

Influence of Class Size on the Geography Teachers' Use of Fieldwork Method of Teaching Geography in Kenyan Schools

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Abstract

Class size is one of the many factors in education that have been thought to influence student learning and academic achievement. It is no exception therefore that the mode of instruction used by teachers is based on the number of students a teacher has to attend to. Geography lessons can be taught both theoretically and practically providing exposure to the students beyond the closure of classroom work. Latest findings by World Bank (2015) have shown that pupil-teacher ratio in Kenyan secondary education had increased from 29.4 students per teacher in 2001 to 41.1 students per teacher in 2012; portraying an average annual growth rate of 4.16 %. This poses a challenge to teachers of Geography and impacts learning of the students. This paper is an assessment of the influence of class size on the Geography teachers' use of Field Work Method in teaching Geography in secondary schools in Kenya. The study focused on selected secondary schools and teachers of geography in Kakamega County. Data was collected from a total population of eighty-seven teachers of Geography from secondary schools in three divisions namely: Lurambi, Ikolomani and Shinyalu. Data collection techniques employed included questionnaire built on a Likert scale, interview schedule and observation checklist of fieldwork study records maintained by the geography teachers. The study concluded that the number of students in the geography class had clear influence on the geography teacher's decision to use the fieldwork method. The study recommends that for effective use of the fieldwork method of teaching geography, the classes should not have many students.

Key words: Geography, Fieldwork, Student-Teacher Ratio, Learner Centred, Instructional Methods.

INTRODUCTION

Geography can make a meaningful contribution to the advancement of mutual understanding between people of the world. Improvements in the teaching of geography for better international understanding are needed especially in developing countries like Kenya which seek to modernise their education systems. Geography seems to be the best suited subject to bring about this understanding, concerned as it is, with civics, patriotism, and the information essential to a knowledge and appreciation of other lands and national groups (UNESCO, 1985).

Geography is best learnt from observations of the actual landscape in the field. Geographical field work thus becomes an inalienable and vital part of teaching and learning process in secondary schools. In order to make teaching of geography more practical and student-centered, the teachers of geography should apply field work method of geography instruction. The fundamental principle in today's globalised world in the educational change is active engagement of students. Biggs *et al.*, (1999), state that the concept of field work is seen as "the active engagement with the external world." The trend now is to move away from the use of indirect, teacher - dominated instructional procedures that do not fully involve learners in the learning activities to approaches that are learner-centred. With adoption of mathematics and statistical techniques, geography teachers are now concentrating more on field work studies, generating primary data, using secondary data and applying sampling techniques. Emphasis is on the use of fieldwork method of teaching geography which encourages higher student participation, interaction, conceptualisation of facts and more often than not, results in desired effective learning.

A leu, (2010), concludes that students who participate in fieldwork generally have more positive attitudes towards Geography. Fieldwork takes students to locations that are unique and cannot be duplicated in the classroom. Each student observes natural settings and creates personal relevant meaning to the experience. Interactive exhibits help students play with concepts, activities often not possible in the classroom setting. Fieldwork method is a very effective method of teaching and learning geography in secondary schools in Kenya. However, geography teachers need to involve students from preparation stage, actual excursion to the synthesis stage.

Fieldwork study experiences have great influence on students' understanding of concepts in Geography taught in class. Chang, (2010) for instance, has emphasised that learner-centred methods like fieldwork, projects and group discussions were more effective in influencing the perception of students towards social sciences hence improving performance during evaluation. The Kenya National Examination Council Report, 1999 states that poor instructional methods have been associated with poor performance in the National Examinations. This is often the case where teachers rely solely on teacher-centred instructional strategies. Therefore, the geography teacher needs to engage learners in the fieldwork studies which provide ideal settings for skill development, discovery learning, inquiry and problem-solving activities for students.

Ngaroga, (2008) believes that the involvement of students in learning process provided by fieldtrips as a learning strategy provides students with sound and concrete basis for conceptualisation. First-hand information makes learning more meaningful and gives

the learner lasting memory and opportunity for improving social relationships among shortcuts and between students and teachers. The use of fieldtrips in teaching and learning geography in secondary schools therefore helps learners to be able to apply fieldwork techniques in studying geography.

In their study, Fuller *et al.*, (2006) highlight that while the depth of understanding as a result of active learning techniques is difficult to assess objectively, it may accumulate over time with the consistent use of interactive methods. In an assessment of problem-based learning among geography students, Spronken-Smith, (2005) found that students deemed this approach better than traditional lecture method as it was 'hands-on, active and interactive', hence engendering an active learning experience. This paper is based on the hypothesis that; there is no significant relationship between the class size and the geography teachers' use of the fieldwork method. The author's test to ascertain the truth in this statement at the alpha 0.05 level of significance and appropriate degrees of freedom (df).

MATERIALS AND METHODS

This study was carried out in Kakamega County in Kenya. The population of study consisted of trained secondary school teachers of geography in County. There were eighty secondary schools with a total of approximately ninety-two teachers of geography (Kakamega District Development Plan 1994-1996). With the study population of ninety-two teachers of geography, the confidence level of 95% and the sampling error of 5%, the required size was eighty-seven teachers of geography (Mitchell and Kolly, 1988), which is more than 30% of the total population of study. Proportionate sampling technique was employed to ensure that all the secondary schools in the County had equal opportunities to be selected for the study. At least twenty-one teachers of geography were selected from each of the constituent divisions involved. The main divisions included Lurambi, Ikolomani and Shinyalu constituencies. The study used a Likert type questionnaire, interview schedule and observation checklist for data collection. The information collected from observation served to verify data collection through the questionnaire and the interview schedule. The purpose of using questionnaire and the interview schedule was that data requested for was administrative and could be obtained in no better way. Data were then analysed using descriptive and inferential statistics. Descriptive statistics were used in the calculation of totals, frequencies, means and percentages. Inferential statistics especially the chi-square (X^2) was used to test the stated hypotheses at the alpha 0.05 level of significance and appropriate degrees of freedom (df).

RESULTS AND DISCUSSION

The findings of the study indicated that the number of students in class had an influence on the geography teachers' use of the fieldwork method of teaching geography. This is portrayed by 49% of the teachers in table 5. In order to use the fieldwork method effectively, in the teaching of geography, the secondary school class size should have a maximum of about fifty students. A class with such capacity of students is quite reasonable to handle whether it is in the case of the short distance or long distance fieldwork studies. However, observations have shown that most of the secondary schools have tended to over-enroll students per class. Some schools even have double

streamed classes whereby each stream has far more than the required capacity of students. The situation escalated and got worse with the introduction of Free Primary and subsidized secondary Education. There have been cases of large number of students qualifying and seeking more places in secondary schools. Large classes make it difficult for the geography teacher to organise and manage the class for the application of the fieldwork method. Such teachers, faced with large numbers of students, avoid the use of fieldwork method and rely more on the expository methods of teaching which may not be suitable for the particular topic. Most of the geography teachers in the study indicated that they had many students in their classes as shown in tables 1, 2, 3 and 4.. The scrutiny of this information revealed that 39.8%, 31.0%, 19.1% and 33.5% of the classes from form one to form four had more than fifty students per class respectively. Large class enrolment do not create conducive atmosphere to conduct fieldwork in secondary schools.

Table 1: The number of students in Form One Geography class

No. of Students	Frequency	Percent
0-10	8	12.7
11-20	2	3.2
21-30	2	3.2
31-40	18	28.6
41-50	4	6.4
51-60	3	4.8
61-70	2	3.2
71-80	1	1.6
81-90	6	9.6
91-100	8	12.8
101-110	3	4.8
111-120	2	3.2
Over 120	9	14.4
Total	63	100.0

Table 2: The number of students in Form Two Geography class

No. of Students	Frequency	Percent
0-10	11	17.5
11-20	3	4.8
21-30	1	1.6
31-40	9	12.7
41-50	11	17.6
51-60	3	4.8
61-70	4	5.4
71-80	5	8.0
81-90	2	3.2
91-100	4	6.4
101-110	0	0
111-120	2	3.2
Over 120	11	19.0
Total	63	100.0

Table 3: The number of students in Form Three Geography class

No. of Students	Frequency	Percent
0-10	19	30.2
11-20	8	12.8
21-30	9	14.3
31-40	6	9.6
41-50	10	15.9
51-60	2	3.2
61-70	2	3.2
71-80	1	1.6
81-90	4	6.3
91-100	4	1.6
101-110	2	3.2
Total	63	100.0

Table 4: The number of students in Form Four Geography class

No. of Students	Frequency	Percent
0-10	17	28.0
11-20	10	16.0
21-30	10	15.9
31-40	7	11.2
41-50	5	7.9
51-60	11	17.5
61-70	1	1.6
71-80	2	3.2
81-90	3	4.8
91-100	4	6.4
Total	63	100.0

There was an equally strong feeling among the targeted geography teachers as (44.4%) of them stated that the number of students in class does not influence the geography teachers' use of the fieldwork method. A geography teacher who is active, creative and innovative can comfortably apply the fieldwork method against the odds of large class numbers. It is possible that such teachers have learnt through their long years of experience in the teaching of geography that the best way of developing geographical skills and concepts is by observation in the field, the geographer's laboratory.

The null hypothesis was tested and the results are presented in tables 5, 6, 7 and 8. All the analyses were done using the chi-square (χ^2) statistic. From the analyses the null hypothesis which stated that:

“ H_{01} there is no significant relationship between class size and geography teachers' use of the fieldwork method of teaching geography” was rejected.

This is clarified in the chi square tables below.

Table 5: Relationship between the number of students in form one geography class and teachers' use of the fieldwork method

Variable	N	%	df	P value	Critical value	LS
The choice by geography teacher to use fieldwork method depends on number of students in the class						
Agree	31	49				
Undecided	4	6				
Disagree	28	44	52	55.227	31.41	NS

Table 6: Relationship between the number of students in form two geography class and teachers' use of the fieldwork method

Variable	N	%	df	P value	Critical value	LS
The choice by geography teacher to use fieldwork method depends on number of students in the class						
Agree	31	49				
Undecided	4	6				
Disagree	28	45	64	52.398	31.41	NS

Table 7: Analysis of the relationship between the number of students in Form Three geography class and teachers' use of the fieldwork method

Variable	N	%	df	P value	Critical value	LS
The choice by geography teacher to use fieldwork method depends on number of students in the class						
Agree	31	49				
Undecided	4	6				
Disagree	28	45	48	38.234	31.4	NS

Table 8: Relationship between the number of students in Form Four geography class and teachers' use of the fieldwork method

Variable	N	%	df	P value	Critical value	LS
The choice by geography teacher to use fieldwork method depends on number of students in the class						
Agree	31	49				
Undecided	4	6				
Disagree	28	45	54	59.6256	31.41	NS

The results indicate that there is a relationship between the number of students in class and the geography teachers' use of fieldwork method in teaching geography. The decision by the geography teacher whether or not to use the fieldwork method in

teaching the relevant geographical topics sometimes depends on the number of students in the class. As it has been pointed out elsewhere in this work, fieldwork method is better suited to geography class that is not too large. Any large classes will raise problems of class management for the geography teacher.

It is also difficult for the teacher to undertake long distance fieldwork studies with a class of hundred students. Here the problems of logistics like transport may be foreseen and therefore the school authority would be reluctant to assist the geography teacher in conducting fieldwork studies. The respondents clearly stated that they were teaching classes too large for meaningful application of fieldwork method. In the case of the lower secondary school classes that is, form one and two, there were as many as one hundred students per class. It would be safely assumed that the reluctance of some of the geography teachers to apply the fieldwork method could be due to the large numbers of students in the geography classes. Geography is still one of the popular subjects on the secondary school curriculum. Geography teachers might find it difficult to implement the KNEC's recommendation that "where possible students should travel to see actual examples of physical features" (KNEC Report: 1998). The secondary school head teachers need to assist geography teachers to undertake real practical fieldwork studies. It is therefore up to the teachers of geography to use personal initiative and insight to ensure that the fieldwork method is applied where the situation requires it.

The cases of large geography classes tended to account for some of the drawbacks involved in the organization of fieldwork studies in the secondary schools. Presumably, this may partly explain why such studies are not frequently undertaken. Brown, *et al.* (1982) emphasised that if students are to travel out of the school to a place of geographical interest there will almost certainly be transport costs involved. Should the head teacher allow one class, he may feel obliged to let the other class to take part in similar trips and this could be very expensive. Travelling in itself is full of risks. The time taken for a study trip is also considered by some teachers to be excessive in terms of the rewards it will reap. In addition, such trips can require a lot of administrative work which is not usually welcomed by teachers who are already busy with other commitments. Normally, travelling short distances is both convenient for administration and reconnaissance; it also avoids loss of time in tiring journeys. It has been observed by Willatts (1975) that geographical fieldwork, whether long distance or short distance, should be a means of developing an inquiring mind and should lead to enjoyment and understanding of one's surroundings. From the results it was apparent that it was the geography teachers handling classes with less than fifty students who were enthusiastic and frequently applied the fieldwork method of teaching geography in the secondary schools. Even though short distance fieldwork studies were supposed to be carried out in the area within the school vicinity, it was still necessary that this should be done with small geography classes.

In the case where the geography teacher intended to engage the students in short distance field trips; there was need for prior reconnaissance of the study area. The geography teacher must first ascertain the suitability, feasibility and accessibility of the designated geographical areas of study. Before going out with students to more distant places, preliminary work in the known school vicinity is essential in order to introduce students to the necessary skills, techniques and methods of thinking and questioning, thus providing them with a basis for subsequent comparison with new areas.

The emphasis in this paper is that fieldwork method should be applied to relatively small geography classes. The choice of fieldwork study topics need not be done haphazardly, but should be designed to identify concepts which might be appropriate for the student's learning and which could be demonstrated in the area. Careful consideration should be given to the amount of information that can be realistically acquired in the course of the excursion. Maund and Jenkins (1976) note that students should be able to recognise relationships and discern problems, not only the particular area of study, but of other areas in general. The students need to make actual visits to the area and consult local sources or relevant sources in order to obtain sound background knowledge. Properly designed and conducted fieldwork studies should give students opportunity to develop awareness and understanding of the nature and problems of an area and allow for differences in individual perception and rates of learning.

IMPLICATION TO RESEARCH AND PRACTICE

Geography teachers in educational institutions other than secondary schools would find the outcome of this study a resource for preparing their students in the geography methods courses. The findings of the study would substantially help to change the existing attitude of some teachers, head teachers and the general public towards the use of the fieldwork method of teaching geography as mere leisurely walk in the field. This is how some people tend to view fieldwork excursion activities when Geography teachers are seen with students out in the field. While it is appreciated that fieldwork study in a locality beyond walking distance from the school necessitates a means of transport, reluctant head teachers would discover from the results of this study that there are numerous rewards and educational values to students when taught using the fieldwork method.

Besides, the implications of the results of this study are that, hopefully, they will serve to illuminate, to challenge, to provide the basis for further study and eventually, lead to the improvement of the practices related to the preparation of geography teachers for secondary schools in Kenya.

CONCLUSION

For effective use of fieldwork method of teaching geography, the classes should not have over 50 students. The application of fieldwork method requires thorough planning, organisation and execution of the study. Secondary school head teachers are sometimes unwilling to grant permission if the geography teachers intend to take out many students on field trips. Any outdoor activity that takes students out of the school environment should be considered of the greatest educational value. Geographical fieldwork provides an excellent opportunity for this. Large numbers of students were recorded in the lower secondary classes than the higher classes. This might have necessitated the geography teacher's unwanted enthusiasm with which they conducted fieldwork studies. The study however presents an appreciable number of respondents who clearly stated that the number of students in the geography classes did not have any effect on the teacher's use of the fieldwork method of teaching geography. It was surmised that those were cases

of geography teachers who had not used fieldwork method on large classes but believed in the possibility of obvious success.

RECOMMENDATIONS

Geography teachers should ensure that no students taking geography in secondary schools leave school without having undertaken some fieldwork studies. Geography teachers should use their initiatives to help the head teachers to understand the importance of using fieldwork method of teaching geography.

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