

EFFECTS OF ACTUAL FIELD TRIP FOR ENVIRONMENTAL INFLUENCE AND VIDEO INSTRUCTION METHODS ON UNDERGRADUATE STUDENTS' ACHIEVEMENT IN AGRICULTURE SCIENCE

¹Eze, S.C. and ²Asogwa D.U.

¹Department of Crop Science, University of Nigeria, Nsukka

²Department of Art Education, University of Nigeria, Nsukka

Abstract: The study investigated the effects of actual field trip for environmental influence and video instruction methods on the undergraduate students' interest and achievement in crop production techniques. The design of this study was a quasi-pretest and posttest experimental research design. The population of this study was undergraduate students (N=145) in the Faculty of Agriculture, University who enrolled in the course Ag 401 titled "Field crops" during the first semester 2013/2014 academic session. Three research questions and three null hypothesis tested at 0.05 probability level guided the research. Instrument used for data collection were pretest and posttest achievement scores. The instrument, achievement test (AT) was validated by expert in crop production technique. The reliability of the instrument was tested using Cronbach's Alpha and result showed correlation co-efficient of 0.85. Hence the instrument was found to be reliable for this research. Data analysis was done using means, standard deviation and Co-variance analysis (ANCOVA). The result indicated that students taught with field trip had slightly lower score in the achievement test than those taught with video instruction. Similarly, female students taught agricultural science using Video instruction scored higher posttest means of (73.55) than their male counterparts that scored posttest means of (69.87) with mean gains of 33.97 and 27.20 respectively. The ANCOVA result showed that there were significant differences in gender achievement test scores, modes of instruction and their interactions. Therefore, the hypotheses of no significant differences between male and female, field trip and video instructions in teaching agricultural science and their interactions were rejected. The present study evidently showed that field trip and video instructional approaches to teaching agriculture science significantly stimulated students' interest and achievement.

Keywords: Actual field trip, Video, Instruction, Agriculture students, Gender, Achievement.

INTRODUCTION

Field trips can be considered as one of the three methods through which science can be taught. The use of the term 'field trip' emphasizes some of the formal exercises which are done outside the classroom, usually in courses like biology, geology and agriculture at senior high school and tertiary levels. Actual field trip no doubt will expose students to new environment, new technology and new production techniques that will invariably influence

the students' attitude and thinking about agriculture science. According to Onyeabor, Botril and Amadi (2006), organized and guided agricultural field trips is a visit to farms, agricultural institutions and the like, either for pleasure, education, recreation or others. Students that specialize in agriculture as a profession usually embark on field trips to some agro-based industries, farms, and research Institutes Universities and colleges of agriculture in order to acquire practical knowledge of the course rather than what they were taught in the class room. These activities may be considered to be a subset of field trips or excursions.

An instructional material is an object or means of communication process that stores and distributes human experience or knowledge, therefore, it is the totality of information carrying device (Fatumbi, 2005). Video instruction is a very important example of instructional materials. Video is in the class of audio visual of instructional materials. It increases the retention of knowledge and stimulates understanding and attitude. According to Alaku (1998) video play vital role in teaching and learning. When used effectively, it stimulates interest among the pupils and induces longer retention of factual ideas as the students come into contact with what is being taught. Video has tremendous power to trigger learning across organizations and across cultures (Van Mele et al., 2010). Alaku (1998) again, stated that teachers' effectiveness depends on their use of appropriate instructional strategies and audio visual aids. Appropriate instructional strategies portray good teaching techniques and successful learning. They assist students to enjoy and understand lessons easily especially when they are attached with visual aids. Akerele and Afolabi (2012) opined that an intelligent use of audio-visual aids will save time and stimulate students' interest and achievements.

Achievement losses or gains in terms of mean scores and standard deviation are some of the measurable tools for evaluation of various instruments in teaching and learning processes. When students are involved in a discussion session of what they already know and are doing it at home, they may tend to remember it and consequently, tend to make higher achievement gains in assessment tests. Instrument which is practical oriented for example, field trip is likely to expose the students to environmental influence through practical demonstration that will give them better understanding of the subject. This might be one of the reasons why the National University Commission (NUC) made field trip one of the conditions for the award of B. Agriculture to students of agriculture in Nigerian Universities. Therefore, all the undergraduate students of agriculture usually embark on field trips in order to complete the course.

Undergraduate students of agriculture are those people that want to make a carrier in agriculture through University education. Empirical investigation has shown that the youths of today and leaders of tomorrow who are undergraduates of Nigerian Universities show no interests in agriculture. It is observed that more than 80% of agricultural students did applied to read medicine, Pharmacy, Radiography, Engineering, Microbiology etc as their initial choice of courses. When they failed to get admission into the course of their choice they settled for agriculture not because they liked agriculture but because they are desirous to be in the University. Serious efforts are needed to arouse interests of these students in agriculture in order to achieve food security of the nation.

Statement of the problem

In the National Policy on Education of 2004, one of the objectives of agricultural education is to stimulate students' interest in agriculture. Therefore, it is expected that field trip will expose the students to the practical experience and widen the students' knowledge of the course. There is a huge gap between information residing in agricultural knowledge centres and rural communities. Information on pest and disease control, especially early warning systems, new varieties, new ways to optimize production and regulations for quality control should help us in achieving the desired objective of increasing food production. The majority of people in the least developed countries still live in rural areas and their livelihood depends on the primary industries.

Purpose of the Study

The purpose of this study was to determine the effects of using actual field trip and video instruction on the teaching of crop production techniques among undergraduates student of agriculture. Specifically the study sought to: 1) Determine the achievement scores of students taught agricultural science with actual field trips and video instruction. 2) Determine the academic achievement scores of male and female students in agricultural science when taught with actual field trips and video instruction and 3) Determine the interaction effects of the two modes and gender on students interest on agriculture science

Research Questions:

The following research questions were formulated based on the purpose of the study:

1. What is the mean achievement score of students taught agricultural science using actual field trips and video instruction?
2. What is the mean achievement scores of male and female students taught Agricultural Science using actual field trips and video instruction

3. What is the significant interaction effects of the two modes and gender on students interest on agricultural science

Hypotheses

The following hypotheses were formulated to guide the study at 0.05 level of significance.

1. There is no significant difference between the mean achievement score of students exposed to actual field trips and video instruction in the study of agricultural Science
2. There is no significant difference between the mean achievement test scores of male and female students taught with actual field trip and video instruction for teaching agriculture science
3. There is no significant interaction effects of the two modes of instruction and gender on students achievements test in agriculture science

RESEARCH METHODS

Design of the study

The design of this study was a pretest-posttest experimental design. The pretest was used to establish equality or no difference between the treatment groups. The design consisted of two groups of students where one group is the field trip lectured while group two is the video lectured students.

Sample and Sampling technique

The sample of this study comprises only the 400 level students in the Faculty of Agriculture, University of Nigeria, Nsukka. This sample provided the researchers with a wide breadth and diversity of students from the Faculty to be represented in the sample group.

Instrument for data collection

The students were divided into two groups of learning styles. Group one was the field instruction while group two was the class room multimedia instruction. Students were randomly assigned to the two experimental groups using a random paper table.

All students then received instruction on the selected topic, “Yam (*Dioscorea spp*) production”. The topic was divided into six units thus: (1) general land preparation, type and choice of seedbeds, (2) yam minisett technology, (3) weed management techniques, (4) types and methods of fertilizer application,

(5) Maturity, senescence and harvest, (6) preservation/storage methods. The field dependent group were taught by the field instructor while the lecturer explains the principle further. The lecturer taught the field independent group by shooting video recorded field lecture on the screen as the students were watching.

The instrument, pretest and posttest (PP) used for data collection was validated by two experts of crop production techniques. An internal reliability of 0.85 was obtained using Cronbach Alpha while the coefficient of stability for the PP was established using spearman's test-retest coefficient of reliability and was found to be 0.91. Data collected was analyzed using mean and standard deviation for the research questions, analysis of covariance for the hypotheses. The research questions were answered by computing the mean scores and standard deviation scores of both groups while the hypotheses were tested at $P < 0.05$ probability level using analysis of covariance

RESULTS

Research question 1.

What is the mean achievement score of students taught agricultural science using actual field trips and video instruction?

Table 1. Mean and Standard Deviation of Students' Overall Achievement Scores in agricultural science taught using video instruction and actual field trip.

Modes of instruction	Group N & STD	Pretest	Posttest	Mean gain
Field trip	75	42.00	70.25	28.25
	STD	9.51	9.46	
Video	68	41.57	72.57	31.0
	STD	9.51	9.75	
Total	143	41.80	71.36	29.56
	STD	8.90	9.63	

Table one shows that students taught with videotaped instruction have higher posttest (72.57) mean than those taught with actual field trip (70.25). Hence the mean gain for the video-taped group is 31.0 while that of the actual field trip group is 28.25

Research question 2.

What is the mean achievement scores of male and female students taught Agricultural Science using actual field trips and video instruction?

Table 2: Mean Scores of male and female students taught agricultural science using actual field trip and video instruction

Modes of instruction	Gender	Group N & STD	Pretest	posttest	Mean gain
Actual field trip	Male	71 STD	43.56 8.48	70.55 8.59	26.99
	Female	72 STD	40.06 9.02	72.15 10.15	32.09
Total	Total	143 STD	41.80 8.90	71.36 9.63	29.56
Video instruction	Male	71 STD	42.67 9.04	69.87 7.99	27.20
	Female	72 STD	39.23 8.99	73.55 9.21	33.97
Total	Total	143 STD	40.95 9.35	71.71 9.45	30.78

Table 2 shows that female students taught agricultural science with actual field trip have higher posttest means of (72.15) than their male counterparts that scored (70.55) with mean gains of 32.09 and 26.99 respectively. Similarly, female students taught agricultural science using Video instruction scored higher posttest means of (73.55) than their male counterparts that scored posttest means of (69.87) with mean gains of 33.97 and 27.20 respectively. Male students however, scored higher than female students in their pretest assessments.

Hypotheses H₀₁: There is no significant difference between the mean achievement test scores of students taught with actual field trip and video instruction for teaching agriculture science.

Hypotheses H₀₂: There is no significant difference between the mean achievement score of male and female students exposed to actual field trips and video instruction in the study of agricultural Science.

Hypotheses H₀₃: There is no significant interaction effects of the two modes and gender on the students interest in agriculture science.

Table 3: Analysis of Covariance of Students' Overall Achievement Scores by Instructional Approaches and Gender in teaching of agricultural science

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	7789.359 ^a	4	1947.340	48.256	.000	Significant
Intercept	16449.692	1	16449.692	407.631	.000	
PRETTEST	2661.343	1	2661.343	65.949	.000	
INSTRUCTION	204.874	1	204.874	5.077	.026	
GENDER	609.551	1	609.551	15.105	.000	
INSTRUCTION * GENDER	4017.498	1	4017.498	99.556	.000	
Error	5649.607	140	40.354			
Total	750075.000	145				
Corrected Total	13438.966	144				

The ANCOVA results of the students' overall achievement scores by instructional approaches and gender answered hypotheses 1, 2 and 3 as shown in Table 3.

Table 3 also shows that both the main effects and their interactions are significant. Therefore, all the hypotheses are rejected.

DISCUSSION

The study shows that the mean achievement scores of students taught with video instruction performed better than those taught with actual field trip. Comparing male and female performances in the posttests of the two modes of instructions, female scored higher than males under video instruction. This could be probably due to apathy women have for going to the field to work since majority of the students are women. This result disagrees with the findings of some studies (Agommuoh, 2004; Ogonna, 2007) which indicated that there was no significant difference between achievement of male and female students in science learning.

However, the two modes of instruction improved students' performances in agricultural Science with mean scores of 70.25 and 72.57 for field trip and video instruction respectively. Auwa (2013) obtained similar result where he noted that the demonstration method of teaching in the field had higher retention test mean score and low standard deviation above that of discussion method of teaching. This result implied that demonstration method of teaching in the field brings about better retention of knowledge gained under field trip instruction. Achor et al. (2009) had earlier reported that the retention mean scores (58.01) of students taught using field trips was higher than the retention mean scores (21.35) of those

taught with the conventional approach. In a similar study by Alaku (1998), he noted that video significantly stimulated interest among the pupils and induced longer retention of factual ideas as the students came into contact with what was being taught.

The ANCOVA result also indicated that the difference between the performances of the two groups is significant. This is in line with the findings of Daluba (2013) that instructional materials help students to develop skills, scientific attitude and creativity. Again, real life activities as in actual field trip where demonstration and specimens in agriculture and the environment are brought to the learners, high retention is expected. The significant interaction indicates that both gender and instructional materials should constitute important consideration in the teaching and learning of agricultural science.

The non significant differences between the two modes of instructions (actual field trip and video) suggest that they are very effective in the teaching of undergraduate students crop production techniques. This result is similar to the report by (Isiaka, 2014) that the students taught slashing and raking skills with video-taped instructional package performed significantly better than their counterparts taught the same topics using conventional approach among others. Based on the findings of the study, it was recommended among others that video-tape as an instructional procedure should be applied to augment practical work for skill acquisition in practical agriculture in secondary schools.

The non significant interaction effects of the two modes of instruction and gender could be related to the effectiveness of the instructional materials that lead to the high achievement scores in the posttest by both male and female students. This report agrees with the finding of Babalola (2007) when he reported that the pupils taught with the video performed equally as well as those taught with real objects (Realia). While both groups performed significantly better than those taught with chart and without instructional medium. According Babalola's report, there was no significant difference in performance based on the gender and with regards to grade (Primary 5 and 6), only the group taught without instructional medium had a significant difference.

Recomemendations

1. Video-tape as instructional procedure should be used when teaching practical agriculture especially to girls who are stimulated when watching videos.
2. Government should assist schools to acquire necessary facilities such as buses, video equipment and standby generator sets for both field trip and videos instruction.

3. Facilities should be put in place in the Universities including other higher Institutions to promote and encourage the use of field trips and video instructions in teaching and learning agriculture science.

CONCLUSIONS

Agricultural science is a practical oriented course and cannot be properly taught without the practical aspect. All the hypotheses that there were no significant differences between male and female students achievement tests in agricultural science using actual field trip and video instruction were rejected. Also the hypothesis that there was no significant difference between gender and mode of instruction was rejected based on the result of this study. The present study evidently showed that field trip and video instructional approaches to teaching agriculture significantly stimulated students' interest. Again, male students performed better than female students when actual field trip is employed while female performed better when video instruction is applied.

REFERENCES

- [1] Abdulhamid Auwal (2013). Effects of teaching methods on retention of Agricultural Science knowledge in senior secondary schools of Bauchi Local Government Area, Nigeria. *International Journal of Science and Technology Educational Research*. Vol. 4, No.4 pp. 63-69
- [2] Achor, E.E., Imoko B.I, Uloko E.S. (2009). Effect of ethnomathematics teaching approach on senior secondary students' achievement and retention in locus. *Educ. Res. Rev.* 4(8):385-390. Retrieved on 29th August, 2012 from <http://www.academicjournals.org/ERR>.
- [3] Agommuoh, P.C, (2013). Videotaped Instruction and Constructivist Model On Students' Physics Achievement. *IOSR Journal of Research & Method in Education (IOSR-JRME) e-ISSN: 2320-7388, p-ISSN: 2320-737X Volume 3, Issue 2 (Sep. -Oct. 2013), PP 50-54*.
- [4] Alaku, P.O. (1998) Instructional Strategies and Audio-Visual Aids for Teachers Effectiveness, Agricultural Development retrieved from www.acdivoca.org agricultural science in Kogi State. *Teacher Education Journal (TEJ)*, 12(1), 14-19.
- [5] Daluba, N.E. (2013). Effect of Demonstration Method of Teaching on Students' Achievement in Agricultural Science. *World Journal of Education* Vol. 3, No. 6; 2013.
- [6] Isiaka B. (2014). Effectiveness of video as an instructional medium in teaching rural children agricultural and environmental sciences. *International Journal of Education and Development using Information and Communication Technology: (IJEDICT)*, 2007, Vol. 3, Issue 3, pp. 105-114.

- [7] Onyeabor, D., Botril, A.C., and Amadi, B. (2006): Problems of Agricultural Tourism in East African, London: McGraw Hill Publishers.
- [8] Van Mele, P., Wanvoeke, J., Akakpo, C., Dacko, R.M., Ceesay, M., Béavogui, L., Soumah, M. and Anyang, R. (2010) Videos bridging Asia and Africa:
- [9] Overcoming cultural and institutional Barriers in technology-mediated rural learning. *The Journal of Agricultural Education and Extension* 16(1): 75-87.