing five possible constraints to print and electronic media use and asking respondents to indicate the seriousness of the constraints. Maximum of 2 point was awarded for major constraint and 1 for minor.

Results and Discussion
Socio-economic characteristic of respondents

Age
Result in Table 1 shows that the highest percentage (35%) of the respondents are within the age range of 30-39 years, 21.7% are between 20-29years, 20% are between 40-49years, 15% are 50-59 years while only 8.3% are between the age range of 59 and above. This implies that agriculture (farming) in the area has a brighter future since many (56.9 %) are within their active and productive age (20-39years).

Education
From table 1 the results shows that 41.6% of the respondents had secondary education, 38.4% had tertiary education while only20% had primary education. The implication is that most of the respondent are secondary school leavers. This is contrary to Oluyaire (2018)who found that 8.1% of farm youth in Federal capital territory had tertiary education. The level of individual's education may assist in the enhancement of mental ability to gain knowledge about a particular concept, understanding and usage of technology or practice. Zijp (1994) opined that agricultural information transfer, sourcing and usage thrive better in places where farmers are highly educated.

Marital status
In table 1,83.4% were married, 10% were single, while 6.6% were widows. This study implies that majority of the respondents are married. This should be expected in this part of country where as a culture matured individual are advised to marry. The result is similar to Banmeke and Oose (2012) who reported that 62.9% of users of social networks in Southwest, Nigeria are married.

Cosmo-politeness
From table 1 65% had traveled outside their state, 23.3%had never travelled outside their

locality, 5% had travelled within their Local Government,5%had travelled within their communities and only1.7% had travelled outside their country. The results imply that majority of the respondents had travelled outside their state. The extent of farmers' cosmopoliteness predisposes him to new ideas. This is contrary to Oluyaire (2018) who found that majority (76.9%) of farm youth in the FCT have travelled out of their community and only (23.1%) respondents had not left their communities.

Farm size

Results in table 1shows that majority (86.7%) of the respondents had between 1 and 5 hectares of land, 11.6% had between 6-10 hectares of land while 1.6% had 11-15 hectares of land. This implies that farm holding in the study area is small. Thus, the study agreed with Ajayi, Jibrin and Anayo (2014) who posited that Nigerian farmers are mostly small scale farmers.

Table 1: Socio-economic characteristic of respondents

Variable	Frequency n=60	Percentage
Age		
20-29	13	21.7
30-39	21	35
40-49	12	20
50-59	9	15
60+	5	8.3
Education		
Primary	12	20
Secondary	25	41.6
Tertiary	23	38.4
Marital status		
Single	6	10
Married	50	83.4
Widowed	4	6.6
Cosmopoliteness		
Within the community	3	5
Not outside their community	3	5
Within the LG	14	23.3
Outside their State	39	65
Outside the country	1	1.7
Farm size		
1-5	52	86.7
6-10	7	11.6
11-15	1	1.6
Total	**60**	**100**

Available PEM in the study area

The result in Table 2 shows that 41.7% and 35%of the respondents indicated that television and radio were available followed by telephone (8.3%), internet (3.3%), newspaper (1.6%) and bulletin (10%) respectively. This implies that television is the most available PEM while bulletin (0%) was not available for learning in the study area.

Table 2: Available print and electronic media

PEM in Farming activities	Frequency	Percentage
Radio	21	35
Television	25	41.7
Internet	2	3.3
Bulletin	6	10
Newspaper	1	1.6
Telephone	5	8.3
Total	**60**	**100**

The level of PEM usage and its conformity to Kindler's assertion

The results in Table 3 showed the level of utilization of PEM in the study area .The result showed that all the PEM except newspaper were used. The use of phone was ranked first with a weighted mean score of 2.88 followed by bulletin 2.73 and television with mean score of 2.58.Similarly, Ajayi and Ogba (2006) used a 4 point likert-type scale to assess perceived problem of implementation and acceptance of water aid programme (WAP) in Igede land, Benue State and got 2.8, 2.9 and 3.2. However, three of the PEM which had low ranking were radio 2.17, internet 2.02 and newspaper 0.95. Moreover, majority (93%) and (87%) of respondents highly utilized telephone and bulletin respectively for their farming activities. Also, internet has the lowest utilization with 55% of respondents affirmed their non-utilization of the media .This study is contrary to Sodiya and Oladoyinbo (2014) who found that 39% and 20% of respondent utilized telephone and radio for information on medicals value of Moringa. However, it is similar to Eniola *et al.*, (2014) who found that low utilization of internet was due to lack of proper knowledge of the benefit of the internet.

Table 3: The level of usage of PEM

Media n=60	HU %	MU %	LU %	NU %	Mean	Rank
Radio	45	31.7	18.3	5	21.7	4
Television	70	20	8.3	1.7	2.58	3
Phone	93.3	3.3	1.7	1.7	2.88	1
Internet	38.4	3.3	33	55	2.02	5
Bulletin	86.7	1.7	11.6	0	2.73	2
Newspaper	15	11.6	26.7	46.7	0.95	6

Grand Mean= 2.22; < 2.22= not utilized, =>2.22 = highly utilized, S = Significant, NS = Not significant, Hu=Highly utilized, Mu = Moderately utilized, Lu = Lowly utilized, Nu =Not utilized

Furthermore, it was revealed that majority of respondents had high utilization of PEM with mean score of equal to, and greater than 9.1, followed by 33.33 percent which had moderate utilization with mean score of between 4.5 and 9.0 and 28.33 percent which had low utilization with mean score of equal to or less than 4.5 (=4.5) as shown in Table 4 below.

Table 4: Classification of usage score of respondent in the study area.

Usage score	Frequency	%
< 4.5 (slightly utilized)	17	38.33
4.5-9.0 (moderately utilized)	20	33.33
>= 90 (highly utilized)	23	28.33

Evaluation of cognitive skill among farmers in the study area

The results in Table 5 showed the usage of PEM in comparison with Kindlers postulation. The result reveals that after three days of test, the cognitive domain of the farmers could retain 52.08% of what they heard, 62.25% of what they have seen, and 37.50% of what they say. The implication of this study is that higher percentage of learning (62.25%) took place by what people have seen than by what heard and say. This finding is contrary to Kindlers assertion where high percentage of retention and recall was recorded in "say and do". This result further put to rest the habit of hasty acceptance of outcome of a research done in one part of the world and adopted and generalized to be used across other geographical location. It is even worse when there is no consideration for the culture, learners' and learning situation, teaching aids availability, and knowledge level of the learners among other factors in the two environments. Among the factors affecting Adult learning in Nigeria are: (a) custom or tradition, (b) Age; (c) felt needs; (d) social structure; and (e) interest (Tennant, 1997) Thus, Kindler's postulation of learning outcome does not conform to learners' ability among farmers in Chikun local government area, Kaduna State, Nigeria. This result may not be unconnected with respondents' inability to pronounce certain words because of their low education status. This finding is similar to World Bank (2011) that rural farmers have problem of low or no education.

Table 5: Test of cognitive skill of farming households (after three days)

Villages n=60	Heard n=8	Seen n=8	Say n=8
	%	%	%
A	37.50	62.50	50.00
B	62.50	37.50	25.00
C	37.50	81,50	37.50
D	50.00	75.00	62.50
E	37.50	50.00	37.50
F	87.50	62.50	25.00
Total	**52.08**	**62.50**	**37.50**

Table 6 reveals Kindler's postulation in 1976 in comparism with the result of this study in 2018. This is the summary of the cognitive skill performance of farmers in Chikun LGA.

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Table 6: Comparism of Kindler's assertion with cognitive domain test of respondents in Chikun LGA, Kaduna State, Nigeria

Cognitive skills	Kindler's postulation 1976 (%)	New findings 2018 (%)	Remark
Heard	10	17.50	> Kindler's
Seen	20	62.50	>Kindler's
Say	70	39.75	< Kindler's

Constraints to PEM usage

The results in Table 7shows the constraints to the utilization of PEM among extension agents. The result show that financial problem (91.7%) was perceived by farmers as the major problem, followed by domestic conflicts (48.4%) and electricity were the major constraints to respondents in the study area.

But the most important constrains is low income. However, education, (91.7%),land dispute (71.6%), electricity (51.7%) and domestic conflict (57.6%) were among the minor constrains.

The results imply that funding or financial problem is the main constraint to extension activities in the study area. This study is similar to Nlerum (2014) who found insufficient funds as the major constrains to the use of ICTs among the rural households in Degema communities, of River State.

Table 7: Distribution of Respondents According to Constraints

Constraints n=60	Major	Minor
Erratic electric supply	51.7	48.3
Poor income	91.7	8.3
Domestic conflict	48.4	51.6
Land dispute	28.4	71.6
Education	8.3	91.7

Source: field survey, 2018.

Conclusion and recommendation

From the study it was concluded that phone was the most utilized means of communication, while finance, erratic power supply and domestic conflict were paramount among the major constraints to farming in the area. Therefore, communities in the area should form a cooperative society to alleviate their financial issues. Moreover, an advocacy group should be formed to report the cases of power supply and domestic conflict to the appropriate authorities such as the *wakawaka radio* programme that is championing such

cases in Kaduna State. However, farmers in Chikun Local Government area have higher cognitive skill than Kindler's learning postulation. Thus, Kindler's postulation is not applicable among farmers in the study. It therefore recommended that strategies such as training that can improve visual cognitive skill in Chikun LGA, Kaduna State should be promoted for effective extension service delivery

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