

Inquiry Teaching in Ghanaian Secondary Schools

Ruby Avotri
Murdoch University

Paper presented at the Annual Conference of the Australian Association for Research in Education
Esplanade Hotel Fremantle

Abstract

The new education system in Ghana recommends the use of inquiry method of teaching and learning. This method, it is anticipated, will give students greater participation in the planning, teaching and learning processes. It will also help them develop problem-solving skills that will enhance their learning outcomes. This paper reports on the preliminary results obtained in a study on teachers who teach the new curriculum in secondary schools in Ghana. It reports on their practice of inquiry teaching.

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Introduction

Educational reforms generally take place at three levels, namely, curriculum design, implementation and monitoring. The success of the reform therefore depends on all three levels. Consequently, a reform programme could fail because of lapses at one of the levels. For example, a well planned programme could fail if it is not well implemented.

The new education system in Ghana recommended the use of inquiry approach to teaching and learning. Inquiry is a process of finding-out information for-yourself instead of depending on the teacher. It aims at developing problem-solving skills, creativity, attitudes and values in pupils by giving the child greater participation in the planning and learning processes (Martorella, 1976, Beyer, 1971). Teaching becomes child-centred instead of teacher-centred. The teacher, according to Eisner (1979), is not to "stuff the duck" by imparting knowledge to them but rather to facilitate the achievement of the students' aims (p.124). The teacher is expected, therefore, to guide students to conceptualize on a given problem, rather than tell them what they are supposed to be learning. The teacher could also create a problem solving situation and motivate students to ask questions which will help them identify the problem. Inquiry is anticipated to enhance learning outcomes because children learn more by doing things (Bishop, 1979). A Chinese adage, quoted in Bishop (1985) reinforces this view, "I hear and I forget, I see and I remember, I do and I understand" (p. 102).

According to Martorella, good inquiry is not innate, it must therefore be learned and practised.

Objective of the study

The main objective of the study was to examine the pedagogic techniques used in the classrooms in Ghanaian secondary schools. It focused on the teachers' perceptions of the classroom environment in relation to the recommended method of teaching of the new curriculum compared with their perception in the old traditional type of education. In effect, it aimed at finding out the extent to which these teachers perceived and practised the inquiry methods in the classrooms.

This study is part of an on-going study in secondary schools in Ghana. The main study compared students studying in the schools derived from the old traditional British education system with those studying in the new education system in Ghana. This paper

reports on the study conducted on teachers who teach social studies or social science subjects. It is hoped that the results of this study could be used in planning and improving teacher training programmes for effective teaching.

METHOD

Design and Sampling

The study involved a 2 (old and new curricula) by 2 (professional or no professional qualification) experimental design. Thirty two teachers were contacted to take part in the study, 12 from new schools and 18 from old schools. However, only 22 of them, 10 from new schools and 12 from the old schools completed the questionnaires. These represented 69 percent of all the social studies and social science teachers in the schools that were randomly sampled for the main study. The sample was composed of 17 (77%) male and 5 (23%) female teachers. Their ages ranged from 25 to 48 years with a mean of 36 years. All the female teachers taught in the new schools. Their teaching experience ranged from less than one year (9%) to more than 6 years (68%). 17 of the teachers had professional qualifications in education either from teacher training college or tertiary institution while 5 (22.7%) of them did not possess any professional qualification in education. It is very common for untrained teachers, popularly called "pupil teachers" to be engaged in teaching at any level of education, especially at lower levels in Ghana. This was a measure adopted since colonial time to solve the problem of teacher shortage in schools and perhaps was adopted as the norm.

There were six categories of teachers ranging from national service, the lowest category, to degree level. Every post-secondary student in Ghana is required by law to do one year

national service before proceeding to any tertiary institution and one year after tertiary education. Most often, students are posted to government departments and organisations to fill existing vacancies. The national service category refers therefore, to those teachers who completed second cycle institutions and were doing the first part of their national service.

Procedure

It was difficult to get the cooperation of some teachers in some of the schools to respond to the questionnaire. Some of the teachers were reluctant to participate in the study. Some claimed to be too busy while others were not interested in completing the questionnaire. Others refused to return their questionnaires despite two follow-ups. Teachers from four schools either did not return their questionnaires or did not participate at all. This problem was encountered during the pilot study as well. Some teachers did not see the relevance in the results and recommendations, expressing their scepticism about whether the recommendations would be implemented by the Ministry of Education.

The apathy displayed by some teachers could be a reflection of the existing relationships between teachers and education policy makers. The lack of response could affect the results in a way which cannot be determined since the characteristics of the non-responding teachers are not known.

Instruments

The Teachers Classroom Environment Scale (TCES) was designed for social science and social studies teachers. It was adapted from the long version of Fraser's (1990) Individualised Classroom Environment Questionnaire (ICEQ). It was anticipated that the results will reflect on the type of pedagogic techniques being used by the teachers, and also show the areas that needed to be

emphasised in the classroom in relation to inquiry teaching. The results will determine which aspect of the scale (sub-scale) teachers tended to lay more emphasis on most.

The TCES consisted of 30 Likert scale items with four point response options. It has 5 sub-scales of participation, personalisation, investigation, independence and differentiation. For each item, teachers were asked to choose which of the response options best suited the activity stated in the statement. The four point response options were "never done", "seldom done", "often done", and "always done" which were scored 1, 2, 3 and 4 respectively. The negative items were reversed-scored before the analysis. An activity that was always

done was given a value of 4, thus giving a maximum score of 120 for the instrument. An activity that was never done was scored 1, giving a minimum total of 30. The instrument had Cronbach's alpha internal consistency coefficient value of .54.

Analysis of the data

The analysis of the data was based on the independent variables of type of curriculum (old or new) and professional qualification in education (teacher training/ no teacher training). The dependent variables were the total score on the TCES, and the sub-scales of participation, personalisation, investigation, independence and differentiation. The analysis was a one-way factorial analysis of variance to determine differences among the groups with respect to total scores, and the sub-scales in each instrument. For each section of the questionnaire the means for groups differing in the curricula a critical value of $\alpha=0.05$ was adopted for significance in all statistical tests conducted.

Results

Teachers' Perception of their Teaching Environment

This study examined teachers' perception of their classroom environment in relation to the use of the inquiry method of teaching. Analysis of variance did not show any significant differences between either teachers in the old ($m=81.4$, $sd=5.7$) and new schools ($m=83.4$, $sd=7.5$) (see Table 1). It however, showed marginal difference between professional and non-professional teachers (see Table 2).

Table 1: Source of Variance for Analysis of Teachers' Classroom Environment

Scale Score for Type of Curriculum

Source of Variation	SS	df	MS	F	p
Within Cells	116.35	20	5.82		
Type of Curriculum	.01	1		.01	.00 .962

$p < .05$

Table 2: Source of Variance for Analysis of Teachers' Classroom Environment

Scale Score for Qualification of Teachers

Source of Variation	SS	df	MS	F	p
Within Cells	753.44	20	37.67		
Professional Qualification	.066	1	142.38	3.78	

$p < .05$

A comparison of the means showed higher mean scores for teachers

who teach in the new schools as well as, the teachers who held a professional qualification in education. The differences between the two groups generally seem to be small on all the scales. However, the differences are marginally larger on the professional qualification variable they are not conclusive between the two groups (see Table 3 and Table 4).

Table 3: Means and SD for teachers (old and new curricula) in the TCES (total and the sub-scales)

VARIABLES	OLD CURRICULUM n=12	NEW CURRICULUM n=10
Total		
Means	81.40	83.40
SD	5.69	7.52
Participation		
Means	22.50	20.6
Std. Dev.	3.58	2.22
Personalisation		
Means	20.75	20.70
Std. Dev.	2.83	1.76
Independence		
Means	8.92	9.90
Std Dev.	2.43	2.22
Investigation		
Means	16.08	16.80
Std. Dev	2.87	2.35
Differentiation		
Means	12.08	14.00
Std. Dev	3.15	2.83

Table 4: Means and SD for Professional and Non-professional teachers in TCES total and the sub-scales

VARIABLES	PROFESSIONALS	NON-PROFESSIONALS
	n = 17	n = 5
Total		
Means	83.47	77.40
SD	6.59	3.84
Participation		
Means	22.53	20.60
Std. Dev.	2.72	3.78
Personalisation		
Means	21.18	19.20
Std. Dev.	2.13	2.60
Independence		
Means	9.18	10.00
Std Dev.	2.35	2.55
Investigation		
Means	17.29	14.80
Std. Dev	2.52	1.92
Differentiation		
Means	13.06	12.60
Std. Dev	2.93	3.98

Discussion of results

The results showed high mean scores for both groups of teachers although no significant differences were observed. However this should not be interpreted to mean inquiry teaching is practised in both the old and new schools for the following reasons. The results could be quite deceptive of the real situation when compared with informal discussions and lessons observed earlier on.

In the first place, all the teachers in both the new and old schools were trained in the old traditional curriculum and method. Some of those teaching the new curriculum had undergone

in-service training programmes that were designed for teaching the new curriculum. One would therefore expect their responses to be different from those of the teachers who teach the old curriculum and had not had any in-service training in inquiry teaching. The fact that the results did not show any significant differences or only small differences in the means among the two groups of teachers could mean that the in-service training might not have been effective. The teachers teaching the new curriculum might have also reported the practices that they had originally learnt in the traditional schools.

Moreover, these in-service training programmes seemed to be too brief and inadequate for teachers in terms of duration of the

training and training resources. It is therefore possible that some of the teachers might not have benefited from these programmes in view of the large number of teachers involved and the limited resources available. The new education programme is a long term venture in which huge investment had been made. One would have expected, therefore, that a meticulous training programme be designed for the those who were expected to to implement it long before it was implemented nationwide in 1987.

In every educational institution teachers need to feel confident in the performance of their duties. They need to understand the content of the curriculum they are expected to teach and how they are going to teach it (Fenton, 1966). This confidence seems to be lacking in some of the teachers. This was portrayed during the observation of social studies lessons in the pilot study and the fact that teachers advocated for the teaching of the separate social science subjects instead of social studies which they found more difficult to teach. Their lack of confidence could be due partly to the fact that teacher training programme might not have been incorporated in the education reform at the time that it was being planned. Keppel, F quoted in Fenton, (1966) pointed out that:

serious limitations are imposed upon the students' ability to learn by the instructor's ability to teach. If the student is to be brought to the frontiers of knowledge, the teacher must know the whereabouts of those frontiers. If the student is to be encouraged to grope, the teacher must at least be able to suggest which of his roads are likely to be blind alleys (p. 513).

The fact that 22.7% of the teachers had no professional qualification in education has definitely affected the success of the new programme. The new education system and materials had cast teachers in a new and different role from what they were traditionally taught or used to. Ideally, teachers should have been trained to handle the new system while they were undergoing their teacher training education in the first place. In-service training could be adequate for short-term changes but the new system in Ghana is not a short-term venture. It is a long and

unending effort that required good planning and implementation.

Conclusion

Unless teachers of much higher quality can be produced, the new education system, good as it might look, is likely to become another wasteful venture in Ghanaian history. In order to avoid "innovation without change" (Hamilton, 1973, p. 147) there is the need to establish a viable and permanent system of educational research and development that would integrate teacher recruitment

and training in the Ministry of Education. A continuous process of accountability and effective monitoring of the system must be established to make the system viable.

Finally, the impact of an innovation can be severely hampered or modified by the milieu in which it is used and by the use to which it is put (Hamilton, 1973). This study involved an aspect of the classroom environment, which is mainly the use of inquiry in the social studies classroom. Since the classroom environment comprises several aspects, it is obvious that more research is needed into it. Hence, the need for a viable system of educational research in Ghana.

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