

RELATIONSHIP BETWEEN LEARNING STYLES AND GENDER AMONG SENIOR SECONDARY SCHOOL BIOLOGY STUDENTS IN JIGAWA STATE, NIGERIA

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ABSTRACT

The purpose of the study is to determine the relationship between cognitive style, and gender amount senior secondary school biology student in Jigawa State, Nigeria. Three objectives and three Hypotheses guided the study. Correlation survey was employed as the design for the study. Group embedded figure test (GEFT) was used as instrument for data collection. .216 student selected by proportionate random sampling were as subject for the study. The findings revealed that, cognitive styles of filed dependence and filed neutral were significantly related to gender. The study recommends that, efforts should be made to improve secondary school students' cognition by teachers employing variety of learning content presentation methods.

Background to the Study

Cognitive style are psychological constructs which describes individuals mode of information perception, organization and representation (within and Moore, 199). Also Emmanuel (2003) stated that cognitive style is a common and there is actually no low or high end of it, however, at the extreme ends there are filed-independent individuals. Good-enough and Cox (1991) revealed that students who preferred a field-dependent leaning style tend perceive the world globally, found it difficult to solve-problem, tend to favor the spectator approach to leaning and would adopt the organization of information to be learned. While student who preferred a filed-independent learning style tended to view the world analytically, found it easier to solve-problems and were more likely to favor enquiry to independent study. And, they tend to provide their own structure to facilitate learning. The student cognitive styles as it relate to gender and achievement in science process kills of interest in this study as senior secondary schools student by piglets categorization are expected to be formal thinkers' age range 11-19 years. Gender related issue on cognitive achievement in science has attracted the attention of many researches with a view to improved instruction for boys and girls in secondary school. Kaure, (1992) states that, boys achieve better than girls in biology. This is because most girls have tendencies to shy away from activity base subject which biology is inclusive. This is supported by Ditch Field and Scott (1987) when they stated that, girls do not like practical work and cannot handle inquiry method effectively. In addition, Marcia, (2006) reports that gender differences in cognitive processes often reflect gender differences in courses

enrolment and training in science and mathematics. Therefore, the relationships between cognitive styles (field-dependent and field independent), gender and achievement in science process skills formed the basic for the study.

Statement of the Problem

It was argued by many psychologists like Witkin and Lazarus (1954) that learning supposed to be bringing change in learners' behavior which must be permanent. It was also argued that for learning to be permanent, the style in which individuals should adopt in order to learn must to be known by teachers. The knowledge of the various form of learning style as exhibited by the student is important for placement purposes. The problem therefore sought to be tackled by this study is whether or not there is relationship between gender and a particular learning style adopted by the students. In other word, the study will bring out the relationship between learning style and gender among the students.

Objectives

The main objective of this study is to discover if there is a relationship between learning style and gender among the students. In specifics terms the study the following objectives:

1. To determine significant relationship between filed dependency and gender
2. To determine significant relationship between filed independency and gender
3. To determine whether neutral cognitive style are related to gender.

Methodology

Design

The design for this study is survey – co relational. It is designed to establish relationship between learning styles and gender. The population of the study comprises senior secondary schools students in Dutse Zone, Jigawa State. They were estimated to be five thousand according to the figure released by state ministry of education 2015. Four schools were randomly selected in the zone namely FGC Kiyawa, GC Birnin Kudu, GGUC Gwaram and GSSS Jahun.

Sample and Sampling Technique

The sample for the study consists of a projected estimate of 216 students selected by proportionate random sampling and balloting. Four senior secondary school in three zonal education areas in Jigawa State were selected. Almost the same number of male 108 and female 108 students were sampled.

Instruments for Data Collection

The instrument for data collection was the Group Embedded Figure Test (GEFT) the Group Embedded figure test was developed by Witkin et al (1971) was used to measure the student field dependency and field-independency cognitive style. It

consists of three sections with 25 items. The first part contains seven items for practices, the second and the third sections consist of 9 items each for scoring.

Result

In response to answer Hypothesis 1 that says, there is no significant relationship between field-dependency and gender. Point biserial correlation analysis was applied to the relevant data on achievement scores of male and female student in the group embedded figure test in the field-dependency cognitive style of learners followed by T test. The result in table 1 shows that T-calculated is 2.993, T critical is 1.981, $r_{pb} = 0.83$, Therefore T-calculated is greater than T-critical. Therefore the relationship between field-dependency and gender is significant, H_{04} was rejected.

Table 1: Summary of analysis for Hypothesis

N	X	Y	DF	T-Cal	T-Cri	rpb	level
216	12.98	12.94	200	2.993	1.981	0.83	0.05

Decision: H_{01} rejected.

In response to answer Hypothesis 2 that says, **there is no significant relationship between field-dependency and gender**. Point biserial correlation analysis was applied to the relevant data followed by T test. The result in table 2 shows that T-calculated is 3.55, T-critical is 1.981, r_{pb} is 0.65. Therefore T-calculated is greater than T-critical at 0.05 levels. The relationship between field –independency and gender is significant. H_{02} was also rejected.

Table 2: Summary of analysis for hypothesis 2

N	X	Y	DF	T-Cal	T-cri	rpb	Level
216	17.6	16.4	200	3.55	1.981	0.65	0.05

Decision H_{02} rejected.

Table 3. Shows that of the 216 students administered with GEFT, 46 (21%) were male and 36 (16.5%) were female field –dependent learners, 38 (17.5%) were female and 34 (15.5%) were female field –dependent learners, 32 (13%) were male and 32 (14.5%) were female field –neutral learners.

Table 3: Distribution of Student in GEFT According to Gender and Cognitive style.

TYPE OF COGNITIVE STYLE	NO. OF MALE	NO OF FEMALE	%	%
Field –dependent	36	46	18	18
Field- neutral	30	34	13	14.5
Field –independent	58	12	26.8	5.5

Table 4: Distribution of Student Cognitive Style According to Schools.

SCHOOLS	COGNITIVE STYLES		
	FD	FN	FJ
FGC Kiyawa	18	15	28
GC BK	20	16	20
GGUC Gwaram	30	22	12
GSSS Jahun	20	5	10
Total	88	58	70
		=216	

Discussion of Findings

With regard to cognitive style and gender, the results indicated that, cognitive style of field-dependent and field-dependent are positively related to gender, especially the file-independency (cognitive style) as given in 14. 17.5% Of of the participant were male field-independent while 15% female field-independents. This is also in agreement with finding of Okwo and Otubah (2007) that the joint influence of field-dependence/field-independence and gender on students’ achievement in physics is significant. The significant relationship observed between field-independency and gender from the study meant that, field-independency cognitive and field-independency cognitive styles are related to gender. Table 4, shows the number of male and female field-independents which indicate that male student are more field-independent than female students (FGC Kiyawa and GC B/K). Table 4: shows that FGC Kiyawa has 28 students which were field-independents, G.C BK has 20 students, GGUC Gwaram has 12 students and GSSS Jahun has 10 students which were field-independents. The analysis of field-dependents and field-neutral is also presented in the same table.

Conclusion

From the result and observations from the study it was concluded that about half of the participants were field-dependent learners. Gender is not a significant factor in determining achievement in science process skills, gender is however, a significant factor in determining the cognitive style of the student. These are meaningful findings that influence the student’s performance in science generally and biology in particular.

Implications of the Findings

Cognitive styles of field-dependent/field-independent are related to gender in the study more boys are more field-independent than girls, this have a performance in science.

Recommendations

- i. Efforts should be made to improve senior secondary school students cognition by employing a variety of learning content presentation methods that addresses learners different learning style, such presentation may include, visual s, video, audio, interactive exercises etc. with well guided instructions
- ii. Teachers should also intensity efforts in employing activity – base instructions that help to facilitate process skills acquisition by students, so as to improve performance in science.
- iii. Since, the subject that were used for the study does not form a complete representative samples of Nigerian senior secondary school students as the study is limited to Jigawa state only because of financial constrain, there is need for more research to ascertain the level of field-independency (cognitive style) of Nigerian secondary school students and its relationship with learner characteristics.

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