

Principals' Instructional Leadership Qualities That Enhance Effective Teaching and Learning of Chemistry in Secondary Schools from Perspectives of Students and Teachers

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Abstract: *The study was designed to investigate the principals' instructional leadership qualities that enhance effective teaching and learning of chemistry in secondary schools in Kogi state, Nigeria. The sample of this study consists of 42 principals, 84 chemistry teachers and 1,050 chemistry students from 42 senior secondary schools selected using multi – stage sampling technique. A 36-item questionnaire ($r = 0.81$) was developed, validated and used by the researcher to collect data. Mean and Standard Deviation were used to answer research questions while t – test was used to analyse the hypothesis at 0.05 alpha level. The results showed among others that provision of conducive teaching and learning environment, constant supervision of teaching – learning process and provision of incentive to both teachers and students by the principals are the leadership qualities that enhance effective teaching and learning. It was also found that non – significant difference existed between the mean perception scores of students and teachers on the instructional leadership qualities of principals' that enhance effective teaching and learning chemistry. Recommendations were made to include that principals of schools should be constantly assessed by their students and teachers and the feedback used to improve the instructional leadership qualities of principals.*

Keywords: Chemistry, Effective teaching and learning, Principals' instructional leadership qualities, Students and Teachers

1. Introduction

Science and Technology is the bedrock of the technological development of any nation. Chemistry as one of the key Science subjects is essential ingredient in any meaningful science and technological development. Udo (2010) defined chemistry as a branch of Science concerned with the study of the nature of matter and the ways in which materials may be produced or converted into other forms. He stated that chemistry investigates:

- The composition of matter (i.e. identification of the chemicals) present and the proportions in which they are present
- The properties of materials (i.e. behaviour and reactions of materials and methods of inter-convesting materials).
- The reason for chemical behaviour.

From the above, chemistry can therefore be defined as a subject that tends to find out what a substance is made of, the properties of such substance to mankind through its usefulness as a tool for industrial development.

Teaching and learning of chemistry is central in chemistry education as it is a twin process that takes place in chemistry classroom. It also involves two very important human resources in chemistry education, namely chemistry teachers and students. Teaching is an activity in which the teacher imparts the knowledge and skills required by students. The essence of teaching basically, is to help a learner to acquire knowledge and skills which would affect him/her behaviour toward positive direction. Learning in the other hand, is a process of acquiring knowledge and skills by the students according to their interest, needs and aspirations. Learning requires effective teaching for the students to understand,

assimilate and master the concept that are being taught. Quality learning depends on the quality teaching. Therefore, the effective or ineffective performance of the chemistry teachers during teaching-learning process is a major factor in the success or failure of effective learning. But for chemistry teachers to be effective there is the need for adequate supervision of the teacher. And the third party or human resource whose responsibility demands him or her to supervise the chemistry teacher to ensure that the set objectives of the school is attained is the principal.

Many authors have defined principal in various ways. Pwol (2002) defined principal as chief executive of their schools that perform several tasks to improve the teaching and learning condition within the classrooms, link schools with communities, raise resources for the schools, motivate teaching and non-teaching staff for better and increase the effectiveness of their individual institutions and the system as a whole. She summarized the main tasks of the principal as human resource management, material management, financial management, facilities management, support services, organizational services as well as legal services. According to Adeosun (2009) the principal is the chief administrative officer who plans, organize, direct, coordinate all resources for effective learning within the school environment. From the above definitions, the principal is the administrative and instructional leader of the school that is charged with the responsibility of running the affairs of the school in order to achieve the set goals of the school. As instructional leader, the principal is responsible to the college the following ways:

- Adequacy of National Curriculum.
- The breaking of National Curriculum into Schemes of Work and weekly filling of Scheme of Work.

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- Preparation of lesson plans, notes of lesson, school time table (which cover subjects and other co-curricular activities).
- Supply, care and maintenance of equipment and materials required for quality teaching.
- Adequate supervision of staff and students.
- Discipline of staff and students.
- Adequate assessment of the students.

In other hand, Amiebenomo (2000) summarized the administrative roles of the principal as follows: Planning, organizing, directing, supervising, guiding, motivating, resourcing, decision taking, coordinating and evaluating the school system. The effectiveness of the principal can be determined by how both the administrative and instructional leadership are realized in the school. This paper focuses on instructional leadership of the principal. According to Ogunsaju (1988) an effective principal should be able to strictly implement the instructional leadership in addition to other administrative duties:

2. Literature Survey

Contributing to the instructional leadership qualities of effective principals, Stronge, Richardard & Catano (2008) pointed out that effective principals Possess knowledge of the curriculum and good instructional practices, monitor the implementation of curriculum standards and make sure they are taught, model behaviour they expect of school staff, are in a good position to support teacher effectiveness, need to spend time in classroom in order to effectively monitor and encourage quality instructional practices, share a deep knowledge of instruction with teachers, promote coherence in the instructional programme where teachers and students follow a common curriculum framework and trust teachers to implement instruction effectively but visits to verify the result. They concluded, by saying that nothing in the principal's role is more important for ensuring successful learning than effective instructional leadership. Manasse (1985) carried a research on improving condition for principal effectiveness: Policy implication of Research. The Summary of the work indicated that effective principal are likely to have a clear source of their own strengths and weaknesses, high energy levels, strong communication skills, an analyzed approach to problem solving, human relation skills and a high tolerance for stress which directly related to characteristics of effective schools described as: strong administrative leadership, climate conducive to learning, worldwide emphasis on skills, high teacher expectations for students' achievement and systematic monitoring of pupils' performance. Cotton (2003) pointed that principals of high-performing schools were found to exhibit the following behaviours that affect student achievement positively: focus on student learning, high expectation for student learning, communication and interaction, parents and community outreach, support of risk taking, teacher autonomy, collaboration, shared leadership, visibility and accessibility, self-confidence, professional development opportunities, discussion of instructional issues, instructional time, use of student's data for program improvement, classroom observation and feedback to teachers, safe and orderly school environment and monitoring student progress. Fullan, Bertani and Quinn

(2004) carried out research and found out that effective leadership for change has 10 crucial components namely, a compelling conceptualization, collective moral purpose, the right structure, capability building, team building, assessment of ongoing learning, resolving conflict, competence is demanded, active external partners and focused on financial investment. Mohammed (2011) on his own contribution, pointed out that to ensure effective teaching and learning of Science, the principal's major role is to ensure adequate supply of right caliber of teachers; sufficient supply of equipment, regular supervision of teachers; regular inspection of lesson notes and records of work and inspection of students exercises/works. He concluded by saying that this is to ensure that the teacher is doing what he is expected to do and students learn the right thing. Herrera (2010) on his work found that the principals perceived that they had a high level of engagement in leadership practices associated with order, discipline, resources and input while teachers perceived a high level engagement of principals in leadership practices associated with only intellectual, stimulation and input. Ayeni (2012) on his study titled assessment of principal's supervisory roles for quality assurance in secondary schools, found that principals performed low on tasks such as provision of instructional materials, reference books, feedback and review of activities with stakeholders but performed well in monitoring teachers attendance to class, preparation of lesson notes and adequacy of diaries. The study concludes that principal who is instructional leader should be more resourceful and pro-active in collaborating with stakeholders in education to ensure quality education in secondary schools. Ayeni and Akinfolarin (2014), carried a research on assessing principals coordinating and controlling strategies for effective teaching and quality learning outcome. The findings showed that effective coordination and control of teachers' instructional performance by principals no doubt leads to quality education and students learning outcome. Also the results showed that the constraints identified by principals as factors that inhibit their effectiveness included inadequate teachers, excess workload, inadequate teaching resources, lack of conducive classrooms, etc. It was recommended that Government in collaboration with principal should make adequate provision of human and material resources in the schools to fill the gap.

From the literature review, it is clear that principals who exhibit high leadership qualities enhance teaching and learning effectiveness of their teachers and students. However, what appears to be the missing gap is that the opinions of students who are at the centre of the educational process are hardly sought. Little works is done in this area, most research reports sought the views of principals and teachers on the leadership qualities of the principal that foster teaching and learning effectiveness. Therefore this study is to examine principals' instructional leadership qualities that enhance effective teaching and learning from the perspectives of students and teachers.

3. Problem of the Study

Who to blame for students poor academic achievements in chemistry in Secondary School Certificate Examination

(SSCE), has been a controversial issue in Nigeria. The answer one gets, when you pose the above question, depends on who you ask. When chemistry teachers and students are asked, they tend to blame the poor academic achievements of students on the negative leadership qualities exhibited by the principals of Secondary Schools. They agree that the performance of Chemistry teachers in the classroom situation is a major determinant of students' academic success but they have argued that effective teaching and learning depends solely on effective leadership styles of the principals such as adequate supervision of teaching and learning process. Stronge et al (2008) tend to agree with their views, when they pointed out that among the school factors that facilitate effective students learning, the effect of principals is considered second to that of the teachers. Therefore the pertinent question at this point is, what are the various principals' instructional leadership qualities that enhance effective teaching and learning of Chemistry at the Secondary Schools level? Providing an answer to this question by the students and teachers, presents problem that necessitated this study.

Purpose of the Study

The main purpose of this study is to determine the instructional leadership qualities of the principals responsible for effective teaching and learning of Chemistry from the perceptions of students and teachers among the Secondary Schools in Kogi State.

Specifically the study sought to:

- (1) Find out the students' perception on the various instructional leadership qualities of principals that enhance effective teaching and learning
- (2) Find out the teachers' perception on the various instructional leadership qualities of principals that enhance effective teaching and learning.
- (3) Find out factors that inhibit principals' positive leadership qualities

Research Questions

The following research questions were formulated for the study.

- (1) What are students' perceived instructional leadership qualities of their principals that enhance effective teaching and learning?
- (2) What are teachers' perceived instructional leadership qualities of their principals that enhance effective teaching and learning?
- (3) What factors do principals hold responsible for their inability to exhibit positive instructional leadership qualities?

Hypothesis

To guide this study, one null hypothesis was formulated and tested at 0.05 level of significance.

Ho: There is no significance difference of mean perception scores of Students and teachers on the leadership

qualities of the principal that enhance effective teaching and learning of Chemistry.

Methods

The research design was a descriptive survey carried out in Senior Secondary Schools in Kogi State, Nigeria. The target population was all the principals, Chemistry teachers and Students in 262 public secondary schools of the 21 local Government Areas of Kogi State as at June 2016. A multi-stage sampling technique was used to choose 40 principals, 84 chemistry teachers and 1,050 chemistry students which was done in stages. Firstly, purposive sampling technique was used to select two secondary schools from each of the 21 – local government area of Kogi State, giving 42 secondary schools. All the principals and chemistry teachers in the selected schools constituted the sample and they were 42 and 84 respectively. Secondly, a simple random sampling technique by balloting was used to select 25 chemistry students from the 42 selected secondary schools giving a total 1,050 chemistry students that were used for the study.

The instruments used for data collection was a structured questionnaire titled principals' instructional leadership qualities questionnaire (PILQQ) which was developed by the researcher. The instrument has four sections: A, B, C and D. Section A sought information on personal data of the respondents. Sections B and C, required chemistry students and teachers to indicate their principals' instructional leadership qualities respectively. Section D sought from the principals, possible problems that inhibit their effective delivery in their schools. In section B, C and D, each item has a four point rating scale of Strongly Agreed (SA) = 4, Agree (A) = 3, Disagree (DA) = 2 and Strongly Disagreed (SD) = 1. The instrument was face validated by four experts: two specialists in chemistry education. One specialist in measurement and evaluation and one specialist in educational administration. The questionnaire was pilot tested in Secondary Schools that were not part of the study and the response were subjected to Cronbach alpha reliability test. The reliability coefficient of 0.81 was obtained which was considered high enough for a survey study. The researcher and research assistants administered the questionnaires to the subjects at the various schools. The questionnaires were collected from the subjects on the same day. The data collected were analyzed using Mean and Standard Deviation to answer research questions and t-test to analyze the hypothesis. The criterion Mean Value is 2.50 and any item that score the Mean of 2.50 and above will be regarded as significant while those that score mean value of less than 2.50 were regarded as insignificant. The hypothesis formulated was tested at 0.05 level of significance.

4. Results

The result of this study is presented in tables 1, 2, 3 and 4.

Table 1: Mean and Standard Deviation of Students responses on principal's Instructional Leadership qualities that enhance effective teaching and learning

S/N	Instructional leadership qualities of principals	Mean	SD	Remarks
1.	Ensuring that teachers attend their classes.	3.92	1.20	Significant
2.	Encouraging students to study hard by giving annual awards to the best students.	3.83	0.96	Significant
3.	Checking Students notes and other class works regularly.	3.51	0.96	Significant
4.	Prioritizing Students learning along with students' welfare.	3.56	1.16	Significant
5.	Listening to any complain by students especially on academic matters.	3.37	1.07	Significant
6.	Creating "open day" where parents come to inspect their ward's academic works.	3.65	0.85	Significant
7.	Providing enough Science teaching materials for Chemistry practicals.	3.16	1.30	Significant
8.	Ensuring that students' progress, is regularly assessed and reported.	3.42	1.45	Significant
9.	Organizing excursion for the students.	2.94	0.73	Significant
10.	Organizing "after school lessons" for students.	2.48	0.87	Insignificant
11.	Providing conducive environment for the students to learn.	4.08	1.03	Significant
12.	Maintaining high level of discipline in the School.	3.16	1.16	Significant
Pooled Mean / SD		3.42	1.08	

Table 1 above shows that the mean rating of item statements 1, 2, 4, 5, 6, 7, 8, 9, 11 and 12 were all above the criterion mean of 2.50. This implies that from the students' perspectives, the eleven instructional leadership qualities of the principals enhance effective teaching and learning of chemistry. However, item statement 10 that deals with organizing "after school lessons" for students had mean rating below the cut-off mean of 2.50. This also implies that

the students disagreed, that the statement enhances effective teaching and learning of chemistry in their schools. From Table 1, the three major instructional leadership qualities of principals that enhance effective teaching and learning of chemistry are: providing conducive learning environment, supervising teachers' attendance to class and incentive to hard working students, in that order respectively.

Table 2: Mean and Standard Deviation of teachers responses on principal's Instructional Leadership qualities that enhance effective teaching and learning.

S/N	Instructional leadership qualities of principals	Mean	SD	Remarks
1.	Translating education policies into school based teaching and learning.	2.86	1.20	Significant
2.	Supervision of the teacher's preparation of schemes of work and lesson plans.	3.40	0.87	Significant
3.	Monitoring and assessment of teachers while teaching.	3.15	0.99	Significant
4.	Giving constructive feedback about teacher's assessment.	3.80	0.82	Significant
5.	Providing conducive environment for teaching chemistry.	4.01	0.96	Significant
6.	Encouraging teachers to use innovative teaching methods by in-house training programmes.	2.93	1.12	Significant
7.	Sponsoring teachers to attend Workshops, Conferences and Seminars.	3.58	1.16	Significant
8.	Administering examination in the college using standard questions.	2.56	1.12	Significant
9.	Giving incentive to hardworking teachers by instituting annual best teacher's award	3.37	0.94	Significant
10.	Communicating fully and holding regular meetings with staff.	3.14	1.10	Significant
11.	Influencing posting of qualified teachers and/or employing PTA teachers.	3.31	1.23	Significant
12.	Leading the staff by his/her own example.	3.19	1.18	Significant
Pooled Mean/SD		3.28	1.06	

From table 2, the mean rating of all the item statements, were all above the cut-off mean of 2.50. This implies that chemistry teachers agreed that the twelve instructional leadership qualities of principals listed as item statements above enhance effective teaching and learning. From table 2 also, three major instructional leadership qualities of

principals that enhances effective teaching and learning as perceived by teachers were conducive environment for teaching; giving constructive feeding back to teachers about their assessment and sponsoring teachers for workshops/conferences.

Table 3: Mean rating and Standard Deviation of the principals responses on the factors inhibiting their ability to exhibit positive leadership qualities.

S/N	Item Statement	Mean	SD	Remarks
1.	Inadequate infrastructural facilities	3.94	1.01	Factor
2.	Inadequate chemistry teachers.	2.76	0.92	Factor
3.	Inadequate chemistry textbooks.			Factor
4.	Inadequate laboratory equipment.	3.67	1.17	Factor
5.	Inadequate Laboratory assistants.	3.06	1.06	Factor
6.	Poor training of principals.	3.32	0.86	Factor
7.	Poor preparation of teachers.	3.56	0.97	Factor
8.	Poor funding of schools.	3.98	1.16	Factor
9.	Poor remuneration of teachers.	3.75	1.04	Factor
10.	Lack of chemistry laboratory.	2.33	0.88	Not a factor
11.	Rapid rate at which teachers are transferred.	2.57	0.95	Factor
12.	Politicization of the appointment of principals	3.49	1.11	Factor
Pooled Mean / SD		3.03	0.92	

Table 3 shows item statements of factors which principals hold responsible for their inability to exhibit positive leadership qualities that would enhance effective teaching and learning. The principals' mean rating of items 1, 2, 3, 4, 5, 6, 7, 8, 9, 11 and 12 were all higher than the cut off mean of 2.50, implying that the principals have agreed that the

eleven items mentioned above out of twelve inhibit their positive leadership qualities. In other hand, the principals mean rating for item 10 (lack of chemistry laboratory) was below the cut-off mean of 2.50, implying that principal disagreed that lack of chemistry laboratory in their schools hamper their positive leadership qualities.

Table 4: T-test of students and teachers on their perceptions in respect to principals' instructional leadership qualities that enhance effective teaching and learning.

Respondents	Number	Mean	SD	Df	T-Cal	T-Table	Decision
Students	1,050	3.42	1.08	1,1	1.2	1.96	Accepted
Teachers	84	3.28	1.06	32			

From the table above, the calculated value of t at .05 level significance with 1,132 degrees of freedom was 1.20 and the crucial t -value was 1.96. Since the value of t -calculated is less than the table value, the null hypothesis is accepted. That is, there is no significant difference of the mean perception scores of students and teachers on the leadership quality of the principal that enhance effective teaching and learning.

5. Discussion

Results obtained from this study revealed that majority of the chemistry students sampled were of the view that their principals' instructional leadership behaviours (qualities) that enhance effective teaching and learning are: provision of conducive environment for learning, teachers' attendance to classes, incentive for student to study hard, checking of students' notes / home works, monitoring and supervision of teaching, listening to students complaints, prioritizing students learning/welfare, creating "open day" for parents to inspect their ward's academic works, providing enough Science equipment, assessing and reporting regularly students academic progress, organizing excursion for the students and maintaining high level of discipline in the school. It could be deduced from the students rating that the three major instructional leadership qualities of principals are: provision of conducive learning environment, regular monitoring of teachers attendance to class and encouraging hard work by giving best students' awards/prizes. The perception of students as revealed in the findings in table 1 is in conformity of with the findings of Mohammed (2011) and Ayeni (2012) who found that monitoring of teachers attendance to class, supervision of preparation of lesson notes, provision of adequate diaries, provision of instructional materials/reference books and feedback to stakeholders are principal's instructional leadership quality that enhance quality instruction. In other hand, the sampled students rated organization of "lesson after school" as insignificant instructional leadership quality in terms of enhancing effective learning. The views of the students in this wise, may be connected to the students desire to learn one or more trades (entrepreneurial skills) after school from the roadside artisans. Therefore the students are not ready to spend extra hours in the school overloading themselves with theories only, especially when the "white collar job" is no more available for them after completing their education. The educational implication of this is that the authority of the school should endeavour to include and implement as part of the school curriculum, trades that would enable students acquire entrepreneurial skills which in turn would

make the students self-employed on graduation. The students are craving for this and their principals should give them support to make them realize their dreams.

Table 2 revealed that the various leadership behaviours (qualities) of principals which directly enhance effective teaching and learning from the perspective of teachers. They are: as translation of education policies into school based teaching, supervision and monitoring of teachers, giving feedback to teachers, conducive environment for teaching, encouraging teachers to use innovative teaching methods through in-house training, sponsoring teachers' to conferences/workshops, administering standard examination, giving incentive to hardworking teachers, adequate communication/meetings with staff, influencing the posting of qualified teachers and leading the staff by personal example. This findings agree with the previous work of Ayeni and Akinfolarin (2014) and Achimugu (2012). It can be deduced from the teachers rating in table 2, that the three major instructional leadership qualities of principals are: conducive environment for teaching and learning, giving constructive feedback to teachers and sponsoring teachers to conferences/ workshops. It is very interesting to note that the teachers opinion have collaborated to some extent with the opinions of students as earlier pointed out in table 1. The educational implication is that, any school principal who wish to enhance effective teaching and learning in his/her school should show high level of positive qualities on the area of provision of adequate human and material resources that ensure conducive teaching and learning environment, provide adequate incentives to both teachers and students and ensure adequate supervision of teaching-learning process vis-a- vis the feedback to both teachers and students.

Table 3 shows the factors which principals perceived are responsible for their inability to efficiently exhibit positive instructional leadership behaviours to include: poor funding; inadequate infrastructural facilities; poor remuneration of teachers; inadequate chemistry teachers, lack of laboratory equipment and laboratory assistants; poor trainings of principals; rapid transfer of teachers and politicization of principal-ship. This finding is in agreement with the finding of Achimugu (2016) who found that inadequate instructional materials, poor funding, poor remuneration among others affect effective teaching and learning of chemistry. Indeed poor funding, poor motivation of teachers and inadequate resource materials are becoming recurring decimals in Science education. One only hope that Government at various levels are listening and doing

something about them. But on the part of principals, they should be creative and resourceful by involving Parents-Teachers Association (PTA) and Old Students Association in raising fund to address these three major problems and others that inhibit effective teaching and learning of Chemistry.

The results from table 4 revealed that there is no significant difference between Chemistry students and teachers on their mean perception scores on the principal instructional leadership qualities that enhance effective teaching and learning. This implies that the observed mean difference between students and teachers is by chance, as in actual sense, both students and teachers responded in a similar way to the questionnaires. This is very interesting as principals, teachers and indeed educational researchers who may look down on students as not matured enough to assess their principals or teachers should no longer take students for granted.

6. Conclusion

Very often, school authorities tend to lose sight of the fact that instructional leadership qualities, of which the principals exhibit in running schools, affect effective teaching and learning. This study was designed to find out from Chemistry Students and teachers who are direct beneficiaries of principals' good leadership qualities, those instructional leadership behaviours of the principals that promote effective teaching and learning of Chemistry. The results revealed that provision of conducive teaching and learning environment, regular supervision of teaching-learning process, provision incentives to staff and students that are hardworking, etc enhance effective teaching and learning. It was also found that both the students and teachers responded in similar way to item statements, implying that students are matured enough to assess their principals. Also the findings of this study indicated the major constraints that prevent principals from playing their roles as instructional leader of their schools to include: poor funding, poor remuneration of teacher, inadequate resource materials among others. Based on the findings of this study, pertinent recommendations were made as shown below.

7. Recommendations

Based on the discussion of the results and conclusion of this study, the following recommendations were made

- 1) Principals of schools should be constantly assessed by their teachers and students and the feedback should be used to improve the instructional leadership qualities of principals.
- 2) Principals in collaboration with government at various levels should ensure the inclusion of trades in their schools' curriculum and the school principal should also ensure that he/she implement the same at the school level to help the students acquire the necessary entrepreneurial skills that would equip them or make them self-employed after their schooling.
- 3) Principals and government at various levels should provide good condition of service for teachers as well as conducive environment for teaching-learning process.

- 4) Principals of secondary schools should be constantly trained so as to allow them acquire the necessary skills to perform their duties effectively.
- 5) Principals at this period of economic hardship, should be creative and resourceful by involving P.T.A and old students Associations in raising funds to address the problems hindering principals' leadership effectiveness.

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Author Profile

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