

The Use of Outdoor Learning Strategy in Science Pedagogy: Interactive Learning Inclusion for Basic Students

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Abstract

Ensuring children's interest and participation is imperative for learning in a basic science class. Outdoor learning strategy could be a mean to achieve this. The study investigated the use of outdoor learning on children in basic science classes. The design used was descriptive research of survey type. Participants in the study included one hundred and twenty (200) Junior Secondary School Two children of basic science from three randomly selected Government Colleges in Ekiti State. The instrument used was a validated questionnaire titled Outdoor learning in Basic Science(OLBS). Reliability value of the instrument, 0.78 was ascertained through test retest method. The two hypotheses formulated in the study were inferentially analyzed using regression analysis. It was concluded that there is significant impact of use of outdoor learning on science pedagogy. It was recommended from the study that outdoor learning strategy should be made compulsory for some specific topics of the science curriculum.

Keywords: Outdoor learning, Science pedagogy, Interactive learning, Students

Introduction

Everyday life is characterized with scientific phenomena which mostly do not necessarily happen indoors. For instance, scientists are required to go outside in order to study the surroundings, habitats, effects of changing seasons and temperature on plants and animals. Oxymoronically, science education usually generally happens indoors at schools; and only takes place outside the classroom on rare occasion (Glackin, 2013, 2016; Rickinson et al., 2004). This might explain to an extent, reasons why many authors assert that better interactions with real-life

should be established to counterbalance the frequently reported and denounced lack of authenticity at school (Fägerstam, 2014; Gafoor & Narayan, 2012; Krapp & Prenzel, 2011; Potvin, & Hasni 2014; Smith, 2013; Tal, Alon, & Morag, 2014).

Learning outside the classroom is the use of places other than the classroom for teaching and learning. It is about getting children and young people out and about, providing them with challenging, exciting and different experiences to help them learn. Outdoor learning is a pedagogical approach used to enrich learning, enhance school engagement and improve pupil health and wellbeing.

Outdoor learning is often referred to as a way to engage, enthuse and teach children about the world around them. Emphasis on the development of skills is always accentuated by science curriculum for the purposes of lifelong learning and to enable effective relevance to the society” (CCEA, 2007). The impact of such curriculum cannot be understated and is perceived as overwhelming for many, coupled with changes in how science was previously taught previously as a subject on its own, but now must be taught as part of ‘The World Around Us’. The use of places other than the classroom “help us to make sense of the world around us” (DfES, 2006) In schools, regular outdoor learning is suggested within the curriculum. Outdoor education support emotional, behavioral, and intellectual development, studies have shown that students who learn outdoor develop: a sense of self independence, confidence, creativity, decision-making and problem –solving skills, empathy towards others, motor skills, self-discipline and initiative. ‘Playing in natural spaces supports a child’s sense of self, allowing children to recognize their independence and connectedness with their ecological worlds.

Currently, many countries have a growing interest in and awareness of the outdoor environment as a valuable compliment to traditional classroom teaching (Fägerstam, 2012). However, its importance is not stressed in schools (The Star, 2003) and as a consequence environmental literacy among school children is still at the moderate and low level (Jannah, Halim, Mohd, Meerah & Fairuz, 2013).

Various forms of formal and informal settings have been established by different groups utilizing the outdoor environment for diverse types of programs. However, outdoor learning as an extension to support classroom teaching especially in specific subject such as Science is not common. Some main problems encountered in teaching Science and other subjects are exam-oriented teaching which sacrifices on practical and experimentation, teacher-centered which ignore the thinking skills as required by the curriculum and ineffective delivery in teaching abstract topics such as biodiversity, energy, motion and molecular structure, among others (my Foresight, 2013). Although these topics are represented in the curriculum, the teaching of environment-related topics is not uniform among teachers and entirely depends on the teacher’s own efforts (Ahmad Shaari & Osman, 2011). In a study on mathematics outdoor camps in Malaysia, a country where students are rarely taught in outdoor settings, students valued learning mathematics outdoors and enjoyed the new learning environment (Noorani et al., 2010).

Hazuraet. al (2013) discovered that presently the current curricula from all subject areas do not address the issue of children’s connectedness to nature and that teachers use very little of the outdoor environment for teaching Science, Geography or any other subjects. The authors concluded that teachers should bring their students for outdoor education and use nature as the focus of learning for Science subjects. Teachers’ education in ‘out of classroom’ and outdoor learning is required in building up relationships with the environment. Nevertheless, the needs to encourage people to personal connect and conserve the environments. A learning outcome is the expected result of learning after teaching activities. It has to be measurable. The specified action

by the learners must be observable. It must be possible to evaluate the specified action taken by the learners. The specified action must be done by the learners. Transforming learning objectives into learning outcomes by asking 'what are the most important things a student should know (cognitive), be able to do (skills), or value (affective) after completing an outdoor activity is vital for a successful outdoor class/lesson and easier when outdoor learning is participatory and well conducted.

Problem of Study

Basic science pupils are just discovering science. They need to be well rooted and view science learning as interesting, to encourage their choosing to learn science. The common methods/ways of teaching Science subjects are exam-oriented teaching which sacrifices on practical and experimentation, teacher-centered method of teaching which ignore the thinking skills as required by the curriculum and teaching in abstract, use of textbook rather than local examples in the surrounding. All these are inadequate to inculcate science ideas, make students experience science learning with nature and develop attitudes required to learn science in students and thus making many students to dread studying science. Science learning is imagined by many Basic students, as cumbersome, tasking and uninteresting, that can be learned only by the very brilliant ones.

Purpose of Study

Children love to learn through play, and interactive learning is best for science subjects whether within or outside the classroom. The study aimed at introducing and developing a better attitude towards the use of outdoor learning in Basic Science. Learning by interacting with the environment is believed to draw student's attention, and make learning much easier, more real and natural, because not every topic in basic science can be taught effectively within the classroom.

Hypotheses

The following hypotheses are formulated in the Study:

1. There is no significant influence of the use of outdoor learning teaching strategy on Basic science education.
2. There is no significant influence of Outdoor learning strategy on Basic Students' performance in science learning.

Methodology

The study employed descriptive research method of survey type. The population was made up of Basic Science students in the State Government Colleges. Participants in the study included two hundred (200) Junior Secondary School Two children of basic science from three randomly selected Government Colleges in Ekiti State. The instrument used was a validated questionnaire titled Outdoor learning in Basic Science(OLBS).The instrument was made up of Bio-data in section 'A' and items to elicit information on the use of Outdoor learning and students' knowledge, interest and performance in Basic Science made up the section 'b' of the questionnaire. The face and content validity of the instrument was censured by experts in the field of Science Education in Faculty of Education of the University. Reliability coefficient value of the instrument, 0.78 was ascertained through test retest method on some Basic Science students outside the sample of the Study.

Results

Hypothesis 1

There is no significant influence of the use of outdoor learning teaching strategy on science education in Basic secondary schools.

Table 1: Regression analysis showing the impact of outdoor learning strategy on student’ interaction/participation in science education in Basic Secondary Schools

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta(β)	T	
(Constant)	5.094	.432		11.800	.000
Use of Outdoor learning strategy	.314	.030	.601	10.574	.000

Multiple R=0.601, Multiple R²= 0.361, Adjusted R²=0.358, F_{1,198}=111.801*

* **p<0.05**

Table 1 shows that there is significant influence of Outdoor learning strategy on students interaction/participation during Basic science lessons (F_{1,198}=111.801, p<0.05). The null hypothesis is rejected. The table reveals that there is significant positive multiple correlation between the predictor variable (Outdoor learning strategy) and students’ interaction in science lessons (r=0.601, p<0.05). This implies that the predictor variable is factor that can exert influence on Students’ interaction/participation in science class. The value of the coefficient of determination (R²=0.361) indicates that the predictor variable accounted for 36.1% (R² X 100) of the observed variance in students’ interaction/participation in class while the remaining 63.9% unexplained variance is largely due other variables that can account for students’ interaction/participation in science. The calculated F-ratio (111.801) is significant at 0.05 level of significance. This implies that the predictor variable provides a significant explanation for the variation in the students’ interaction/participation in science learning.

Hypothesis 2

There is no significant influence of Outdoor learning strategy on Basic Students’ performance in science learning.

Table 2: Regression analysis showing the impact of Outdoor learning strategy on Basic Students’ performance in science learning.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta(β)	t	Sig.
(Constant)	4.284	.611		7.012	.000
Outdoor learning strategy	.668	.042	.749	15.895	.000

Multiple R=0.749, Multiple R²= 0.561, Adjusted R²=0.558, F_{1,198}=252.653*

*** p<0.05**

Table 2 shows that there is significant influence of knowledge of Outdoor learning strategy on Basic Students’ performance in science learning. (F_{1,198}=252.653, p<0.05). The null hypothesis is rejected. The table reveals that there is significant positive multiple correlation between the predictor variable (Outdoor learning strategy) and students’ performance in Science learning. (r=0.749, p<0.05). This implies that the predictor variable is factor that can exert influence on students’ performance in Science learning. The value of the coefficient of determination (R²=0.561) indicates that the predictor variable accounted for 56.1% (R² X 100) of the observed variance in product/services of entrepreneur while the remaining 43.9% unexplained variance is largely due other variables that can account for Students’ performance in Science learning. The calculated F-ratio (252.653) is significant at 0.05 level of significance. This implies that the predictor variable provides a significant explanation for the variation in the performances of Basic Students in science learning.

Discussion

This Study reported significant influence of Outdoor learning strategy on students’ interaction/participation during Basic science lessons and a significant influence of Outdoor learning strategy on Basic Students’ performance in science learning. This is in agreement with Gafoor & Narayan (2012) and Tal, Alon, & Morag (2014) who in their findings discovered that students’ participation in Outdoor learning will enhance interaction with real-life/nature and thus promote interest in Science subjects. Science learning become easier when every student is involved, nature is being explored and interest is developed, as clearly stated by Olu-Ajayi (2016) in her study on low-performing science students, that ‘every child has the capability to learn even if it’s at his/or her own pace’ children’s science learning interest can be motivated through interaction with outside classroom .

The teaching of Science as part of the ‘World around us’ as reported by CCEA, (2007) will enable development of skills” for the purposes of lifelong learning and “operating effectively in society” .Retention is pertinent when students interact with their environment during Outdoor learning to learn some topics in Science subject. It will provide the students with ample opportunity to see things in real form, that is, make use of life instructional materials and local examples rather than abstract ones. Learning by interacting with the environment tend to draw student’s attention, and make learning much easier, more real and natural.

Conclusion.

Outdoor learning is a choice of Basic Science teachers. It could be a very wise choice to win students' interest, participation and enhanced attitude to science learning in Basic Science Students. It could also make teaching and learning easier because not every topic in basic science can be taught effectively and understood by learners within the classroom. It is professional for Basic Science teachers to employ the use of Outdoor learning in Schools.

Recommendation

The Study recommends:

- Teachers should endeavor to employ Outdoor learning strategy in Science Education.
- Basic Science teaching should involve more Outdoor activities to create interest of Science in students.
- Outdoor learning should be made compulsory in teaching of specific topics in Science Curriculum.
- Teacher Education should emphasize the training of teachers on Outdoor learning.
- School authorities should provide the necessities for Outdoor learning in Science Education

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