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STUDENTS' EVALUATION OF TEACHING EFFECTIVENESS OF ACADEMIC STAFF IN UNIVERSITY OF CALABAR, NIGERIA

NOVEMBER, 2006

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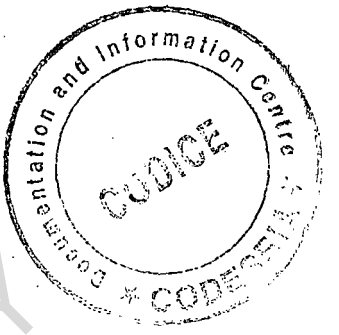

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NOVEMBER, 2006.

CERTIFICATION

I hereby certify that this thesis is original and has been written by me. It is a record of my research work and has not been presented before in any previous publication.

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DECLARATION

We declare that this thesis titled **"Students' Evaluation of Teaching Effectiveness of Academic Staff in University of Calabar, Nigeria"** by Bassey Bassey Asuquo (Registration Number EDT/Ph.D/2002/009) carried out under our supervision, has been examined and found to have met the regulations of the University of Calabar. We therefore recommend the work for the award of the degree of Doctor of Philosophy (Ph.D) in Educational Measurement and Evaluation.

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ABSTRACT

This study sought to ascertain, using students views, the extent of the teaching effectiveness of academic staff, faculty-by-faculty, in University of Calabar, Nigeria; and how gender, age, discipline, academic qualification, rank and teaching experience of academic staff influenced their teaching effectiveness. Nine null hypotheses and one research question were formulated to guide the study. The study adopted the ex post facto design using the stratified random sampling technique in selecting the 380 academic staff and 3800 undergraduate students for the study. The instruments used for collecting data were a 7-item Academic Staff Questionnaire (ASQ) and a 43-item University Students' Evaluation of Teaching Effectiveness Questionnaire (USETEQ). Population t-test, independent t-test, dependent t-test, one-way ANOVA, and three-way ANOVA were used to test hypotheses at .05 alpha level. The following, among others, were the findings of the study: (i) The teaching effectiveness of academic staff is significantly high. (ii) Academic staff in Faculties of Law and Education were assessed by students to be most effective while those in Faculties of Agriculture and Management Sciences were assessed least in teaching effectiveness. (iii) Gender of the academic staff was not a significant factor in their teaching effectiveness. (iv) Age, academic qualification, discipline, rank, and teaching experience, taken individually, were significant factors in academic staff's teaching effectiveness. It was concluded that if quality/standard of learning among students/graduates of the University were low, something other than effective teaching might be responsible. Recommendation: academic staff should explore the use of student evaluation of instruction to foster their professional growth.

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INTRODUCTION

1.1 Background to the study

These days in Nigeria, serious concern has been expressed about the quality of graduates from Nigerian Universities. Graduates from Nigerian universities have been variously described by employers of labour, parents and the entire society as half-baked, ill-trained, ill-equipped, of poor quality and of poor standard (Obanya, 2002).

It is expected that higher education provided by universities should develop in the graduates a certain number of specific skills to a level that will ensure the continued creative productivity of the individual. Such skills according to Joshua (1999), Obanya (2002) and Idaka (2005) include:

a) *Analytical power skill*-which implies an advanced capacity for logical reasoning, employing verbal, quantitative, graphic, documentary, audio-visual, sensory perception and so on.

b) *Communication skills*–oral and written, using appropriate language and non-verbal forms in specific situations to achieve specific objectives.

c) *Problem-solving skill*–the ability to task ones analytical power to maximum in developing possible solution paths to problems in a wide variety of situations.

d) *Team-spirit skill*-which refers to the ability to contribute meaningfully to group activities in a wide variety of forms and, to relate with others.

e) *Creativity*- the ability to go beyond the well-trodden path, in thinking as well as in action.

f) *Versatility*–which implies a broadened horizon in terms of domains of knowledge and competence.

g) *Life-long learning skills*-which imply perseverance, risk–taking, a spirit of enquiry, reading as a habit, self-directed learning efforts, the ability to face challenges, and so on.

h) *Information technology skill*-as a tool for and support to other life activities.

Courses offered in the Nigerian University system are designed to create above skills (a–h) in its graduates. These skills are inherent in the quality assurance mandate of the National Universities Commission (NUC, 1989; Ramon-Yusuf, 2003). It is doubtful whether the teaching of courses in Nigerian Universities has been effective enough to produce the skills so identified in (a-h) above in Nigerian graduates these days.

Several reasons have been adduced for the seeming poor quality of graduates from our universities. These according to Obanya (2002) and Idaka (2005) include:

i) Unplanned expansion, leading to a very rapid increase in the number of institutions since 1975 onwards;

ii) Unnecessary duplication of courses and programmes;

iii) Deterioration of physical facilities;

iv) A near absolute lack of teaching–learning and research facilities.

v) Over stretching teaching, research and managerial capacities.

vi) Massification of students numbers;

vii) An upsurge of various forms of social ills such as examination malpractices, falsification of certificate, cultism among students and the commercialization of the entire educative process.

viii) Internal and external personnel hemorrhage among the intellectual class; and the loss of faith in the entire system.

Some of these reasons have been investigated in Nigeria and elsewhere, but no consensus has been reached as to the effect of lecturer–student interaction in the classroom on the quality of our graduates. It is this lack of consensus that has provoked this study into the classroom interaction between the academic staff and the student in order to evaluate what transpires as lectures go on in the classroom and if the teaching is effective enough to create the desired skills on the part of the students.

Two primary responsibilities of academic staff are teaching and research. These two roles are meant to complement each other for the staff professional growth, the students and the entire system at large. However, "publish or perish" syndrome has made most academic staff in universities to pay more attention to research (contributing articles to journals, writing of books, attending seminars/workshops/ conferences) at the expense of teaching. Consequently, teaching has

become less attractive and less important to many academic staff in Nigerian Universities, moreso, as the promotion in academic career depends almost entirely on scholarly research and publication efforts. The most disturbing is the fact that nobody, including university administrators, seem to be concerned about taking necessary steps to assess or evaluate what the lecturer does in the classroom, and therefore, anything goes. Here may lie the cause of poor quality of our graduates, hence this study.

Certain kinds of monitoring are therefore necessary if universities are to play their expected roles in the society. Lecturers like other professionals should be sincere enough to set up or accept the setting up of the machinery for monitoring their performance in order to foster their professional growth, check misconduct and to realize the set goals of the society and the school, and the specific objectives of school programmes. Therefore, the evaluation of the school, its component parts and processes is inevitable if higher education in Nigeria is to be brought back to its former glory.

Among the many personnel in the school is the teacher, the instructor, the lecturer, the faculty or academic staff (these would be used interchangeably in this study). The system of formal education places the teacher at the hub of the teaching-learning process and gives him a lot of power over the direction and intensity of the child's growth and development. "The teacher is the primary ingredient in the learning process, and the characteristics of effective teachers should be identified in order to provide more effective teachers and fewer ineffective ones" (Withall and Lewis, 1993). Learning would be

greatly enhanced if teachers who teach/lecture are those the learners see as their best or ideal ones (Nenty and Essien, 1989).

As a guide to the evaluation of teaching effectiveness, Johnson and Rising (1967) identified five characteristics of any person who is aspiring to be an effective teacher should possess. They include the following qualities:

i) Competence in mathematics (and indeed in any course).

ii) Skillful in communication

iii) Inspiring values and personality traits

iv) Understands and accepts students

v) Competent in professional knowledge

It is believed that these variables meant for assessing teaching effectiveness in mathematics could be adopted and used for any other discipline. We have thus culled, modified and adopted these variables from Johnson and Rising (1967) for this study, thus:

a) knowledge of subject matter/area

b) classroom communication skill

c) effective teaching strategies

d) classroom management

e) ability to motivate students

f) relationship with students

g) evaluation of students learning activities

Teachers generally are chary about evaluation, especially about student–based evaluation for merit awards, personnel decisions and promotion. This does not mean we should shy away from evaluation, if we think carefully of the help, which a teacher needs. He needs, first of all, feedback on how his students perceive his teaching and

how it affects their learning. Secondly, he needs to indulge in a certain amount of self-examination to assess whether, over his teaching years, he has come up to acceptable standard of imparting knowledge to students.

The use of student ratings is predicated on the assumption that:

i) The student knows when he has been motivated;

ii) It is the student whose behaviour is to be changed;

iii) Student rating constitute feedback to the teacher; and

iv) Student recognition may promote or motivate good teaching (Joshua, 1998a).

Students' evaluation of teaching should be kept firmly in its place: as a feedback instrument to the teacher, to assist him view the effectiveness of teaching. That, it is believed to be the right of every class of students, and one which no teacher should deny.

By endorsing the use of students' rating of teachers for formative purposes (Joshua, 1998a; Idaka, 2005), Nigerian teachers are invariably recognizing the unique contributions that students, as clients in the educational system, can make towards fostering the professional growth of teachers, improving classroom instruction, and also serving other formative purposes. Since students are the direct beneficiaries of instruction and given that they spend a great deal of time with their teachers, students can offer useful inputs in identifying flaws during instruction or curriculum implementation, and ways of remediation.

Students' evaluation of teaching effectiveness for instructional improvement has been studied elsewhere (Aleamoni, 1980; Aleamoni and Hexner, 1980; Centra, 1979; Cohen, 1993; Marsh, 1982; McKeachie; 1979; Millman, 1981; Dooris, 1997; Marsh, 2004; Joshua,

1998a Idaka, 2005; Archibong, 2006). The situation with the teaching effectiveness of academic staff, faculty-by-faculty, in University of Calabar, as evaluated by their students, is the main concern of this study. The influence of personal/demographic variables of academic staff on their level of teaching effectiveness is also the concern of this study.

1.2 Theoretical background

The theoretical background of this study was discussed under the following sub-headings:

i) The systems theory
ii) Models of school organisation and academic staff evaluation;
iii) Accountability theory;
iv) Professional competence evaluation
v) Okpala teaching evaluation model
vi) JUBO teacher evaluation model

1.2.1 The systems theory

Managers find optimal solutions to management problems by using scientific analysis which is closely associated with the system approach to management. A system is an interrelated and interdependent set of elements functioning as a whole. A system can be opened or closed system. The system in systems theory is an open one that interacts with its environment. It is composed of **inputs** from the environment (material or human resources), transformation **process** of inputs to finished goods (technological and managerial processes), **outputs** of those finished goods into the environment (products or services), and feedback (reactions from the environment).

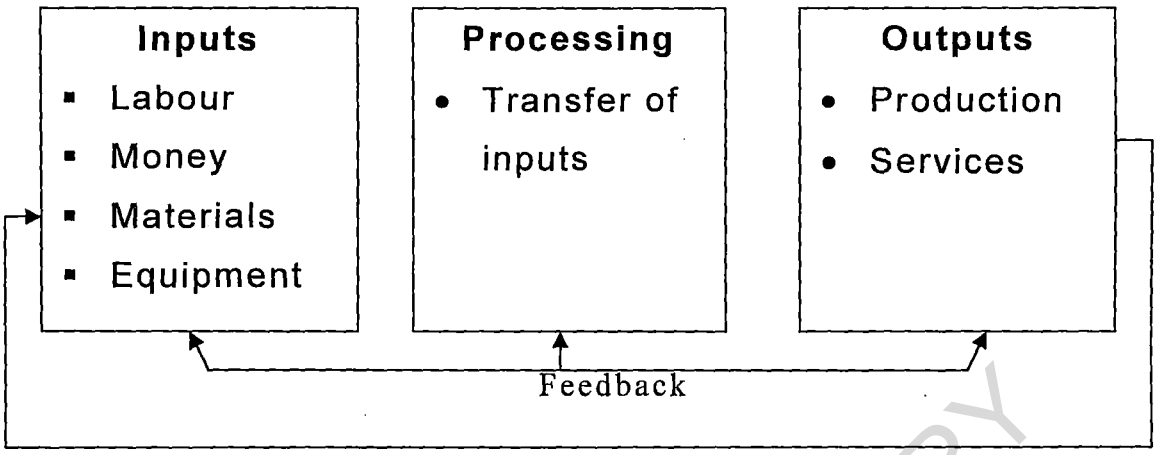

Fig. 1a: The organisation as a system (Bushnell, 1990)

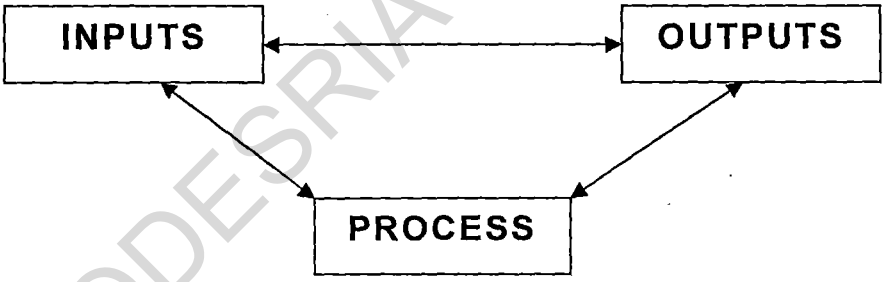

Fig. 1b: IPO model (Bushnell, 1990)

The systems theory is in consonance with the evaluation model IPO, which seeks inter and intra relationship between three blocks of variables. IPO means "Input", "Processes" and "Output".

(i) **Inputs:** The inputs component describes the resources available and determines the best use of those resources in terms of cost and benefits (Inyang, 1995). The inputs category refers to the resources, in terms of physical resources and material resources in human and financial resources that are put into the education system.

The physical resources include, classroom, laboratory, libraries, school vehicles, school farm, school buildings, textbooks that are necessary for an effective running of the school system. Human resources come in terms of teacher/lecturer, principal/vice chancellor, students, and non-teaching staff. Teachers/lecturers are evaluated in terms of their qualification, teaching experience, sex, salary, training, knowledge, classroom management, interpersonal relation and professional ethics. The principals/vice chancellors are evaluated in terms of school management, provision of facilities, conditions of service, welfare of teachers/learners and leadership qualities. Students are also evaluated in terms of achievement, learning behaviour, background and students enrolment in each school and class level. Non-teaching staff, like technologists, laboratory assistants, clerical officers and librarians are evaluated in term of quantity, qualification and

salaries. The financial resource components involve evaluation of the grants, school fees, subventions, donations from organisations and school expenditures.

(ii) **Process component:** This component emphasizes what goes on in the school and classroom level, classroom and school set-up, classroom process, utilization of physical and material resources in classroom processes. The frequency of visiting libraries, the frequency of using the laboratory giving and marking assignment and home works, and staff meeting goes into the process component.

(iii) **Output component:** The output component looks at the outcome or product of the educational system. It focuses on the cognitive, affective and psychomotor achievement of students. The cognitive outcomes are measured through academic achievement of students performance in an examination, the affective outcomes are measured through students' attitude to education and their class work. The psychomotor outcomes are measured through the vocational skills the students have acquired. These three blocks of variables are very important in any evaluation system. It is hoped that this theory when used will provide adequate information about the outcomes between the teachers and learners.

1.2.2 Models of school organization and academic staff evaluation

The new and emerging focus in teacher evaluation is a refection of the diverse role of the teacher in the educative process, the nature of the organization and operations of schools (particularly tertiary institution) and the purpose(s) of school itself (Darling-Hammond; Wise, & Pease, 1983). Consequently, different theories and models of operation of schools are embodied in different models of teacher evaluation. Many models exist in the literature, but the two models of school organization discussed by Darling-Hammond; Wise, & Pease, (1983), but quoted from Joshua (1998a) and Idaka (2005), which indicate how radically different assumptions within organizational context can lead to different approaches to teacher evaluation are presented.

(i) **Rationalistic model of school organization:** This model according to Darling–Hammond, Wise, & Pease, (1983), Joshua (1998a) and Idaka (2005) is the assumption that teaching-learning process has an underlying order, and that learning is predictable. Predictability connotes that students are essentially passive, and whatever their characteristics, will react in the same way when a given stimulus is applied by the lecturer (teacher). Based on this model, it is the duties of the university administrators to specify the correct inputs and process, and for the lecturers to achieve result through deliberate application of those rationally prescribed process and practice. Unfortunately,

tertiary institutions in Nigeria are not operated like a strait jacket.

This model further assumed that once the goals of evaluation are decide by external agencies, the school administrators will defined the behavioural objectives, and lecturers will teach on the basis of those objectives. Consequently, it is the policy–makers and the administrators who rationalize the operations of the school. Again, in the universities it appears the rationalization of what to teach and how to teach it in particular rest on the lecturer. The model presumes that the lecturer and student performance should be assessed and this will give a clear picture of students' achievement; and by implication of lecturers' competences or effectiveness.

In this model, the school is conceived as a bureaucratic system, with little regards to variation in teacher and student interest or emotions. In this model, the lecturer implements the curriculum handed down by the specialist(s)/administrator(s). The corollary is that the school system tends to adopt an evaluation approach that emphasizes the subjection of the lecturer/teacher to superior specialists, material rewards, sanctions, specification of task, processes and expected outcomes (Darling–Hammond, 1986; Darling-Hammond et al, 1983; Joshua, 1998a; Idaka, 2005). Unfortunately, this is

completely at variance with the way any university in Nigeria is conceived and operated.

(ii) **The Natural system model of school organization:** This is the social science view of organization. The model assumes that effective teaching does not depend on deliberate, rational planning by Deans or Heads of Departments, but that a lecturer who is seen as professional should be given an environment conducive enough for the practice of his/her profession. The model also assumes the following organizational characteristics: absence of consensus among members on values, norms, and objectives; functional autonomy of the constituent components; bargaining and compromise; de facto decentralization of power; incomplete information for making decisions; lack of coordination in planning and policy making.

In this model, the school is conceived as a natural system, which is technically a set of interrelated parts; all of which are working towards a defined goal. The constituent parts depend on each other, and the entire whole uses feedback to determine if its defined goal has been achieved. Thus, the lecturer is perceived as a professional who plans, conducts, and evaluates his/her work individually and collectively. Lecturers analyze the needs of their students, access the resources available, take the immediate community's goal into consideration and decide on the appropriate instructional strategies. The lecturers also access themselves constantly to ensure that they are effective

within the school system (Darling-Hammond, 1986; Dick & Carey, 1985; Joshua, 1998a; Idaka, 2005). Accordingly, this model recognizes the importance of the various components that make up the university system; and as such, all should be active, acting as checks and balances in ensuring that set goals are achieved. This model by implication recognizes the part students can play in evaluating instruction as consumers.

Besides, this model presupposes teacher autonomy in order for him to serve the needs of his/her students in the best way possible. Lecturers are therefore encouraged, motivated to use both their personal and professional judgement in problem solving. The model therefore permits a teacher evaluation approach that emphasizes, self-evaluation, peer rating, and student evaluation for the effectiveness of the system and for the professional growth of lecturers. Moreso, since the model expects inputs from other components in order to achieve organizational goals, it will not just blame the lecturers alone for any perceived short comings in the system (Darling-Hammond et al, 1983; Fuller, Wood, Rapaport & Dornbush, 1982; Joshua, 1988a; Idaka, 2005).

It is germane to add that the two models of school organizations are neither exhaustive nor mutually exclusive. Instead, they should imply a continuum or a kind of admixture of different values and beliefs operating in our school system, and which values and belief is dominant. However, from the

literature cited, the emphasis is that the model of school organization prevalent in a given school determines the beliefs, role and concept assumed of the teaching work, approaches, instruments and the rationale for teacher evaluation adopted, and the use of such evaluation. In general, the latter model, to a greater extent fits the operations of universities, and students as significant component and consumers are properly placed to evaluate instruction, and hence the justification for this study.

1.2.3 Accountability theory

Accountability theory refers to the process whereby each member of an organization is expected to answer to someone for the execution of specific plans and against certain deadlines set to achieve tangible performance or results. In brief, it requires proof of results (Aderownmu & Ehiametalor, 1985; Joshua, 1998a). In the context of school, accountability means that someone accepts the responsibility not only for developing or trying to achieve certain educational objectives, but also for the negative or positive consequences of failing or succeeding in the achievement of those objectives (Allen, 1980). Norman (1992) as quoted by Joshua (1998b) define accountability theory as it relates to school as a set of commitments, policies and practices that are designed to:

i) Heighten the probability that students will be exposed to good instructional practices in a supportive learning environment.

ii) Reduce the likelihood that harmful practices will be employed; and

iii) Provide internal self-correctives in the system to identified, diagnose and change courses of action that are harmful or ineffective.

Thus, school accountability involves holding school personnel responsible for what is going on in school, and for what does not go on in school, though expected (Joshua, 1998b).

Over the years, the public has become increasingly inquisitive about the activities going on in schools, and about the results schools are producing in the graduates. Not just the public only, the different governments, the communities, opinion leaders, employers, parents, and the students alike have had reasons to worry about the results schools produce. The declining and deteriorating results from schools in terms of academic achievement, attitudes, values, intelligence, psychomotor skills and other affective measures in their graduates have been matters of concern, not only in Nigeria, but also across the world. A new dawn of awareness is gradually emerging, as the citizenry is increasingly demanding the school to render its accounts in terms of its effectiveness and efficiency. Thus, the concept of school accountability, be it kindergarten, elementary, secondary or tertiary institution, has come to stay.

As quoted by Joshua (1998b), there are five reasons given by Huberman (1973) that justify the demand for accountability in education. They are:

i) Convergence of criticisms on specific objectives of the school.

ii) Dissatisfaction of employers with school graduates;

iii) Dissatisfaction on the part of school graduates with the training given to them in schools.

iv) The rapid (and sometimes, astronomical) increase in educational costs; and

v) The apparent inability or failure of education in fulfilling the earlier promises in solving some societies'/ individuals' problems.

In reality, the returns from schools, vis-à-vis the huge investment in and great expectations from education are quite disturbing. Heyneman (1983) and Tsang (1999) have also lamented on the poor returns from schools, and have underscored the need for calling on schools to render their accounts.

The accountability movement is a product of two theories labeled as Theory I and Theory II by Aderounmu and Ehiametalor (1985). Theory I, which, grew out of business, military and industrial backgrounds, holds that accountability is an authoritarian process to be imposed on schools by legislation and mandate. It is rooted in the belief that teachers and administrators cannot be entirely trusted, and that learners, given a choice, would prefer not to learn. Thus, a system of accountability based on Theory I would have the following features:

i) The Ministry of Education or any such agency placed by government, defines the goals and objectives of education (these are product specification).

ii) Through testing programmes and monitoring of the schools' activities by inspectors of Education, the state determines which schools are most successful and which ones are least successful in realizing the set objectives

iii) The State makes decisions on funding on the basis of the effectiveness of the schools;

iv) The various local school administrators evaluate the performance of the professional staff members of their schools (the least effective ones are penalized, i.e. held accountable); and

v) Each school is made to issue to parents an annual report of its students' achievement-thus, the schools in competition with themselves will strive to handle the children as effective as possible (Aderounmu & Ehiametalor, 1985; Joshua, 1998a).

Theory II of accountability, on the other hand, is humanistic in outlook. Its tenets are rooted in the humanistic tradition. Humanism in education advocates total enfranchisement, equal rights, autonomy, individual differences, and definite obligations, among others. Theory II is based on the assumptions that:

i) Students learn more and better in environments in which planning is shared and communication is open, and within

which self-evaluations, independence and creativity are facilitated;

ii) It is possible and desirable to build non-manipulative organizational environments based on increasing self-control, and such organizations would be self- monitoring;

iii) People can generally be trusted –educators want to learn how to do their jobs better and kids, if given learning tasks which make sense to them and which they can do successfully, are eager to learn; and

iv) Accountability is basically a planning process in which those who are most affected by a plan are involved in its design and implementation.

Theory II recognizes the importance of local autonomy that requires schools to develop their own goals, objectives and curricula; it recognizes that there are more than one education philosophy, and that schools, if they are to wear humane faces, must, to a large extent, be shaped by the people in them (including the students). A system of accountability based on Theory II would have the following features:

i) The curriculum provides for individual difference among learners.

ii) The curriculum is goal- and objective – oriented;

iii) The curriculum provides many options for the pupil-initiated learning;

iv) Pupils' and teachers' rights and obligations would be defined;

v) Provision for diagnosis of learning difficulties and prescription of remedial learning activities;

vi) Overall progress of groups of learners is periodically measured and reported; and

v) Teachers assume the responsibility for planning and evaluating their own work (Esler, 1972; Adenounmu & Ehiametalor, 1985; Joshua, 1998a).

One of the first most dramatic crude effort to impose accountability in or for education was the incident in which the citizens of Anthens forced Socrates to swallow hemlock because they thought his influence on the youth was not in harmony with the values and perceived needs of their parents. In 1862, the Vice President of Britain's Committee of the Privy Council for Education, Robert Lowe, introduced a system of accountability and cost benefit payment or payments by result plan in England. In USA, accountability movement in public education was first observed in the statement of President Nixon in 1970 when he remarked that school administrators and school teachers were responsible for their performances, and that it was in their interest as well as the interest of their students that they be accountable. Since then, the concept or the movement has spread over the years and over many countries. The primary thrust in the movement was directed at school educators (teachers and administrators), but it has broadened over the years to include students, parents, and other non teaching personnel in the school system. Thus, many more are being asked or called upon to accept

responsibility for the achievement of educational objectives in schools (Adenounmu & Ehiametalor, 1985; Gorton, 1983; Joshua, 1998a).

What are the implications of accountability concept, movement and theories to teacher evaluation concept? These are many and varied. To demand for accountability from school is to hold school personnel responsible and accountable for the education of the school clientele. As Jewell (1990) puts it, its seems likely that with the growing public demand for accountability, teachers evaluations will be increasingly used for the purpose of providing information needed for determining in-service educational needs of teachers, as well as for making staffing decisions. Darling –Hammond et al (1983) put the implication this way:

> The demand for accountability in education has shifted from broad issues of finance and programme management to specific concerns about the quality of classroom teaching and teachers. These concerns have led to a resurgence of interest in evaluating teachers and to the development of new systems for teacher evaluation (p. 285).

Thus, school accountability movement has given rise to, or has strengthened the practice of teacher evaluation.

The two theories of accountability lead to two kinds of school accountability and to two kinds of data sought for during teacher

evaluation. Theory I leads to seeking for result–oriented data–hard data on teacher performance, attendance, students' standardized achievement scores and grade point averages. Here teachers give account by showing "how much learning", if any, occurs by their inputs. This is an efficiency or cost-effectiveness approach in education. Theory II leads to seeking for person–oriented data, and focuses an consumer's choice. Here teachers are rated by themselves, peers, students, superiors, and subordinates who describe the style of teacher's performance in terms of initiative, technical competence and interpersonal relationships. Lapses, when and where discovered, are highlighted for improvement (Aderounmu & Ehiametalor, 1985).

Personnel in education, especially teachers, have criticized the implementation of teacher evaluation that is solely aimed at meeting the accountability demands, especially the theory 1 aspect of it. The major reservation of teachers is that standards for them, and for the learners are likely to be set "from above", and the required level of performance may be unrealistic and unattainable. They fear being held as scapegoats when the school system does not meet the demands of the parents, society, employees, school boards and the relevant government agencies. They quickly point out that schools do not constitute the sole agency of change in a learner's education. Many other agencies (home, church, community and others) and other factors in the instructional environment interplay to influence or shape the extent of learning required in school.

To allay the fears and concerns of educational personnel with respect to teacher evaluation and to benefit from its rich blessings, Morphet et al (1974), have given the condition for achieving accountability in schools (from both theoretical bases):

i) Lay citizens and educators must reach agreement on the goals they expect to be achieved primarily through the schools;

ii) The goals and objectives must be stated in measurable terms;

iii) The responsibility for goal achievement must, as nearly as possible, be assignable and be definitely assigned;

iv) The resources for the achievement of the goals and objectives must be sufficiently and timely allocated;

v) The criteria to be used to access the degree of achievement must be specified; and

vi) The use to which the evaluation results will be put have to be specified in advance.

If these conditions are fulfilled, it is hoped that accountability will fulfill its own promise, which is that the system of education where it is properly implemented will deliver educational excellence characterized by effectiveness, equity and efficiency (Norman, 1992; Joshua, 1998b).

1.2.4 Professional competence evaluation

It is expected that in the society the competence of professional are evaluated regularly or at least once in a lifetime of a particular

professional. Evaluation of the competence of professional personnel has occupied the attention of educators, authors and other practitioners for centuries. A proper analysis of professional competence evaluation begins with defining a profession.

A profession involves a specialized intellectual study and training with the purpose of supplying skilled services or advice to members of the public, sometimes for a definite fee or salary. Professionals, therefore, are individuals who use technical or specialized knowledge and skill in service of the public welfare. Many professions have evolved, beginning with the three classic ones of medicine, law and clergy (including university teaching) to numerous new ones occasioned by the western industrial revolution and the expansion of opportunities in secondary and tertiary education (McGaghie, 1991; Joshua, 1998b).

Professional competence evaluation then, is defined as measurement(s), and subsequent interpretation of the data derived from measurement(s) that result in a judgement that an individual is fit to practice a profession autonomously. It is a periodic systematic gathering of information about the activities or performance of a professional so as to ascertain that the service delivered by him or her are effective and safe. Thus, the public is protected, from being served by incompetent hands or brains. The professional is equally protected. Periodic evaluation of his competence suggests to him when and why he should go for re-training or formal up-dating of knowledge / skills, and presents to him, the chart of his professional

growth and development. Thus, for successful and happy existence of the society and mutual respect and love among its members, the different personnel in the society's numerous professions need to go through periodic professional evaluations. This is to ensure that the lay, innocent and vulnerable members of the public receive the right kind of services they would indispensably need from competent providers of these services. It is also to ensure that the professionals themselves are constantly re-assessing and re-establishing their relevance in today's society with its peculiar phenomenal dynamics.

Professional competence is a construct. Thus, it is neither visible nor tangible. Its presence is referred from measurements, which could be crude or precise, that are assumed to be good indicators of expected competence. Evaluation of professional competence should, then, be expected to be characterized by many issues. These include: validity of professional competence measures, reliability of the measuring instruments or approaches, the role of the public in seeking for and or utilizing the evaluation results, who carries out the evaluation, and the rules of evidence. These are some of what McGaghie (1991) calls technical issues in professional competence evaluation.

Professional competence evaluation as necessary as it is, has not been satisfactorily, carried out ever since it assumed prominence. Although it has involved or led to credentialing, certification and licensing, the following flaws- which have led to dissatisfaction with

professional assessment have been identified and discussed by some authors (Davey, 1991; McGaghie, 1991; Shimberg, 1983).

As in other areas of life in the society, professionals are found in the area of education. Professional competence evaluation in education, then, would be the evaluation of the professional competence of various personnel involved or identified in the education sector. Educational personnel evaluation, refers to the assessment of the qualifications and/or performance of educators, including teachers, administrators, professional support personnel and other professionals who work in schools and other educational agencies. It is the systematic assessment of the performance and/or qualifications of the different professionals in education industry in relation to their roles and some specified, defensible institutional purposes (Joint Committee on Standards for Educational Evaluation, 1988). This sort of educational evaluation is critically necessary and important not only because the welfare of any society depends heavily on the effectiveness of its educational system, but also because societies need to guide and provide feedback on the selection, preparation and performance of educators. And given the centrality of teaching in schools, there is no doubt then that research and development of educational personnel evaluation has focused substantially on teaching and its professionals.

Thus, the concept, practice and principles of, and the societal requirement for, professional competence evaluation provide the rationale, and perhaps, the clamour for teacher evaluation systems in

schools. As teachers are the major agents in the production function of schools, such periodic assessment and evaluation of the teacher could help to ensure that the teacher grows professionally and that the society is guaranteed efficient, effective and safe services, and is made to know when to intervene should the teacher becomes incompetent (and unable to improve), irrelevant and, perhaps dangerous to the innocent and vulnerable learning community of the society (Joshua, 1998a; Idaka, 2005).

1.2.5 Okpala teaching evaluation model

Obanya (1985) and Okpala (1999) and Onocha (1994) perceived evaluation of teaching effectiveness as an integral part of linocyclical teaching-learning activities in educational institutions. This is illustrated in figure 2. Okpala (1999) states that as shown in the figure, each stage of the teaching - learning process is subject to evaluation and the evaluation data from each stage could be used to influence decision making about what should happen in the other stages. Usually what to evaluate is in three parts (input, process and output), which can still be split into more specific components with associated evaluation criteria.

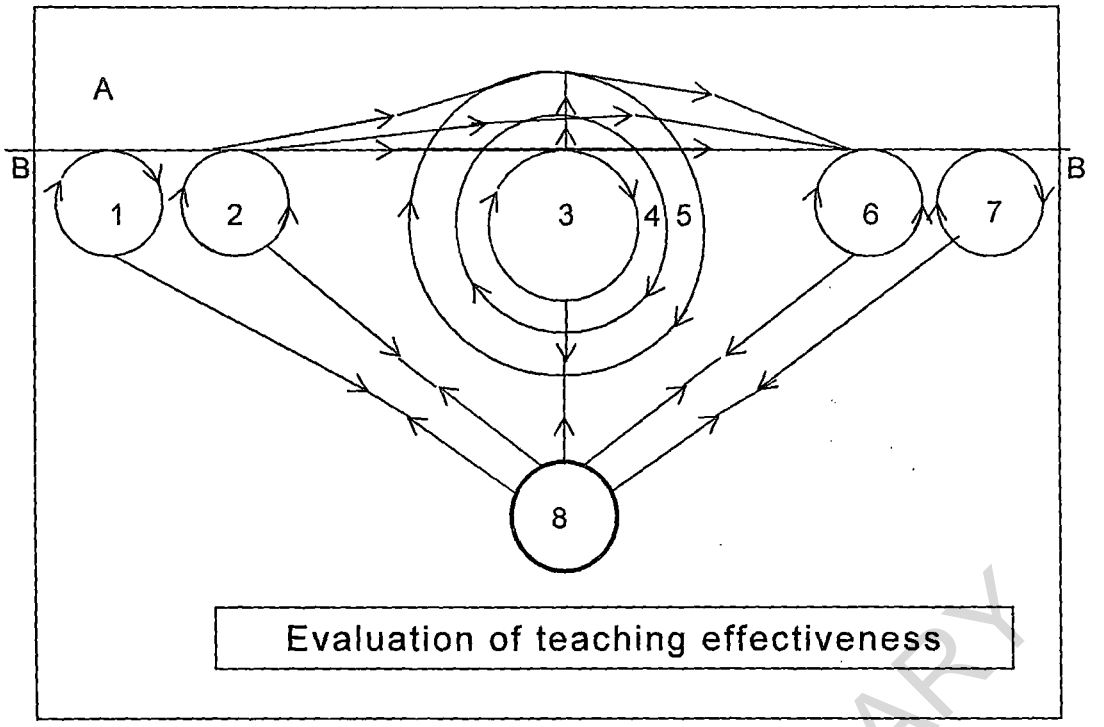

Fig. 2: A model for evaluating teaching effectiveness

Source: Okpala (1999)

Key:

1. Antecedent conditions
2. Teaching objectives
3. Contents and materials
4. Teaching methods
5. Learning experiences
6. Organization of learning experiences
7. Learning outcomes
8. Evaluation instruments

A = School

B = Society

More specifically the three parts cover evaluation of:

i) Antecedent conditions which focus on teachers (with reference to qualification, experience, professional activities, etc), student (with regards to intellectual ability, specific subjects skills, interest, social-economic background, motivation, etc), and learning environment (e.g. school setting, administration, economic resources, etc). The instruments for data collection include tests, questionnaires, checklists, etc.

ii) Teaching objectives which is conducted to ensure that the objectives are related to the desired educational goals/aims; likely to contribute cumulatively to the attainment of these goals/aims; clearly stated to show behavioural and content quality characteristics; appropriate for students at the particular level of education and stage of mental development; attainable by the students at the particular level of education and stages of mental development; important enough to encourage further learning by students in their next class or in related subjects; consistent with the educational or social philosophy of the school; and in conformity with the conditions intrinsic in learning.

iii) Contents and materials to ensure their relevance to teaching objectives, up to-dateness and relevance to learner and environment. The evaluation instruments

should include questionnaire and rating scales with curriculum specialists, subject-matter specialists, experienced teachers, teacher educators and psychologists as possible respondent.

iv) Teaching methods to ensure that the methods are potent (in terms of improving learning outcomes), economical and usable by practicing teachers in specific school settings under consideration. The teachers' perfection on the teaching method could be analyzed in terms of the following interaction patterns: pupil-pupil interaction, pupil-material interaction, teacher-pupil interaction and teacher-material interaction. This would invariably require observing the teachers in actual classroom situations using a variety of observational instruments. Such observational techniques could also provide the basis for analyzing teachers' perfection on the teaching method in terms of monologue (teacher talking non-stop), confusion (noise, students playing, class disorganized, etc) and the extent to which the teacher is not facilitating learning (punishing, distracting attention, using negative reinforcement, giving notes, etc).

v) Learning experience to ensure that the experiences give the students an opportunity to practice the kind of behaviour implied by the teaching objectives; deal with the kind of content implied by the objectives, obtain

satisfaction from carrying out the kind of behaviour implied by the objectives; engage in activities that are within their present educational attainment, socio-economic background and mental set; acquire several positive learning outcomes; and attain the same educational objective through varied experiences. It would be best to do this through empirical evaluation of the learning outcomes of a trial teaching, else judgment and opinions of several experts may help.

vi) Organization of learning experiences to ensure that the experiences have the attributes of recurrence/continuity, sequence and interaction.

vii) Learning outcomes (products) at the cognitive, affective and psychomotor psycho-productive domains to ensure quality, quantity and relevance (with respect to the society).

viii) Evaluation instruments and procedures to ensure that they are valid, reliable and usable.

Okpala (1999) contends that evaluation of teaching effectiveness is large in scope; from the input through the process to the outcomes of the teaching. Such evaluation (even when it is focused on a small classroom unit) would need time, money, materials and quality manpower to accomplish. He thus suggested that for meaningful in-depth evaluation study of teaching effectiveness in our schools, individual/small group efforts should focus on one specific

aspect of what could be evaluated e.g. teaching methods, learning outcomes, teaching effectiveness, and so on. It could even be focused on a sub-component of a specific aspect and evaluation of teaching effectiveness could be by the teacher, student or observer.

Based on this suggestion, this study is aimed at evaluating some components of the antecedent conditions, namely: teaching effectiveness of academic staff, with respect to, knowledge of subject matter, classroom communication skills, effective teaching methods/strategies, classroom management, ability to motivate students, relationship with students, and evaluation of students learning activities. All these relate to specific components of Okpala's model with associated evaluation criteria. With the model as a framework, influence of teachers' age, gender, discipline, academic qualification, professional status (rank), and teaching experience on the level of their teaching effectiveness in University of Calabar were also explored.

1.2.6 JUBO model for evaluating teaching effectiveness

A study of this nature would have preferred to explore theories associated with teacher evaluation to discussing models of teaching effectiveness. Incidentally, experts in teacher evaluation have not yet agreed as to what should constitute such theory or theories because of their divergent views regarding the nature and purpose of assessing teachers. Until we have a theory of teacher evaluation, we are constrained to fall back on teacher evaluation models for evaluating teachers and teaching effectiveness. It might appear superfluous, but

is pertinent at this point to state that for purposes of clarity, assessment of teacher effectiveness is a form of evaluation.

Joshua–Ubi-Bassey-Offong (JUBO) Teacher Evaluation Model was also adapted for this study. JUBO Teacher Evaluation Model developed in 2003 is a model where the teacher is seen as a dominant practitioner and professional in the school system; a model which promotes dialogues among colleagues or peers etc, and recognizes and considers the uniqueness and independence of each classroom, teacher, school (and its management structure) and school community. The model, which enables teacher to thrive naturally in the school organization, where professionalism is emphasized alongside with reflection, collegiality and educative relations. A model which focuses on both formative and summative evaluations. A model which addresses instructional and professional improvement by setting goals and constantly refining them after periodic assessments; a model that may not be too loose for effective management. A model in which the teacher is allowed or given freehand to analyses the needs of their students, assess the resources available, decide on the instructional strategies judged to be appropriate. A model in which teachers are encouraged to constantly and regularly assess themselves to ensure that they are relevant to the system in performing their roles.

Teacher evaluation is perceived as an integral part of linocyclical teaching–learning activities in schools. As shown in figure 3, teachers can be evaluated through nine main approaches. These include: classroom observation, students' rating, students'

achievement, peer rating, parents' rating, self rating, teacher interview, competence test, and direct measures. Usually what to evaluate is in three parts (input, process and output) which can still be split into more specific components with associated evaluation criteria. More specifically, the evaluation focuses on characteristics of an effective teacher as shown in (2) in Figure 3.

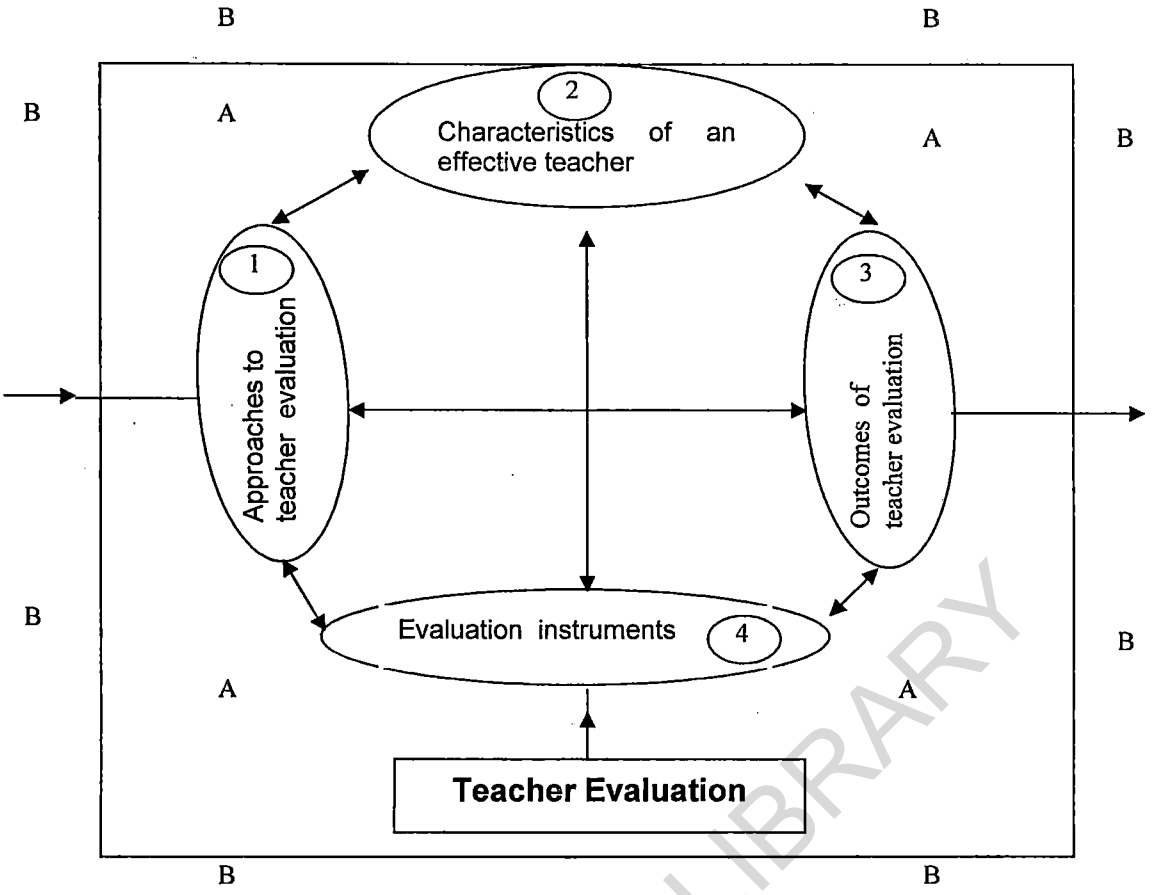

Figure 3: Joshua-Ubi-Bassey-Offong (JUBO) Teacher Evaluation Model.

Key:

1

- Classroom observation
- Students' rating
- Students' achievement
- Peer rating
- Parents' rating
- Self-rating
- Teacher interview
- Competence test
- Indirect measures

2

-Good speaking ability /Communication skills
-Favourable attitude toward students
-knowledge of subject matter/course
-Good organization of subject matter
-Enthusiasm about subject /course
-Fairness in examination and grading
-Willingness to experiment
-Encouragement of students to think

3

- Improve classroom performance
- Improve professional development
- Improve student achievement
- Assess effectiveness of teaching
- Improve Curriculum
- Assist teachers in identifying weak areas
- Select teachers for promotion, demotion, tenure, sack, etc

4

-Questionnaires
-Opinionaires
-Checklists
-Rating Scales
-Observations
-Interviews

A = School Environment
B = Society.

In the light of the above model (Figure 3), it could be said that teacher evaluation criteria is large in scope, from the input (approaches to teacher evaluation) through the process (characteristics of an effective teacher) to output (outcomes of teacher evaluation). Such evaluation would need time, money, materials and quality manpower to accomplish. It is thus suggested that for meaningful in-depth evaluation of teachers in our schools, individual/ small group efforts should focus on one approach of evaluating the teacher, for example, students' ratings, etc. However, their collective and comprehensive evaluation of teachers is the demand of this new model (JUBO Teacher Evaluation Model).

Teacher education institutions in Nigeria seem to practice a bit of multidimensional approach to conducting evaluation of teachers. These institutions need to re-assess what is evaluated in the teacher with the view to removing all duplications and thus create more time which could be used to improve teachers' quality of teaching and the associated evaluations. In all, Joshua, Ubi, Bassey and Offong's (2003) Teacher Evaluation model is adapted for this study as it will help unfold the interplay of the characteristics of an effective teacher, students' rating as an approach to teacher evaluation, outcomes of teacher evaluation using questionnaire as an evaluation instrument without any threat or harm to the teachers involved in the teaching of the students.

1.3 Statement of the problem

Concerned watchers of tertiary educational sector in Nigeria have consistently complained about the falling standard of education, as reflected in poor quality of Nigerian graduates. Many critics have indicted lecturers for the prevalent poor performance of students. It is widely believed that despite improved educational qualification of lecturers, they are mostly not as conscientious to their duties as it is expected of them. Maiwada (2001) attributes the falling standard of tertiary education in the country to the inability of the institution's administration to evaluate the standard of lecturers. Maiwada lamented that nobody cares to find out how lectures were being conducted, what were the qualities of the lecturers and their degree of preparedness to the lesson taught. According to Maiwada, to get out of this doldrum, school administration should institute workable evaluation team to tackle this cankerworm in our educational system. Those to evaluate lecturers, Maiwada opines, should include students. This becomes the source of motivation for this study.

Schools and teachers in developed nations of the world have recognized the role of personnel evaluation, and have harnessed the immense importance, and contributions of this exercise for the good of the school systems and the teaching profession. In Nigeria, however, the practice of teacher and other personnel evaluation by students is yet to receive needed attention. Some academic staff tend to believe that it is an invasion of their privacy for anybody to ask about how they are teaching their courses, what the outcomes of their

teaching are in the learners, and whether there could be room for improvement.

It is expected that higher education provided by universities should develop in the graduates a certain number of specific skills (such as analytical power skill, communication skill, problem solving skill, team spirit skill, creativity, versatility, long-life learning skill, and information technology skill) to a level that will ensure continued creative productivity of the individual. It is doubtful whether the teaching of courses in University of Calabar has been effective enough to produce the skills so identified above in Nigerian graduates these days. Thus, the problem of this study is to provide answers to these questions: As assessed by their students, how effective in their teaching are academic staff, faculty-by-faculty in University of Calabar, Nigeria? How are the academic staff's teaching effectiveness influenced by their personal/demographic variables?

1.4 Purpose of the Study

The major purpose of this study was to determine how effective academic staff, faculty-by-faculty, in University of Calabar are in their teaching, as evaluated by their students.

Specifically, the purpose of this study was five-fold:

To determine:

1. The extent of teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

2. The influence of academic staff's gender, age, subject matter area, qualification, rank, and teaching experience on their teaching effectiveness, each with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

3. The interaction effect of academic staff's gender, discipline, and rank, on their teaching effectiveness with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

4. Whether the evaluations of academic staff's teaching effectiveness made by male students is different from the evaluation made by female students, with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

5. The ranking, faculty-by-faculty, of teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

1.5 Research Questions

This study was designed to answer the following questions:

1. How effective are academic staff in University of Calabar in their teaching, as evaluated by their students, with respect to:
   a) knowledge of subject matter?
   b) classroom communication skills?
   c) effective teaching methods/strategies?
   d) classroom management skills?
   e) ability to motivate students?
   f) evaluation of students learning activities?
   g) relationship with students?
   h) overall teaching effectiveness?
2. What is the influence of academic staff's gender, age, subject matter area, academic qualification, rank, and teaching experience on their teaching effectiveness with respect to:
   a) knowledge of subject matter?
   b) classroom communication skills?
   c) effective teaching methods/strategies?
   d) classroom management skills?
   e) ability to motivate students?

f) evaluation of students learning activities?

g) relationship with students?

h) overall teaching effectiveness?

3. What is the interaction effect of academic staff's gender, discipline, and rank, on their teaching effectiveness with respect to:

a) knowledge of subject matter?

b) classroom communication skills?

c) effective teaching methods/strategies?

d) classroom management skills?

e) ability to motivate students?

f) evaluation of students learning activities?

g) relationship with students?

h) overall teaching effectiveness?

4. Is the evaluation of academic staff's teaching effectiveness made by male students different from the evaluation made by female students, with respect to:

a) knowledge of subject matter?

b) classroom communication skills?

c) effective teaching methods/strategies?

d) classroom management skills?

e) ability to motivate students?

f) evaluation of students learning activities?

g) relationship with students?

h) overall teaching effectiveness?

5. What is the mean ranking, faculty-by-faculty, of the teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, with respect to:
   a) knowledge of subject matter?
   b) classroom communication skills?
   c) effective teaching methods/strategies?
   d) classroom management skills?
   e) ability to motivate students?
   f) evaluation of students learning activities?
   g) relationship with students?
   h) overall teaching effectiveness?

1.6 Hypotheses of the study

The following hypotheses were tested in this study:

1. The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly high, with respect to:
   a) knowledge of subject matter
   b) classroom communication skills
   c) effective teaching methods/strategies
   d) classroom management skills
   e) ability to motivate students
   f) evaluation of students learning activities
   g) relationship with students
   h) overall teaching effectiveness

2. The teaching effectiveness of academic staff in University of Calabar, is not significantly influenced by their gender with respect to:

   a) knowledge of subject matter
   b) classroom communication skills
   c) effective teaching methods/strategies
   d) classroom management skills
   e) ability to motivate students
   f) evaluation of students learning activities
   g) relationship with students
   h) overall teaching effectiveness

3. The teaching effectiveness of academic staff's is not significantly influenced by the age of the academic staff, with respect to:

   a) knowledge of subject matter
   b) classroom communication skills
   c) effective teaching methods/strategies
   d) classroom management skills
   e) ability to motivate students
   f) evaluation of students learning activities
   g) relationship with students
   h) overall teaching effectiveness

4. Academic staff's discipline has no significant influence on the teaching effectiveness of academic staff with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

5. Academic staff's qualification has no significant influence on the teaching effectiveness of academic staff, with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

6. The teaching effectiveness of academic staff in University of Calabar, is not significantly influenced by their rank (professional status), with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

7. The teaching effectiveness of academic staff in University of Calabar, is not significantly influenced by their number of years in teaching (teaching experience), with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

8. There is no significant interaction effect of gender, discipline, and rank, on the academic staff's overall teaching effectiveness.

9. The evaluation of academic staff's teaching effectiveness made by male students is not significantly different from the evaluation made by female students, with respect to:

a) knowledge of subject matter

b) classroom communication skills

c) effective teaching methods/strategies

d) classroom management skills

e) ability to motivate students

f) evaluation of students learning activities

g) relationship with students

h) overall teaching effectiveness

1.7 Significance of the study

The lecturers who are implementers of the curriculum will gain much from the findings and conclusions of this study. They will identify their personal and professional characteristics, which impact on effective teaching and strive to beef up the positive aspects while reducing and correcting the negative aspects. This will manifest in enhancing effective teaching of courses in our Universities.

The students or learners in the university system also stand to gain from the findings of the study. Lecturer evaluation results are used, among other things, to improve instruction; and students are the direct beneficiaries of such improvement. A strategy that could lead to improvement of instruction is one that should be readily embraced by those who wish the students well in their learning encounter, and by those who are active agents in the teaching –learning processes in our universities.

The university administrators and educational planners will benefit immensely from the findings of this study. They will be able to mount comprehensive supervising role on lecturers during and after

giving of instructions so as to ensure the appropriateness and effectiveness of their teaching. This will generally improve lecturer instructional strategies and indeed teaching effectiveness.

The teaching profession itself will gain from the findings of this study, in that the findings will show how important student evaluation of instruction for improving teaching profession, and why lecturers should embrace this phenomenon.

Parents and the society at large have a stake in the findings of this study. Accountability is one of the theoretical bases underlying the concept of teacher evaluation. It posits, among other things, that lecturers should be held responsible, and therefore accountable for the outcomes of education evident particularly in the behaviour and performance of students. This concept of accountability in education requires more relevance in the present day Nigeria where returns from schools are anything but impressive (Joshua, 1998a). The qualities of our graduates are quite embarrassing not only to the parent, but also to the potential employers (Joshua, 1988; 1994; Tsang, 1999). Implementation of the findings of this study could help in reversing this trend.

The educational research community in Nigeria will also benefit from the findings of this study. Most of the studies in students' evaluation of lecturers teaching effectiveness in all manner of courses are foreign- based. The Nigerian researchers have done very little or nothing in this strategic research area. The findings of this study will add to the knowledge bank in this area. The findings will also

generate necessary interest in educational research community for more studies in the locals setting to emerge. The educational research community will benefit a great deal from this development.

1.8 Assumptions of the study

While conducting this research, it was assumed that:

1. Teaching effectiveness is a measurable construct.
2. Lecturers' and students' characteristics are measurable.
3. There are individual differences in academic staff's level of teaching effectiveness.
4. There are individual difference in students' evaluation of teaching effectiveness.

1.9 Scope of the study

The following constituted the scope of the study:

1. This study was conducted in the University of Calabar, Calabar, Nigeria. Although this may suggest the problem of generalization of its findings to other universities in Nigeria, it is hoped that, given the general characteristics of academic staff and students which may not change with university boundaries, and with the sampling technique adopted, the respondents in the study sample were quite representative enough to warrant generalizing the study findings beyond University of Calabar, Nigeria.

2. Undergraduate students were used in this study, thereby discriminating against other students in the remedial, certificate and diploma classes. This was done on the grounds that the sampled students were mature and had gained enough exposure to university environment as to correctly appraise or evaluate their lecturers' level of teaching effectiveness.

1.10 Limitations of the study

1. The study operationized and measured the variables-teacher/student characteristics, teacher professional characteristics and students evaluation of teaching with the researcher questionnaire. Research conception of the variables may not be comprehensive enough to integrate all possible elements related to the variables. Not knowing the dimension of such shortfall, it is recognized thereby as a limitation.
2. The teaching effectiveness was operationalized as inputs from the teacher in the teaching–learning situation designed to enhance effective learning. It is possible that other extraneous variables may have affected the eventual perception of teaching by the students. Since such influence is unknown to the researcher, it is recognized as a limitation.
3. Only questionnaires were used as instrument of measurement. The study was not able to guarantee 100 per cent insulation against extraneous variables that may have affected respondents' mental and emotional well-being during the completion of the questionnaire.

CHAPTER TWO

LITERATURE REVIEW

The review of literature for this study was organised under the following sub-headings:

1. Eight typical concerns of students' evaluation of instruction.
2. Students' evaluation of teachers/teaching effectiveness.
3. Academic staff's professional characteristics and teaching effectiveness.
4. Academic staff's gender and teaching effectiveness.
5. Academic staff's age and teaching effectiveness
6. Academic staff's subject matter area (discipline) and teaching effectiveness.
7. Academic staff's qualification and teaching effectiveness.
8. Academic staff's rank and teaching effectiveness.
9. Academic staff's teaching experience and teaching effectiveness.
10. Students' gender and their evaluation of academic staff's teaching effectiveness.
11. Summary of literature review.

2.1 Eight typical concerns of students' evaluation of instruction.

Aleamoni (1987) identified eight typical concerns of students' evaluation of instruction as follows:

The *first* concern is that students cannot make consistent judgements concerning the instructor and instruction because of their immaturity, lack of experience, and capriciousness.

Second, academic staff expresses a widely held belief that only colleagues with excellent publication records and experience are qualified to evaluate their peers' instruction. In fact, Deming (1992) maintained that such colleagues were the only ones who could qualify as good instructions.

The *third* typical concern is that most student rating schemes are nothing more than a popularity contest with the warm, friendly, humous, easy-grading instructor emerging as the winner every time.

Fourth, many academic staff believe that students are not able to make accurate judgements concerning either instruction or instructor until they have been away from the course, and possibly away from the institution, for several years.

The *Fifth* concern consists of a general indictment of student-rating forms: many faculty members maintain that these forms are both unreliable and invalid.

The *sixth* concern is that any of several extraneous variables, or conditions, could affect student ratings. Some of these conditions include: the size of the class; the gender of the students, the gender of the instructor, the time of the day that the course is offered, whether the students are taking course as a requirement or as an elective; whether the student is a major or a non-major in the field; the term or

semester that the course is offered; the level of the course (freshman, sophomore, junior, senior, or graduate); and the rank of the teacher.

The *seventh* concern is that the grades or marks that the students either expect to receive or actually receive are highly related to their rating of both the course and the instructor.

And finally, the *eighth* concern is that faculty members frequently ask how student – ratings or evaluations can possibly be used to improve instruction.

Now let us consider what the research indicates about each of these concerns. *First*, are students really immature or lack the experience necessary to make consistent judgements on instruction? If we examine the research (Guthrie, 1954; Costin, Greenough, and Menges, 1971) and concentrate only on the studies that used reliable and valid instruments, then we find evidence that students' judgements tend to be pretty stable. In fact, Cooper and Petrosky (1996) pointed out that even students at secondary school level tend to be fairly consistent in what they are saying about instructor and instruction.

Second, Deming (1992) claimed that only colleagues with excellent publication records and experience can, in fact, qualify as good teachers and therefore are the only ones in a position to judge good teaching does not hold up to any reasonable examination. Aleamoni and Yimer (1973) conducted a fairly comprehensive study at the University of Illinois, tracing the publication records and experiences of the faculty. The relationship found between colleague

ratings of instructional effectiveness and research productivity, as judge by the number of scholarly publications or by appropriate creative work in the area of music, art, and so on, was .07. The relationship between student ratings and faculty productivity was-.04. There are no significant difference between the two relationships. Aleamoni and Yimer (1973) also found that correlation between the colleagues rating of instructional effectiveness and the student ratings was quite high: .70. The first time this figure was presented to a faculty group, somebody said, "well, what do you expect? How do you think we learn about so-and–so was terrible, and so-and–so was great, and so forth. That is where we get the information". Aleamoni and Yimer drew on another study (Starllings and Spencer, 1967) to control for bias. The result correlation had the same magnitude in several other places (Linsky & Straus, 1975; Marsh, 1987).

Third, many studies address the concern that most student ratings are nothing more than popularity contest. Grush and Costin (1975) for example, looked at students' personal attraction to teachers compared that attraction to how highly the students rated instructors and found a very low correlation. Abrami, Leventhal, and Pery (1992), in examining educational seduction and the influence of instructor personality on student ratings, also maintained that higher ratings could not be attributed simply to the fact that the instructor was providing a nice, friendly, humorous atmosphere in the classroom; the students are much more discriminating than that. In addition, Aleaomi (1976) looked at thousand of subjective written

comments from students compared them to objective ratings, and noted that the students are not easily fooled. In rating their instructors, students discriminate among various aspects of teaching ability: if a teacher tells great jokes and has the students in the palm of his or her hand in the classroom manner, he/she will receive high ratings in humour and classroom, but these ratings do not influence students assessment of other teaching skills.

The *fourth* concern–that students cannot make accurate judgements until they have been away from the course or possibly away from the school for several years–was the focus of early studies at Purdue by Drucker and Remmers (1950; 1951). They asked graduates who had been out of the institution for five and ten years to rate the instructions with whom they had studied and who still happened to be at Purdue. Then researchers asked current students to rate the instructors on the same basic dimensions. Drucker and Remmers found a high positive relationship between the two sets of assessments. Replication was conducted at the University of Ilinois, by asking graduating seniors to look back at their first two years of college (Aleamoni & Yimer, 1984). This procedure was repeated at the University of Washington and the University of California, Los Angeles (Marsh, 1987) and resulted in similar findings: a high positive relationship between the judgements made by students who had been away and those made by students who were currently taking the course.

Regarding the *fifth* concern about the reliability and validity of student–rating forms, it is true that these forms will be unreliable if they have not been professionally constructed and tested. However, looking at some of the well–established instruments in vogue, we can find a number of fairly reliable forms, with reliability of the total instrument measuring .90 and above. Examples of these instruments are Educational Testing Service (ETS) instrument, Student Instruction Report, the Kausas State Instrument, Instructional Development and Effectiveness Assessment, The Arizona Course/Instructor Evaluation Questionnaire.

Concern number *six* looks a extraneous variables, eight categories of which were identified. The majority of the research indicate little or no relationship between such variables as class size, gender of the student or gender of the instructor, the time of the day that the course is offered, the major or non-major status of the student, or the term or semester that the course is offered, and the way in which students rate a course or instructor. However, the variables that distinguish a required course from an elective and that identify courses by level (freshman, sophomore, and so on) do seem to generate significant differences in students taking the course as a requirement, the lower the overall rating.

Freshmen tend to rate their teachers significantly lower than the sophomores. Sophomores tend to rate them significantly lower than the juniors and so on. A multivariate analysis conducted by Aleamoni and Graham (1974) indicated that the class size or time of the day

seemed to have a significant effect, but once one stratified by the level of the course, those effects were no longer significant. So course level should be taken into account when student – rating results are adopted.

Many faculty members are convinced that the grades or marks the students receive or expect to receive, are highly related to their ratings. Much research has been conducted in this *seventh* area of concern. If we plot the correlations from these studies, we would see a nice well – shaped curve, where the mean, median and mode would be close to zero correlation with a standard deviation of approximately .16. This should be surprising, since grades are notoriously unreliable, anyway, and they do not necessary reflect what the student has actually learned.

On the final question of whether students' evaluations can possibly be used to improve instruction, Aleamoni (1976), McKeachie and others (1982) at the University of Michigan, and Stevens and Alimony (1985), all basically demonstrate that, if we provide feedback from a consultant along with the standard computerized output, we will see instructional improvement as a result.

2.2 Student evaluation of teachers/teaching effectiveness

Teaching is effective to the extent that the teacher acts in ways that are favourable in developing skills, understanding work habits and desirable attitudes in the students (Ryans, 1980). The attributes favourable for such actions according to Ndinechi (1990:14) are "a sympathetic attitude towards his students, a thorough knowledge of

his subject matter, confidence in his own ability to teach, a cooperative spirit with co-workers and a constant interest in expanding his knowledge and that of his pupils".

This study is based on using the students to assess their teachers. It is therefore pertinent to review literature on student evaluation or perception of what constitutes effective teaching. Students' opinions are important but a widely misunderstood tool for evaluating teaching effectiveness (Gerstman, 1995). Although society is the final consumer of the product of education, students are the direct recipients. Rao (1979) says that students spend about 50% of their waking life in the school and 70% on school related activities. Therefore they are in a better position to assess their teachers more accurately.

Mention has been made of student evaluation of teachers and their perception of teachers' effectiveness (Yoder, 1993; Papandreou, 1995; Norton, 1996; Karle–Weist 1990; Camadena, 1991). A few other relevant studies are worth reporting here.

Rutter (1979), analyzed students' rating of 58 teachers in two subjects on teaching effectiveness. Teachers that ranked high by students' perception were those in general "likeability", who took personal interest and responsibility in the students' performance and for management and discipline in their classrooms.

Karabenick (1992) examined how perceived teacher support of classroom questioning related to other dimensions of teacher effectiveness, and to antecedent of classroom questioning. This study

evaluated end–of–term ratings by 806 college students from 39 classes and come out with the following findings:

1) Perceived teacher support of questioning is highly rated to the effectiveness with which teachers present materials (e.g. organization and enthusiasm) and their rapport with students.
2) Teacher effectiveness dimensions of presentation and rapport influence the likelihood of students as perceived teacher support.
3) Perceived teaching effectiveness and support of questioning are inversely related to the likelihood of students confusion; and
4) Perceived support and effectiveness influence the likelihood of student questioning directly by virtue of difference in whether students have questions and their hesitation to ask them.

The summary of these findings is that perceived teacher support significantly influence student achievement and their rating of teacher's effectiveness.

Shaw (1991) examine the idea that a major aspect of improving the effectiveness of schools hinges on obtaining a better understanding of what it is that makes teachers effective. The research surveyed 178 university students from Botswana (n=54), Zimbabwe (n=54) and the United State (n=70) who were training to be teachers. The study asked what the teacher trained remembered of

their primary school teachers and sought to identify characteristics associated with effective and ineffective teachers. Among the findings of the study was that US students tended to place more importance on personal skills as a measure of teacher effectiveness. While students from Botswana and Zimbabwe tended to give greater weight to instructional skills.

The findings expressed one of the differences in opinion of students as to what they perceive as characteristics of effective teaching. Other studies have shown that these difference cuts across culture and geographical boundary (Shaw, 1991 and Yoder, 1993), sex (Ogden, 1994) good and poor student (Papandreou, 1995; Norton, 1996). And age of student, (Comadena, 1991; Martin, 1990). Thus the criticisms leveled against the use of student ratings for evaluating teaching hinges on these differences.

However, Rao (1979), Yoder (1993), Papandreou (1995) and even Shaw (1991) argue that this is not enough. They will hold the view that students are the best sources of feedback and evaluation of their teacher. Rao (1979) stated that in establishments like the Indian Institute of Management, students not only evaluate their faculty members, but publicize the result and put them on the notice board. Students' feedback is therefore most important for correction and forms part of the growth and development of the teachers.

2.3 Academic staff's professional characteristics and teaching effectiveness.

2.3.1 Knowledge of the subject matter and teaching effectiveness

It is generally known that for the teacher to convincingly earn the respect of his colleagues and students alike, he must demonstrate sound and/or high degree of knowledge of his discipline. This view presupposes that such a teacher has got a sound academic training in the subject, has undergone a professional course in teaching and maintained a continuous academic growth. Maryberry (1998) is of the view that a solid background in a subject content plus some familiarization with effective pedagogical techniques need to be part of a teacher's academic training, which aimed at making him competent.

Nwadiniqwe (1998) opined that an effective teacher should not only be conversant with the basic and up to date facts in his discipline but should be able to relate such fact to local and world phenomena. He alluded that this can be achieved if the teacher continuously updates attendance at seminars, workshops and conferences and remaining currently informed by reading journal articles and researching for effective teaching.

Osibodu (1986) in a study of undergraduate student perception of University teachers' knowledge of the subject matter reveals that as large as 29% of the students felt their teachers were limited in knowledge of the subject matter. 6% felt that they were seriously deficient. Another 41% say their instructors only occasionally welcome differences in opinion while 15% say their teachers never

accept divergent views. That gives a whooping 56% of instructors who are resistant to alternative ideas and perhaps, change. This situation is not healthy nor is it consistent with the dynamic nature of knowledge and the rate of obsolescence of old ideas. It is therefore not uncommon to find teachers who give out information which is not current.

Amadi (1987) posits that knowledge of subject matter should be a key element in curriculum design for teacher education. Such knowledge will form the basis for developing, skills and competences in subject matter preparation and subsequently constitute veritable tools for effective classroom teaching. Tsui and Cheng (1997) posit that teacher effectiveness includes three domains of subject competencies. One of which is the cognitive, where the teacher builds a reservoir of knowledge of subject matter and skills for impartation of content to students.

Adeyemo (1994) opines that teachers understanding of the subject matter are basic to effective teaching. Teacher education curriculum should contain high percentage of knowledge of subject matter which the teacher is supposed to teach. In the same vein, the Nigerian Educational Research Council (NERC) in a document in 1977 states that any one who teaches (a subject or course) should know that subject or course, like it, and continue to teach it and should be able to communicate well with the learner and understand its learning process. Here lies the essence for the possession of knowledge of the

subject matter which is a basic criterion for effective teaching of any subject. With this knowledge, the teacher will be able to:

1) Present materials appropriate to the stated purpose of the lesson.
2) Demonstrate command of the subject matter
3) Show enthusiasm for the subject matter and its presentation, and
4) Encourage student involvement and performance in the course.

Bransford (1999) summarizes the view aptly by saying that if education is to help students make sense of their environment and prepare them for the challenges of a technologically driven and internationally competitive world, then it must be based on current knowledge. Available teachers must possess that knowledge and know how to transmit it to their students. Whether academic staff in University of Calabar, as evaluated by their students, possess significant knowledge in the courses they teach is the concern of this study.

2.3.2 Classroom communication skills and teaching effectiveness

Hardly there is a class in which the teacher does not in one way or the other communicate with the learners. The need for communication thus becomes very obvious in any teaching–learning process. This is because the ultimate purpose of acquiring knowledge is to use it for communication. Students at any level are therefore deliberately being exposed to various forms of activities that would

lead to effective communication; they have to speak, write, debate, argue, read, etc. For students to accurately carry out the above tasks demands that the teacher himself must communicate effectively the desired learning experiences to the learners. Where this is lacking, we believe that learning might not be facilitated. This is why this study proposes that effective classroom communication skill should be one of the attributes of effective teaching.

Uwazurike (1990) sees effective communication as the ability of the receiver of a message to respond in the intended manner. He however, readily warns that all communication must not be responded to as in the case of one-way communication, where it is often expected that all responses must be favourable. Speaking specifically about classroom communication, Uwazurike (1990) argues thus:

> For classroom communication to be effective, the teacher should be able to elicit desirable response that will enhance teaching–learning experience. For the classroom teacher to effectively communicate, what is communicated must have relevance to the students. When the classroom teacher has been able to persuade the student that their learning experience is meaningful, communication becomes effective (p. 37-38).

According to Agbi (2004) in the classroom, the basic elements in communication include the communicator (the teacher), encoding (the language), message (the medium), decoding (interpretation), receiver (the students), feedback and noise (distraction). In simple

terms, the teacher (communicator) has an idea (or message of instruction) to transmit to the receiver (student). To transmit the idea, the teacher must translate the idea in to a meaningful form (encoding) and send the message by verbal or non-verbal means (medium). The message is received through the sense of the student (receiver) and translated into a meaningful form (decoding). With a nod of the head, a facial expression, or some action, the student acknowledges whether understanding has been achieved (feedback).

From the above illustration, it is obvious that communication is a two-way process. It involves the act of sending and that of receiving. Thus, the teaching–learning process being a human relations process demands a ready flow of information between the parties involved. The resultant effect of this process is an atmosphere of trust and mutual respect which is a foundation of good team work, effective teaching and learning.

Light (1996) opines that the teacher must first know what and to whom he wants to communicate, and then decides on the best means of doing it. It is no exaggeration that because of the lack of proper understanding of the communication process, many a good lecture may not have traveled beyond the mind of the lecturer/teacher.

According to Inyang–Abia (1988), classroom communication involves deliberate arrangement of learning interactions and activities to change, modify and assess the behaviour of the learner. It is intentional because the teacher predetermines the effects his interactions will have on the learner.

The fact that communication is a process, pre-supposes that it could be carried out in stages. In this, connection, Langerman and Smith (1999:234), have identified six sages associated with effective communication management:

i) A message originates in the mind of the individual who is a sender;

ii) The message is encoded or put in the form which the sender believes will be understood;

iii) The message is transmitted orally or in writing;

iv) The person(s) for whom the message is intended receive(s) it;

v) The receiver must decode or put the message in a language he/she understands;

vi) Based on understanding and reaction, the receiver reacts to the message and in most cases, to the sender.

We wish to modify Langerman and Smith's (1999) suggestions above by stating that messages could be transmitted by other non-verbal communication strategies in addition to sending messages through speech and writing. It is also expedient to highlight for the benefit of all that university teacher are the managers of their classrooms, initiators of change in students, curriculum implementers, and most importantly as communication agents. Because of these attributes, they have to be cognizant of the principles that validate effective communication in organizations in which the classroom is one (Uwazuike, 1990; Ntia, 2002).

The principles is enunciated by Keltner (1993), Ntia (2002), indicate that communication is a process; communication inevitable; communication is continuous. Other principles include that inter-personal communication occurs on more than one level; that self-concept is affected by affects interpersonal communication. If a teacher is therefore not communicating with his students based on the above principles, he/she is likely to run into several communication barriers. These barriers according to Cole (1996) are individual bias and selectivity, status differences, fear and other emotional over-tones, lack of trust, verbal difficulties and information overload.

Another type of classroom communication is in a written form. It takes the form of chalkboard sketches, textbooks, visual aids and other written materials. The use of chalkboard is still indispensable particularly in developing countries like Nigeria, etc. Plannel boards are yet still not widely used I Nigerian schools, even universities, but they are very useful tools for display of pictures and other written materials (Onwuakpa, 1999).

To use the chalkboard as an effective means of classroom communication, Onwuakpa (1999) recommends the following:

i) The board should be mounted in a stationary position preferably on the wall in front of the classroom.

ii) The board should always be kept clean and sightful

iii) Teachers should use chalk that will provide a sharp contrast and easy viewing to the students.

iv) Teachers should write boldly and legibly.

v) Teachers should avoid talking to the chalkboard or ignore the students while writing on the chalkboard.

vi) Teachers should avoid blocking the students' view of the board while writing or lecturing. The students will appreciate a good standing position outside the view of the written material.

For textbook to be effective method of communication in language studies or any other study, these should be followed:

i) The characters of the text must be legible and attractive

ii) The language must be simple and easy to understand

iii) The style must be easy to follow and make reading enjoyable.

iv) The book must contain illustration and pictures

v) There should be objective at the beginning of each chapter and a summary at the end.

vi) The text must contain review questions at the end of each chapter and possibly answers.

vii) Its content must be rich and cover the syllabus fairly well (Nolan, Hayden, and Malsbary, 1990; Popham, Schrag, and Blockhus, 1995; Onwuakpa, 1999).

The third method of communication is through gesture, eye contact, hands and body movement. These could be classified under what Daniel (1986) calls "Teaching as a performing Arts". This is inevitable in the teaching of courses in our universities. Whether or not the academic staff who teach these courses in University of

Calabar are effective in communication skills is one of the concerns of this study.

2.3.3 Teaching methods/strategies and teaching effectiveness

Uma (1999) opines that it is one thing to master the subject matter, yet quite another to have the required competence to organize and impart it effectively and appetizingly to the learner. Inadequate presentation strategies can be a serious limiting factor for both the teacher and the students. Again an effective teacher must not only master but more importantly be able to apply the basic principles of human behaviour, growth and development. These knowledge and ability permeates his lesson plans and implementation as well as his classroom management and control tactics. Relatedly the methods, techniques and devices employed by the teacher reflect on his competence. It stands to reason that the more expertly he uses those strategies, the higher learning outcomes obtained hence the more effective a teacher he is.

Hiklicks (1991) studied the responses of college freshmen to three modes of instructions presentation (i.e. lecture), environmental (student–centered), and non-directional (control). The sample comprised 1049 freshmen randomly selected from 2000 freshmen population and 29 instructors from Mid-Western State University. The sample was classified into three instructional groups, namely: non-directional, presentational, and environmental. Data was collected through the use of questionnaire. The result revealed eleven distinct factors which were further subjected to analysis using the

multivariate analysis of variance for modes of instructions and levels of teaching experience. The finding showed that difference by mode of instruction was highly significant on every factor with environmental or student–centred approach having a higher effect, followed by presentational (Traditional lecture method).

Baid (1993) studied the effect of teaching methods on student academic achievement and how students perceive the effectiveness of the teaching methods, the sample comprised 2670 students who took the American College testing (ACT), battery and were completely their 2nd year, two years college in the Spring of 1992. The instrument was a researcher constructed 33 items true/false questionnaire measuring teaching practices in areas of examinations, classroom procedure, instructor–student interaction, assignments and instructors attitude as perceived by students. Again, students academic ability was measured by obtaining their scores on the ACT composite which was the college admission test. Pearson product moment correlation was used for data analysis. The finding showed that a significant influence of teaching style on student academic achievement exists and that teachers using student–centered classroom approach significantly have their students academic achievement higher than those who used conventional, teacher – centred teaching approach and that students assessment of the teachers was significantly positive.

Kersh (1995) conducted a study on deductive and inductive methods of teaching on three groups and how students evaluate these

methods. He found that those who received instruction in expository (lecture/inductive) method show greater performance in the same examination than those who were exposed only to either expository or laboratory method. She concluded that the ideal method of teaching to enhance effectiveness is to combine both expository (traditional) method to compliment each other and bring about higher academic achievement. To her, no significant academic gain or evaluation gain is observed from students whether taught by progressive method or by traditional method.

Dubin and Tavegia (1998) studied whether student ratings of teaching effectiveness depended on the teaching methods used by lecturers, they concluded that the data demonstrated clearly and unequivocally that there is no difference among truly distinctive methods of college instructions when evaluated by students performance on final examination. Is the situation with students' evaluation of teaching methods of academic staff in University of Calabar the same?

2.3.4 Classroom management and teaching effectiveness

An organization may have put down a wonderful plan of action, have good quality men, sufficient money in form of capital, acquire the right materials and equipment but if it is not blessed with good managers, the business will collapse. This situation may be true of a university or class where the instructor has a good curriculum and all the materials needed, but cannot manage his/her class effectively.

The result will be chaotic and a total ineffectiveness of the teaching–learning activity.

Norton (1996) considers teaching effectiveness as a direct function of effective classroom management. This is borne out of the effective practitioner who is caring, committed, highly creative, a proficient reflective thinker with a strong internal locus of control. What makes the class is its environment and the environment is constituted of those elements that influence it within and without. Ntino (1997) argues that the elements that make up the classroom environment are the curriculum, the teacher, the learner, and the materials used for the teaching/learning activities. These elements are the products of the total school environment and the society.

While it is generally accepted that laissez–faire leaders under–perform both the autocratic and democratic groups, Kurt Lewin and his colleague of the university of Iowa believe that quantity of work produced by the autocratic and democratic groups was equal, but work quality and group satisfaction was higher in the democratic group. Other researchers such as Bartol and Martin (1991) opined that it might not be right to give a definite judgement in favour of any of the two styles. Democratic leaderships produced higher at some times and autocratic at the other times.

Comadena (1991) supports these latter findings in his study of 71 traditional undergraduate students and 105 adult learners to whom he administered questionnaires designed to measure teacher effectiveness and use of power in the classroom. Findings show that

in the sample of adult learners, teacher effectiveness ratings were significantly and negatively related to teacher use of coercive power (i.e. authoritarian leadership) and positively related to teacher use of expert power. In the sample of traditional undergraduate students, teacher effectiveness ratings were significantly correlated with teacher use of expert and referent power often associated with the use of authority and it follows therefore that in class management, teachers should not use cohesive power, which is associated, in most cases, with authoritarian leadership, but should adopt a continuum of mix, recommended by Tennenbarm and Schmidt (1995), in which the teacher moves between autocratic and democratic style depending on the circumstance, but never getting to the extreme of each pole of the continuum.

Metzger (2000) revealed that teachers manage their classes better by building a teacher-student partnership. Thus, an increased role for students will improve instruction and in still order in the classroom. Crisci (1991) studying nearly 300 participants in an observation conference, found out that shared institutional leadership leads to better planning of class activities.

The advantages of participatory leadership style in the classroom is that students feel a personal commitment to the learning task; teachers do not need to use coercion to get students to work or co-operates; student–teacher relationship is improved; there is high expectation of teacher–student performance; creates classes that are organized for student teacher success; creates an ideal internal frame

of reference; and an increased role for students will enable them to practice their citizenship skills, improve instruction and in still order in the class.

Medley (1999) summarized 300 studies on teacher effectiveness and found that management of instructional time or *time on task* is the most singled out variable cited as one, which most frequently affects student achievement. The statement time "is money" is quite popular. In the classroom, we can modify this statement to read *"time is knowledge"*. Therefore, time wasted is money or knowledge wasted. An effective teacher avoids all the elements that waste teaching and learning time. Such elements include; (i) poor planning of the lesson by the teacher; (ii) late starting of the lesson; (iii) non-performance of non-instructional duties such as adhering to established laws, policies, rules, and regulations (Riner, 1990; Jones – Hamilton, 2002).

Olivia and Pawless (2002) opine that the teacher has a critical role to play in establishing rules and procedure that govern all student participation and routines in the classroom. Teachers should demonstrate effective classroom management always and constantly monitor the behaviour of their students and redirect inappropriate behaviour.

Olivia and Pawless prescription is not as easy as it appears. Monitoring and re-directing inappropriate behaviour is a hard work and time consuming particularly if they occur frequently. Moreover, the task has become strenuous on the teacher when students' behaviour defy solution; moreso when the teacher is under pressure

from the society and is blamed for student misconducts which are not directly or indirectly the fault of the school.

This section may aptly be concluded with Zeiger's (1991) 10 steps proposal for a happier classroom. This proposal briefly expounds tips for effective classroom management. Zeiger says the teacher should:

(i) Stay calm and always in control;

(ii) Ignore the behaviour of disruptive students;

(iii) Mediate;

(iv) Maintain a positive atmosphere,

(v) Enforce the rules

(vi) Take necessary, disciplinary actions

(vii) Be prepared in lesson content and delivery

(viii) Change when necessary

(ix) Conduct an orientation period; and

(x) Stress the importance of the subject

To these points, Karle-Weiss (1990) adds that the teacher should learn to be humorous. Literatures and findings of many researchers support the view that humour is related to perceived instructor's effectiveness (Karle–Weiss, 1990; Newman, 1990).

This study findings on how effective academic staff in University of Calabar are in their teaching duties, with respect to classroom management, will add to the body of knowledge in this area.

2.3.5 Ability to motivate students and teaching effectiveness

When the subject matter or method of teaching does not meet the interest and need of the students they may resort to unwholesome behaviours, sometimes this may degenerate into misdemeanor. To avoid such ugly situations in the class, an effective teacher will device means of motivating and sustaining the children's interest in the subject. Njoku (2001) opines that the role played by motivation in the teaching–learning of any subject should not be overlooked. This is because when students are motivated, there is a positive attitude towards learning; learning becomes interesting and easy; student's performance improves. The teacher no longer finds it difficult to get the co-operation from the students.

Motivation is the act of regulating those factors that energize behaviour and give direction or the regulation of need–satisfying and goal–seeking behaviour (Ntino, 2004). Thus, a motivated person will engage in an activity more vigorously and more efficiently than one who is not motivated. For example, what makes Nukak spend so much time practising mathematics? What is responsible for Attih's long hours of practice on computer? The answer may be that both students are motivated. This may be the result of something their teacher did or said or that there is a goal–seeking ambition to be achieved or a need–satisfying desire to be met. These needs energize and spur students towards extra work.

Weniers (1990) and Elliot, Kratochwill, Cook, and Travers (2000) believe that motivation is an internal state that arouses us to

action and pushes us in particular directions and keep us engaged in certain activities. This internal state can be built either from internal stimuli (intrinsic motivation) or from external stimuli (extrinsic motivation). Extrinsic motivation within the classroom setting is built around what the teacher says or does to elicit desirable student behaviour. This type of motivation is the principal concern of research of this nature on teaching effectiveness. Secondly, but of no less importance, is what the teachers can do to sustain and internalise desirable behaviours. The knowledge of the principles of reinforcement, either through classical or operant conditioning, will be an advantage to the teacher.

People are influenced by instincts, needs, and drives that are different and diverse. In the classroom, the student is made to study subjects he/she has no interest or felt–need. The teacher therefore has to find means of urging him on by developing his/her interest in the subject and trying to sustain it. This is the felt-need of motivation (Ntino, 2004). It is often assumed that the learner will be motivated if the lesson is interesting and the environment is conducive. Although some different sources of satisfaction have been identified, different child-rearing and educational practices will make each more or less accessible to individual children, who will also respond differently to the varying types of reinforcement which are available (Kozeki, 1984).

The implication of this opinion, which is borne out of several researches, is that success in classroom motivation is related to the

up-bringing of the child and what motivational styles the parents have used and the students is adapted to. For example, one child will cease from an activity by a mere look of the parent. Another will need a hush to stop, while another will need a raised voice or cane. Seeing therefore, that the classroom is a melting pot of children from these diverse backgrounds, what motivational techniques should the teacher adopt for effectiveness?

The answers to this question lie in the ingenuity of the teacher. He should study and adopt a mix of motivational techniques, which after examination and experimentation, he may find suitable for his class (Njoku, 2001; Ntino, 2004). The motivation technique that could be adopted by a teacher will depend on the felt-need, desire, and goal of the teacher and the learner.

A study was carried out by Ogden (1994) in which 395 participants were asked to identify the characteristics of good/effective teachers. By far, the most important characteristic cited by undergraduate students was understanding. A teacher is adjudged effective when he understands the fears, difficulties, needs and limitations of the students. Thus, he/she will be able to motivate them through counselling and finding solutions to their fears.

The most important characteristic of effective teacher as cited by graduate students in Ogden study was *caring*. Females, more than males, would like to see teachers show understanding, enthusiasm, creativity, and organisation. Males would like to see teachers show fairness, good communication, responsibility and humour. These are

issues that excite or motivates different classes and gender of students. A teacher who knows what his/her students need is at an advantaged position of being effective.

The motivational techniques proposed below are based on the discourses by Feldman (1994), Elliot *et al* (2000) and the case of Karvim Peterson, a fourth grade pupil who seems quite uninterested in learning and is somewhat of social loner and outcast. Karvim was made to accept school and socialize with others through experimentation with different motivational techniques. Bearing in mind that students cannot be motivated by same method, the following mix is suggested.

1. Learning occurs most effectively when experts and novies work together for a common goal and are therefore motivated to assist one another. In this case:
   a. Provide a common goal for the class through joint action.
   b. Establish a good working relationship by involving students in all tasks.
2. Let students know you care and understand their problems and needs. Emphasize but without getting caught with their problems.
3. Plan well and adopt a mix of instructional strategies and methods. Variety is the spice of life.
4. Be humorous and be enthusiastic about your job. It has been discovered that humour is related to perceived instructor effectiveness.

5. Provide a competitive atmosphere but not so stiff to destroy the confidence of the not-so-bright students.
6. Adopt a mechanism that will facilitate an early feedback from the students. This will make provision for early reward, praise and punishment. Papandreou (1995) found out that correction of students' errors (evaluation) was topmost as one of the factors perceived by students as constituting teaching effectiveness.
7. Make meaning by connecting school to students lives. Tharp (1999) advocates that students are motivated when teaching and curriculum is conventionalised in the experiences and skills of students and home.
8. Nothing can frustrate learning as working in an ill-equipped environment as working with materials that are not functioning effectively. To motivate students adequately, ensure that the equipment are in good working conditions.
9. For slow learners and students who are not interested in learning like Karvim Peterson, Elliot *et al* (2000) have discovered that the following strategies might work:
   a. Design an intervention programme and focus relationship building through skills, which the student has to work with small groups.
   b. Design and administer some discovery oriented tasks that focus on students' personal interest and background.

c. Develop interest in the learner and show affection that reduce or eliminate fear and rejection.

d. Explain carefully and precisely why the task is important, meaningful and valuable.

e. Establish a relationship with home/parents of students. This will enable teachers to obtain useful information on students' background–a positive motivation.

Whether or not the ability of instructors (academic staff) in University of Calabar to motivate students, as perceived by the students, is significantly high is one of the concerns of this study.

2.3.6 Evaluation of students' learning activities and teaching effectiveness

It is the view of scholars that some role played by the university teacher involved those that are stress producing to the student. This include his role as a dispenser and executor of justice. Isangedighi (1986) stated that:

> The teacher teaches and award mark to students, he assigns students to groups and at the end of the term promotes some pupils to the next class and retains some in the same class, and at times recommends the withdrawal from school of some of the student.

Relatedly the teacher is seen playing the role of a policeman, chasing students and bringing them to judgement. In pursuance of

these roles, the students see the teacher as a disciplinarian and unfriendly person.

Some scholars like Nwankwo (1997), however acknowledge the relevance of this role in effective classroom management and teaching. He asserted that the teachers use of marks and grades; the giving of honours and scholarship, the award of punishment or the student fear of punishment and avoidance of pains have been found to be powerful motivations for learning by students. He concluded that teachers who appropriately apply this technique objectively are effective classroom managers.

In like manner, Mansaray's (1997) study found that effective teachers use assessment of student activities to motivate students. He said that the use of homework, assignment, weekly quizzes, classroom questioning, project reports, and examinations if administered appropriately and objectively, make students to be anxious to receive more what was taught hence improving their academic ability. Mansaray concluded that the difference between effective and ineffective teachers depends on the appropriateness of perception and application of those roles in classroom situation.

Test and quizzes re more formal and systematic forms of evaluation. Jones-Hamiton (2002) warns that questionnaire whether for oral examination, test or quiz is a technique that tends to be used incorrectly if care is not exercised. The question should correlate with the objectives facilitating the development of the educational goal. For effectiveness, variation in the questioning style is very

important method of evaluation that achieves desired result. Equally important is he mix of the evaluation techniques used by the teacher. Gronlund (1985) and Obikoya (1996) holds the view that the more skilled a teacher is in producing a mix of the evaluation methods for his/her class, the more effective he/she will be in the management of the teaching learning activity.

Students' evaluation as a means of measuring teaching effectiveness is more than a double-edged sword. To Kirkpatrick and Warren (1975), Warren (1996), Gronlund (1985) it can be used:

1) To clarify the intended learning outcome
2) To fashion shorter goals for which the teacher and student should work towards.
3) As a feedback mechanism for measuring students' progress and reporting same to parents, educational planers and administrations and
4) To provide information for research and for overcoming learning difficulties in children.

In the context of teaching effectiveness, Xu and Sinclair (2002) opine that student evaluation is a means of teacher accountability. The overall implication of this contention is to the effect that, the rate of student performance in an evaluation exercise is to a great extent, a reflection of the teacher's input or teaching effectiveness, other things being equal. This input variable includes the teacher's knowledge of subject matter, teaching methodology, classroom management and other inputs required for effective teaching.

Joshua (1997) confirms this view by stating that an evaluation of students is in effect an evaluation of the teacher:

> To hold him/her accountable for some or all of the outcome of instructional or educative process. It implies alerting the teacher that he/she can improve his/her skills and competencies, and, therefore, his/her job performance. It also implies reminding the public that certain defects that result in poor performance by learners could be detected early enough and corrected for overall better results (p. 136).

This section can best be concluded by emphasizing that curriculum designs and theories have always included evaluation as one of its main component parts (Tyler, 1965; Wheeler, 1973; Tanner & Tanner, 1975). The only difference is the sequence at which evaluation comes up in each design.

2.3.7 Relationship with students and teaching effectiveness

Developing a good student–teacher relationship is a great asset for effective teaching. Studies have shown that when teachers build the bridge in communication and interaction with students, they get their co-operation, interest and willingness to learn what the teacher is saying (Domike, 2002; Ogden, 1994; Seldin, 1999).

What these studies show is that there is need for student-teacher interaction both within and outside the classroom. Students perceive

teachers' attitude toward them as important as class content, and they perceive teachers who interact in this way as effective. Therefore, interest that the teacher displays in the student will determine to a great extent the interest the student exhibits in the course.

Domike (2002) studied the pattern of classroom interaction of 90 teachers and found that certain teachers are inclined to particular patterns such as integrative, dominative or the capacity to stimulate critical thinking process. The result of her finding through analysis of administered test showed that significant difference exist in achievement scores of students taught by teachers using different interactive styles.

Uma (1999) posits that an effective teacher plays the role of a friend and confidant to his students. He does this by being warm, mature and sympathetic, thereby making the students to tell him their problems and difficulties and thus releasing tension. This is achieved when students believe that the teacher is able to maintain their confidence and has established good rapport with them.

Iyeke (1998) similarly revealed that the manner the teacher performs his leadership role, to a large extent determines his level of effectiveness in the classroom. The teacher's leadership role is recognized in the students, parents, education officials and teachers themselves. Nwadinigwe (1991) claimed that the available leadership styles which teachers are free to choose from include autocratic, democratic and laissez faire styles. He asserted that most teachers tend to be autocratic in their leadership role while many others, may

be out of frustration or ignorance, and are laissez-faire in their leadership role. The consequence is that students from such classroom environment tend to be disconnected from school learning and teaching; become academic underachievers thereby making such teachers as not being as effective as those who use democratic motivational leadership style. Where students' feelings are respected, their contributions are recognized and encouraged. This view was supported by Iyele (1998), Okafor (1990), and Idu (1992).

Bargan and Dunn (1996) are of the opinion that teachers influence students by the kind of social atmosphere they establish in their classroom, and by the patterning of their interactions with individual students. They strongly commented on the fact that the classroom climate with the teachers behaviour as the central determinant.

Several other studies of teaching effectiveness have identified classroom behaviours including interaction between teachers and students, which appear to be effective in promoting student achievement and the way they perceive their teachers (Brophy and Everston, 1996; Everston, Anderson and Brophy, 1990).

In most of these studies however, data have been analyzed using class means. The use of class means avoids the methodological problem of non-independence that arises when data are analysed with students scores pooled without regard to class membership. Not too long ago, however, Cronbach (1996) argued that class level analysis can be misleading because relationship obtained at the class level may

not occur at the student level within classes. Likewise one cannot assume that the absence of relationship at the class level implies that there is no relationship within classes. There may be influences operating within the classroom that affect relationship between teacher behaviours, perception of teaching and achievement at the student level within classes, but do not affect relationship among behavour, perception of teaching and achievement at the class mean level of analysis. For example, Weinstein and Middlestadt (1999) suggest that because classrooms are social setting, other students within the class may contribute a great deal to an individual's perception of himself/herself as a learner, which in turn will influence effort and achievement.

Dada and Oyetunji (1989) conducted a study titled: "Affective Variables on Reading Comprehensive" and come to the conclusion that affective variables exert some significant effects on the performance of the students in reading comprehension (a measure of significant teaching effectiveness). They further contend that whenever these variables are not catered for, they remain underdeveloped and as such can add to the difficulties in both teachers of reading and classroom learners.

2.4 Academic staff's gender and teaching effectiveness

In an attempt to determine whether male and female students rate teachers differently depending on the gender of the teacher, Centra and Noreen (2000) analyszed data from 741 classes in which

there were at least 10 male and 10 female students. The results revealed small same gender preferences, particularly in female students rating female teachers. Teaching style rather than gender may well explain these preferences.

Dukes and Gay (1989) studied the effect of gender, status, and effective teaching on the evaluation of college instruction. Each of 144 undergraduate subjects in six political science and sociology classes who were represented in four scenarios depicting knowledge of the subject, enthusiasm for teaching, rapport with students, and organization of the course. Within each scenario the variables of quality of teaching, gender of the academic staff, and status of the academic staff were manipulated in an experimental design. Although statistical interactions revealed some gender bias, effective teaching had by far the most important influence on teaching evaluations.

Feldman (1992) in a review of laboratory and experimental research on college students preconceptions of male and female college teacher showed that, in the majority of studies, students' global evaluations of male and female college teachers as professionals were not different; in a minority of studies, however, male teachers received higher overall evaluations than did female teachers. For the most part, the perceptions and ratings of the two genders in most other areas either showed no differences or inconsistent differences across studies. Moreover, most studies found that male teachers and female teachers were not perceived differently by male and female students. Interaction effects found in a particular

study between the teachers gender and other factors (teachers' expressiveness, physical effectiveness, mode of teaching, academic field and the like) usually were not confirmed by findings in other studies. More studies found indications of students' perception of female teachers (compared to those of male teachers) being more heavily influenced by these other factors. Ratings of teachers were sometimes enhanced by gender – typical attributes and behaviours and sometimes by gender – atypical attributes and behaviour.

Although majority of studies have found that male and female college teachers do not differ in the global ratings they receive from their students, when statistically differences are found, more of them favour women than men. Across studies, Feldman (1992) found that the average association between gender and overall evaluation, while favouring women (averager = +.02), is so small as to be insignificant in practical terms. Considering specific instructional dimensions of evaluations, female teachers receive very slightly higher ratings on their sensitive to and concern with class level and progress than do men (averager = +.12). On other specific dimensions, men and women either do not differ or the differences are trivial in size (or, for two dimensions, while nontrivial, based on too few studies to be generalizable with any degree of certainty). Students tend to rate same–gendered teachers a little higher than opposite–gendered teachers. Although interaction effects on evaluations have also been found between gender of teacher and other factors (academic rank of the teacher, academic area, class level of the course, difficulty of the

teacher or course, and the teachers pedagogical orientation or personality characteristics), they are inconsistent across studies. Moreover, ratings of teachers are sometimes enhanced by gender–typical and, sometimes by gender–atypical attributes, behaviours, and positions (Feldman, 1992).

Student ratings of academic staff may be biased against women in subtle but significant ways. This is not the result reported by most field research, however, as Seldin (1993) has noted. This typical study finds that the average rating of all male instructors does not differ significantly from the average of all female instructors at most colleges. This is a very reassuring finding; it is also deceptive because most studies ignore the gender of the students doing the evaluations, the discipline involved, and the fact that female professors are often judged on a double standard. Researchers who consider the gender of the rater find a more complex pattern. The ratings of male professors are unaffected by student gender, but female professors frequently receive lower ratings from their male students and higher ratings from their female students. Female professors also appear to be evaluated according to a heavier set of expectations than are male professors and these expectations affect student ratings.

In one study (Basow and Silberg, 1997), 16 female professors were matched with a male professor (a total of 32 professors, 16 female and 16 male) in the same division, at the same rank, and with the same number of years at the college. More than 1000 students in

classes taught by these 32 professors filled out two questionnaires. One was a standard student rating form consisting of 26 questions, summarized into five factor scores (scholarship, organisation/clarity; instructor–group interaction, instructor–student interaction, and dynamism/enthausiasm) and an overall rating. The second (the Bem sex role inventory) asked students to rate their professor on two sets of personality traits: instrumental (such as assertive or dominant), often viewed as "masculine", and expressive (such as warm or nurturant), often considered "feminine". The results revealed a consistent pattern. On all five factor scores and the overall rating, male students rated female professors more negatively than they rated male professors–and generally more negatively than did female students in the same class. This type of interaction between the gender of the student and the gender of the professor has been found in laboratory research, but less frequently in field studies, which typically neglect to ask the gender of the student rather or fail to match professors on important variables like rank and discipline.

A study conducted at Laticyette College, Eastern by Basow (1994) confirmed the effect of gender variables on students' evaluations. The study of student ratings of all professors in all classes over four years reveals that male academics were evaluated similarly by their female and male students on virtually all questions, but female academics were evaluated differently by their male and female students especially female academics in the humanities and social sciences, and particularly on certain questions.

In general, female academics received higher ratings on questions addressing interactions with students (for example "treats students with respect"), but female student rated female faculty even higher than did male students. On questions tapping teaching style (such as "speaks in an appropriate manner"), female faculty tended to be rated higher than their male counterparts by their female students but lower by their male students (Basow, 1994).

The gender of a student has little effect on ratings. The gender of an instructor, however, may have an impact. Though some students report no relationship between a professor's gender and student ratings others show that adhering to a gender–appropriate teaching style may be rewarded by higher evaluations. (Basow & Silberg, 1987; Kierstead, D'Agostin, & Dill, 1988; Marsh & Dunkin, 1992; Statham, Richardson, & Cook, 1997). The trend may be different among academic staff in University of Calabar, Nigeria.

2.5 Academic staff's age and teaching effectiveness

Research results on the relationship between age and teaching effectiveness are mixed, much of which is strong on polemics and weak on evidence. On whether academic staff performance declines with age, Sheehan, Dobson and Smith (1998) reveal that the age variables lose significance in all models except that for the physical and biological sciences. This loss in significance they reason is not surprising given that the influence of age on teaching effectiveness at later ages was shown to be of very small size. Although teaching

effectiveness appears to improve with age, the teachers rated as most effective seem to retire early so that the remaining pool of professors will be lower average effectiveness rating.

The teaching effectiveness of 43 surgeons was evaluated continuously over a 9-years period. Stability of teaching effectiveness Scores (TES) over the 9-years period, correlation with age, and the changes after academic promotion were analyzed. A total of 3,750 evaluations were completed. The average of 10 evaluations per surgeon per year gave an intra-class correlation of .65. The mean TES did not show any significant change over the 9-years. The majority of the good and average surgeons maintained their TES ratings, and most of the poor group improved their TES. The age of the surgeon was not after academic promotion (Cohen, Macrae and Jamieson 1996).

College teachers' ages and personalities, and students' course grades, gender, enrolment status, academic abilities, and ages were investigated as predictors of student evaluations of academic staff. An evaluation form containing 7 items reflecting the personality trait of extraversion and 8 items reflecting teaching effectiveness was used to collect data from 351 undergraduates. Teachers extraversion (.79) and teachers' ages (-.8) were correlated highest, students' gender was correlated lowest (.08) with teaching effectiveness. Hierarchical regressions revealed that teachers' extraversion was the only significant predictor of student evaluation (beta = .76, $p < .001$) after

controlling for enrolment status, course grades and students' ages (Radmacher & Martin, 2001).

An instructor's ratings for a given course tend to be relatively consistent over successive years. There is not much variation in student ratings for an individual instructor regardless of whether the form is administered to current students or alumni. Also, it was revealed that there is little or no relationship between the following characteristics of students and their ratings of instruction: age, grade point average, year in college, and academic ability (Marsh & Dunkin, 1992). The trend may be different, in these respects, among students and their instructors in the study area.

2.6 Academic staff's subject matter area and teaching effectiveness

Feldman (1998) revealed that teacher (and course) ratings tend to be somewhat higher for upper division courses and elective courses. Compared to other instructors, those teaching humanities, fine arts, and languages tend to receive somewhat higher ratings. The possible reasons for these relationship are many and complex. A precise understanding of the contributor of course characteristics to the ratings of teachers (and the courses themselves) is hampered by two circumstances. Studies in which relevant variables are controlled are far fewer in number than are the studies in which only the zero-order relationship between course characteristics and ratings are considered. More importantly, existing multivariate studies tend to

underplay or ignore the exact place of course characteristics in a causal network of variables.

Students tend to give slightly higher ratings to courses in their major fields and/or to courses that are elective rather than required (Jacobs, 1994). Feldman (1998) found a small positive relationship between class ratings and the students' average intrinsic interest (prior subject interest) in the subject area. Thus, required courses may receive lower ratings simply because students are less interested in them. For this reason, it may be a good idea for instructors to include an item that assesses students' interest in the course. Ratings in higher level courses tend to be higher than in lower–level courses (Jacobs, 1994).

Jacobs (1994) also revealed that within a discipline, the courses that are more difficult or have greater work loads tend to receive higher rating from students. Contrary to popular opinion, easy academic staff do not necessarily receive high student ratings. Some research shows that student see demanding academic staff as being better (more effective) than easy academic staff, hence the higher ratings. Cashin (1992) correlated rating results from over 100,000 classes. The correlation between the items "I worked harder on this course than most courses I have taken" correlated .44 with the overall composite measure, indicating that working harder in a class was positively related to higher ratings.

Cloer and Alexander (1992) analysed demographic data of 235 teachers in south California to determine if significant differences

existed in either student control ideology or effectiveness for people of varying marital status, age, years of experience, or subject matter areas (disciplines). There were no significant differences on either ideology or effectiveness for teachers being analysed according to marital status, age, or years of experience. However, statistically significant difference was found when teachers were analysed according to subject matter area. Teachers in mathematics were significantly different from all the other subject areas (discipline) in student control ideology and effectiveness ($p<.05$). Mathematics teachers tended to express more disinviting attitudes and as a group were rated less effective by their students. No other significant differences were found among subject matter areas (disciplines).

Min and Baozhia (1998) explored the possible effects of student and class characteristics on student evaluation of classroom teaching. Four general subject matter categories–basic sciences, basic medical sciences, clinical sciences, and preventive medicine–were examined. Analyses showed that teachers who taught in clinical sciences received higher ratings from students.

Liaw and Gor (2003) showed that class size had inappropriately influenced students judgement on evaluations of lecturers in the faculty of economics and administration, University of Malaja. A bias exists whereby courses with small enrolment receive good overall teaching ratings, where as larger classes have produced poor evaluations. On the other hand, teaching ratings by students are not affected by instructor characteristics (instructional experience, rank

and gender) or other courses characteristics (type and level of subject, and time and day course is taught).

Instructors teaching certain disciplines tend to receive higher student ratings than instructors in other disciplines. Research has shown that the highest ratings are given to courses in the arts and humanities, followed in descending order by biological and social sciences, business and computer sciences, and mathematics, engineering, and physical sciences (Cashin, 1992).

The lower ratings for mathematics and the physical sciences may be due to the fact that students find these courses more difficult and fast–paced. Cashin (1990) argued that students' quantitative skills are less well developed than their verbal skills, hence quantitative–based courses are more difficult for students and more difficult to academic staff to teach. The natural sciences have also experienced such a rapid growth of knowledge that academic staff may feel pressured to cover increasing amounts of material in each course, and thus students feel rushed and confused. Whether or not the trend is different among academic staff in University of Calabar is one of the concerns of this study.

2.7 Academic staff's qualification and teaching effectiveness

The academic staff's qualification(s) cannot be overlooked in determining the performances of students in schools and colleges. Hilton (1994) stressed that the spread of efficient teaching is wholly dependent on the provision of teachers of the right type and in the right number. Ezewu (1987) said that many studies have indicated

high performance of pupils taught by professionally trained teachers; and observed that when these calibre of teachers are adequately motivated and retained in the classroom in sufficient numbers, the question of dwindling standards in schools will be a thing of the past.

Kayee (2003) conducted a study on the level of teachers qualifications and pupils academic performance and found that the level of teachers qualification yielded a positive correlation on students' academic performance.

Darling–Hammond and Youngs (2002, p.7) claim that "researchers have found that some teachers are much more effective than others". Studies using value added student achievement data have found that student achievement gains are much more influenced by a student's assigned teacher than other factors like class size and class composition (Sanders & Horn, 1994; Sanders & Rivers, 1996; Wright, Horn, & Sanders, 1997). Rivkin, Hanushek, and Kain (2000) attribute at least 7% of the total variance in test–score gains to differences in teachers' qualifications.

A review, which analyses 57 studies that met specific research criteria and were published in peer-reviewed journals, concludes that the available evidence demonstrates a positive relationship between teacher qualification and teacher effectiveness (Wilson, Floden, & Ferrini-Mundy, 2001). The review documents relationships between teacher qualifications and student achievement across studies using different units of analysis and different measures of preparation and in studies that employ controls for students' socio-economic status and prior academic performance.

Ferguson (1991) confirmed through his findings that experience and master's degree were measure of teacher quality that predict higher test scores for children. Glartthorn (1997) reported a research carried out by Sanders, Skonie–Hardin, Phelps and Minnie (1994) in which they examined the relationship of teachers' educational level and student drop-out rate. They, came to the conclusion that student of teachers with higher qualification were less likely to drop out of school than those students who had teachers with lower level of education.

Lacczko-Kerr and Berliner (2002) studies college students taught by 293 newly recruited certified and under certified teachers. Analysis of scores from the mandated state achievement test showed that students of certified teachers performed significantly better than students of teachers who were under-certified. This was true of all three sub-test of the examinations administered to the students.

Darling–Hammond (2000) revealed that several aspects of teachers' qualifications have been found to bear some relationship to student achievement and indeed teaching effectiveness of the teacher. These include:

Teachers: (a) General academic and verbal ability;

b) Subject knowledge matter;

c) Knowledge about teaching and learning as reflected in teacher education courses or preparation experiences;

d) Teaching experience; and

e) The combined set of qualifications measured by teacher certification, which includes most of the preceding factors

Many of the variables that reflect teacher quality (teaching effectiveness) are highly correlated with one another, for example, teachers' education levels are typically correlated with age, experience, and general academic ability, and certification status is often correlated with content background as well as education training and experience (e.g. Goldhaber & Brewer, 2000).

The effects reflected by any given variable in a particular study depend on whether other variables that may also measure aspects of competence are represented in the estimates. The effect size also depends on other context factors, such as the range of variability in the measure used, which can change in different locations and time periods. For example, in some eras and in some locations virtually all teachers held content degrees or were fully certified, so these variables do not strongly predict variations in outcomes. When much more variability is present, these variables are strongly predictive of outcomes. Thus, several studies have found strong measured influences of certification status on student achievement in states like California and Texas during the 1990s when there were wide differences in teachers qualifications. For all these reasons, it is critical for any review of research to represent a range of studies that can shed light on the different relationships of interest using a variety of measures (Darling–Hammand & Young, 2002).

Rice (2003) revealed that the selectivity/prestige of the institution a teacher attended has a positive effect on student achievement. This may partially be a reflection of the cognitive ability of the teacher. She also revealed that teachers who have earned advanced degrees have a positive impact on high school mathematics and science achievement when these degrees earned were in these subjects. However, evidence regarding the impact of advanced degrees at the elementary level is mixed.

The literature on teacher quality and qualifications has typically been viewed as inconsistent and inconclusive. Much of this perception has been fuelled by a set of analyses conducted by Eric Hanushek over the past two decades or so. In his meta-analyses of studies examining the impact of several key educational resources on student achievement, Hanushek (1981, 1986, 1996, 1997) concluded that there is no systematic relationship between educational inputs and student performance. For example, with respect to teacher characteristics, Hanushek (1997) identified 171 estimates related to the impact of "teacher education" on teaching effectiveness and indeed student performance. Of these, he reported that 9% were statistically significant and positive, 5% were statistically significant and negative, and 86% were statistically insignificant.

Knoblock (1996) reported that instructors with postgraduate qualifications (Masters and Doctorate) were adjudged to be significantly more effective than those with bachelor degrees or below–qualifications. This conclusion was derived from measures of

student results on the adjustment test and by responses on evaluative measures. Is the situation the same among academic staff in University of Calabar? A result of this study will unravel this.

2.8 Academic staff's rank and teaching effectiveness

Liaw and Gor (2003) revealed that student ratings of teaching are not affected by instructor characteristics (instruction experience, rank, and gender) or other course characteristics (type and level of subject, and time and day course is taught). However, Feldman (1982) showed that the teachers academic rank is positively associated with the overall evaluation of the teachers. Literature on the influence of academic staff's rank on teaching effectiveness is very scanty (to the best of researcher's knowledge). Findings of this study, in this respect, would add to knowledge bank in this area.

2.9 Academic staff's teaching experience and teaching effectiveness

In many conditions for employment, experience or the number of years a person had worked in similar position plays a very significant role in his employment. Whether that experience contributes significantly to teaching effectiveness of academic staff is what we are about to consider.

Glatthorn (1997) calls experience that "professional growth that takes place in the educator as a result of continued stay, study on the job and other related processes (p. 3)". Is experience essential for the

following words: "Teacher education is a matter of life long learning, starting before one enters teaching, pre-service (probationary period); and continuing throughout ones career" (p. 114).

Examining the difference between novice and experienced teachers, researchers have observed that experienced teachers operate from a deeper and more sophisticated knowledge base Shulman (1987) identifies seven types of knowledge that are acquired by experienced teachers:

1. Content knowledge (knowing the genetics of the subject area).
2. Pedagogical content knowledge (knowing of how to make the subject understandable and interesting to learners).
3. General pedagogical knowledge (knowing strategies for managing student behaviour).
4. Curriculum knowledge (knowing the content of school, state, and national curriculum).
5. Knowledge of learners and their characteristics (who the students are and how to get them to learn).
6. Knowledge of educational contexts (knowing how school and classroom work can be related to community and work).
7. Knowledge of educational aims, values, their philosophical and historical backgrounds.

This type of experiential knowledge, Grossman (1991) adds is very essential for teaching effectiveness, and is obtained through years of repeated contacts and experimentation with students

March and Simon (1998), Ajayi (1995) and Salami (1999) are all of the view that such experienced teachers at all levels who have put in 6–10 years, 11–15 years of service are more stable in their job (the teaching profession).

Feldman (1982) found indicators of the teachers' seniority and instructional experience to be related to the overall evaluations of teachers, and with a consistent pattern. The teachers' academic rank is positively associated with the overall evaluation of the teacher, whereas both the teachers' age and instructional experience are inversely associated with overall evaluation. Although those association are generally weak in strength, they are robust enough to hold under a variety of controls (including the size of the enrolment and the gender of the teachers). Also, at least, for extent of instructional experience, the number and strength of the associations may be underestimated by considering the relationship in question as linear when in fact it may be curvilinear.

Just as teachers' age and extent of instructional experience I general have been either not related or inversely related to the global evaluation of teachers, so they have been for specific evaluations, the relationship tend to be positive for only certain specific rating dimensions while being inverse for others. This being so, it is puzzling that the associations that have been found between academic

rank and global evaluations have generally been positive only (Feldman, 1982). Whether or not the situation in respect of teaching experience is different among academic staff in University of Calabar, Nigeria is one of the concerns of this study.

2.10 Students' gender and their evaluation of teaching effectiveness

The research of the effect of students' gender on the ratings they give has not been conclusively. Early research concluded there has little or no relationship between gender and student ratings. Kierstead, D'Agostino, and Dill (1988) however, found that both male and female students consistently rated their female instructors lower than male instructors. Both genders indicated that they had different expectations for female instructors. They were expected not only to be highly competent teachers but also to act in accordance with traditional sex role expectations. They concluded that male and female instructors will earn equal ratings for equal professional work only if the women also display stereotypically feminine behaviour.

In a well–designed study that controlled for course, teacher experience, and class size, Leuck, Endres, and Caplan (1993) found that female students tended to rate male instructors higher, while female students rated female instructors higher than male instructors. But overall, there was no significant difference in the ratings given by male and female students.

Analysis of classroom studies indicates no practical difference in the overall ratings of male and female instructors. In 28 studies, the correlation between gender and overall evaluations of the teacher was .02 (Feldman, 1993).

Bachen, McLoughlin, and Garcia (1999) found that female students rated female faculty especially high across five teaching dimensions and male faculty comparatively lower, whereas male students did not evaluate male and female professors as significantly different. They also found that assessments of faculty were further influenced by the strength of students' gender schema and that gender schema may also led to differential preference for particular teaching styles.

Basow (1995) in student evaluations competed over a period at a private liberal arts college analysed for the effects of teachers' gender, and divisional affiliation. A significant multivariate interaction between teacher a gender and student gender was found for each of the 4 semesters examined. Overall, the ratings of male professors appeared to be unaffected by student gender. In contract, female professors tended to receive their highest ratings from female students and their lowest ratings from male students. This interaction generally remained when possible confounding factors (such as teacher rank) were partial out. The mean ratings received by female professors also varied as a function of the divisional affiliation of the course.

Basow (1998) using a quantitative approach argued that the overall effect of gender of student evaluations is small, accounting for about 3% of variance. However, there may be significant interaction effects between gender and other context variables that may cumulatively disadvantage female faculty. Basow (2000) also examined the qualities college students valued or disliked in their professors and whether they varied by student or professor gender. Students picked their best and worst professors, described their qualities, and rated their gender–liked personality traits. Gender factors operated more strongly in considerations of best versus worst professors. They also affected descriptions of best professors characteristics.

Students and instructors from 24 classrooms across 8 departments at a major university were observed in a study to

(a) Assess for sex differences in faculty–student interactions and in students' perceptions of their college classroom environment;

(b) Compare student perceptions of their college classroom interaction patterns with observed faculty–student interactions; and

(c) Assess a variety of demographic characteristics together to determine their singular and /or interactive effects on faculty–student interaction patterns and student perceptions.

Male and female students did not differ in their classroom participation or perceptions, and instructors did not interact differently with the male and female students. Student perceptions strongly correlated with their own behaviours and with instructor behaviours. Classroom interactions and student perceptions varied on the basis of different demographic characteristics including instructor sex, class size, instructor monitoring of gender–race equity in the classroom, gender relevance of the course, and the sex ratio of the class (Brady and Eisler, 1999).

Centra and Gaubat (2000) examined gender differences in student evaluations of teaching through two analyses. In the first, female and male student ratings in the same classes were compared for female and male instructors. In the second analysis, ratings by all male students are examined for how they differed for male and female instructors. Data came from 741 college classes, each of which had an enrolment of at least 10 female students and 10 male students from 21 colleges and universities. The student evaluation form was the student instructional Report II from the Educational Testing Service. Multivariate analysis of variance was used to investigate the mean differences of the dependent variable. In this study, in contrast to past studies, female students gave higher ratings to female instructors on three of eight scales for all disciplines combined, while male students gave male instructors higher ratings on only one scale, course organization and planning. Male and female students did not differ in their ranking of male teachers. For the total sample of

classes, when more favourable ratings were given, they were largely by female students to female instructors. Overall, results support the conclusion that gender differences among instructors are related more to their gender–related approaches to teaching than to their overall effectiveness.

141 students at a state university were asked to evaluate syllabi. The course topics were varied: Sociology of gender, Classical Social Theory, and issues in the Family, as was the sex of the hypothetical instructor. For example sociology of gender course, students were more likely to indicate for female instructors that the course topics reflected instructor biases, course topics appeared to be too political, exams and papers appeared to be subjective and dependent on instructor opinions, and that the instructor had a political agenda. Female and male students rating the course (with a female instructor) found that the topics reflected the instructors biases, while male students indicated that the topics appeared to be too political. (For the other two courses there were no significant differences dealing with these bias–related questions). However, there were no overall significant differences in whether students would want to take sociology of gender if the instructor were a man or a woman (Moore and Trahan, 1997).

Trato (1995) studied gender effects on student evaluations of their instructor. College students completed a questionnaire concerning their instructors' effectiveness. Data analysis indicated that female instructors received higher ratings than male instructors

and female students gave higher ratings than male students. Findings from this study will unravel what the situation is, in this respect, among students and their instructors in University of Calabar, Nigeria.

2.11 Summary of literature review

The issue of student evaluation of teaching effectiveness is always an interesting topic to many, hence the gamut of literature on it. Majority of the over thirty studies reviewed in this study under typical concerns of student evaluation of teaching effectiveness show that students judgements about their teachers tend to be pretty stable. All basically demonstrate that student evaluations can be used to improve instruction, and that students feed back is therefore most important for correction, and forms part of the growth and development of the teachers.

Literature reviewed have identified professional attributes or characteristics favourable for effective teaching to include: knowledge of subject matter; classroom communication; teaching strategies; classroom management; ability to motivate students; assessment of students learning activities; and relationship with students. In this study, extensive review has been done on each of these attributes.

Results from over forty studies reviewed and presented earlier on professional characteristics of teaching effectiveness show that for an instructor to be effective, he/she must possess high level of all of

the attributes listed above. The level of teaching effectiveness, therefore, is the sum of the levels of all these characteristics. Whether or not the level of teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is significantly high is the main concern of this study. The results of this study will also reveal the level of the academic staff's effectiveness in each of the professional characteristics under study.

Evidence from the literature, and majority of the findings from the studies reviewed under academic staff gender and teaching effectiveness, male and female instructors do not differ in the global ratings received from their students. Students tend to rate same-gendered teachers a little higher than opposite–gendered teachers. Studies have also shown that the ratings of male instructors are unaffected by student gender, but female instructors frequently receive lower ratings from their female students. Indeed, though some studies report no relationship between an instructor's gender and student rating, others show that adhering to a gender–appropriate teaching style may be rewarded by higher evaluations. What the trend is with academic staff in University of Calabar is one of the concerns of this study.

The findings from most studies reviewed show that instructors teaching certain subjects (disciplines) tend to receive higher students ratings than instructors in other disciplines. The course ratings tend to be somewhat higher for upper division courses and elective courses. Compared to other instructors, the studies reviewed show

that, those teaching humanities, fine arts, and languages tend to receive somewhat higher ratings, followed in descending order by biological and social sciences, business and computer science, mathematics, and the physical sciences. In a study, four general subject matter categories–basic sciences, basic medical sciences, clinical sciences, and preventive medicine–were examined. Analyses showed that teachers who taught in clinical sciences received highest of ratings from students. The trend may be different with academic staff in University of Calabar.

The literature on the effect of teacher quality and qualifications on teaching effectiveness has typically been viewed as inconsistent and inconclusive. Some studies conclude that a positive relationship exists between teacher qualification and teacher effectiveness, confirming that teachers who have earned advanced degrees have a positive impact on courses (or subjects) taught when those degrees earned were in these courses (or subjects). A few studies reviewed show no systematic relationship between educational qualifications and students performance and indeed teaching effectiveness.

None of the studies reviewed specifically showed whether possession of Bachelor degree or Master degree or doctorate degree has any significant effect on the teachers' teaching effectiveness. Results from this study will add to the knowledge bank in this area.

A few studies reviewed show that experienced teachers at all levels who have put in 6–10 years, 11–15 years of service are more stable in their job (the teaching profession). Studies reviewed, however, show that instructional experience in general have been

either not related or inversely related to global evaluations of teachers. The relationships tend to be positive for only certain rating dimensions while being inverse for others. The trend may be different among academic staff in University of Calabar.

Evidence from some literature reviewed shows little or no relationship between gender and student ratings. Others found that both male and female students consistently rated their female instructors lower than male instructors. Yet a study reviewed indicated that overall ratings of male instructor appeared to be unaffected by student gender. In contrast, female lecturers tended to receive their highest ratings from male students. The situation, in this respect, among academic staff in University of Calabar is one of the concerns of this study.

Literature on the influence of academic staffs' rank on teaching effectiveness is very scanty (to the best of the researcher's knowledge). Findings of this study, in this respects, would be a contribution to knowledge or will enrich literature in this area.

This review has given direction to this study. It has highlighted those areas of interest and concern to researchers in the area of student evaluation of teaching effectiveness. It has, therefore, given impetus or credence to the various research questions raised in chapter one of this study. The various studies reviewed were, generally, surveys: survey descriptive or survey inferential, in which the major instrument for data collection was the questionnaire. Some of the sample size, sampling techniques and statistical analysis adopted left much to be desired.

The review has suggested research design, methodology and the kinds of variables chosen for close study in this investigation. It is, however, pertinent to mention that most of these studies were conducted abroad (foreign–based), where comparatively the practice of student evaluation of teaching effectiveness has been petty well clear and fixed. Most of the studies reviewed in this study used simple descriptive statistics of percentages and mean values, making it difficult to study interactions between or among variables that influence students and teachers' attributes in the evaluation of teaching effectiveness. Therefore, replicating some of these studies in the Nigerian setting and filling some of the highlighted gaps are the major challenges that this study seeks to address.

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter; the design, procedure and methodology for conducting the study were discussed. The research area, the population, sampling procedure, the sample, and the research instrument–its construction, validation, reliability and administration –are presented. The hypotheses were re-stated (in the null form), and the associated variables were defined operationally. The data preparation and analysis techniques appropriate for testing the hypotheses were also described.

3.1 Research design

The design applied toward the conduct of this study is the "ex post facto". Kerlinger (1986) defines this design as involving a systematic empirical inquiry in which the researcher does not have direct control of the independent variables because their manifestations have already occurred or because they are inherently not manipulable. The designation "ex post facto" serves to indicate that the research in question is conducted after variations in the dependent variable(s) have already been determined in the natural course of events.

In this study, the independent variables are:

i) Academic staff's gender, age, discipline (faculty), qualification, professional status (rank), and years of teaching (teaching experience); and

ii) Students' gender.

The manifestations of these variables are already evident in the academic staff and students who are the subjects of this investigation. Thus, the existing levels or dimensions of the variables are not manipulable. The dependent variable is teaching effectiveness of academic staff, as evaluated by their students. In "ex post facto" studies, intact groups that possess attributes at each level of independent variable(s) are usually sampled, and the comparisons on the dependent measure(s) are attempts to discover possible causes or reasons for any observed differences in the respondents on dependent variables. It is seen as a useful method that can supply much information of value in educational decision-making where experimental designs are not appropriate, possible or ethical (Ary, Jacob, and Razavieh, 1985; Kerlinger, 1986).

In studying the effects of independent variables on the dependent ones (personal/demographic and professional variables of academic staff relating to teaching effectiveness and students' personal variables), the independent variables were considered singly and jointly. And this called for a factorial design which Kerlinger (1986) defines as "the structured research in which two or more independent variables are juxtaposed in order to study their independent and interaction effects on a dependent variable" (p. 322).

3.2 Research area

The area of study is University of Calabar. It is one of the sixteen conventional federal government owned universities in Nigeria. The Calabar campus of the University of Nigeria, Nsukka was the nucleus of the University of Calabar. As a campus of the University of Nigeria, Nsukka it began functioning during the 1973/74 academic session with 154 students and a small cadre of academic, administration and technical staff.

Today, the University has 10 faculties, three Institutes, and the University Library as other academic unit. The 10 faculties include: Agriculture (Five Departments); Arts (Six Departments); Basic Medical Sciences (Three Departments); Clinical Sciences (Ten Departments); Education (Five Departments); Laboratory and Allied Health Sciences (Eight Departments); Law (Two Departments); Management Sciences (Four Departments); Sciences (Eight Departments), and Social Sciences (Four Departments). The three Institutes include: Institute of Education (Three Departments); Institute of Oceanography (Three Departments); and Institute of Public Policy and Administration (Three Departments). University of Calabar Handbook (2004).

3.3 Population of the study

The population of this study comprised all the 646 academic staff in the 10 faculties and about 10,000 undergraduate students of all faculties in the University of Calabar.

3.4 Sampling procedure

The sampling techniques used in this study are simple random sampling, and stratified random sampling techniques. All the 10 faculties in the University were used for the study (see Table 1). Two of the three Institutes (Education and IPPA) not selected for the study were used for pilot test.

Using stratified random sampling technique, with faculty as the basis for stratification, forty (40) academic staff were selected from each faculty, except for faculty of law which did not have up to forty academic staff. For the faculty of Law, twenty (20) academic staff were randomly selected. In each faculty, simple random sampling technique (use of slips of paper with replacement) was adopted using the list (serial numbers and names) of academic staff in that faculty. The serial numbers which corresponded with the names of the academic staff were written on the slips of paper. The slips were folded and put in a container. After thorough reshuffling, the researcher, not looking into the container, dipped his hand and picked one slip. He unfolded the slip, recorded the name of the academic staff it contained, folded it again and put it back into the container. This process was repeated until the required number of academic staff in that faculty were drawn. This was done in the 10 faculties until the 380 academic staff as sample for the study, were drawn. Each of the 380 academic staff so selected was given a questionnaire on his/her personal/demographic characteristics, such as name, gender, age,

academic qualification, subject matter area (faculty), rank, and teaching experience, to fill and return to the researcher.

For each of the academic staff selected, ten (10) undergraduate students, with gender as the basis for stratification, was randomly selected to evaluate the teaching effectiveness of the academic staff. For each of the academic staff selected for the study, the researcher visited his/her class. With permission from that lecturer and assistance of the class representative the researcher noted the number of students (male and female) in that class. Again, simple random sampling technique (use of slips of paper with replacement) was adopted in the selection of 10 students (five male and five female) that would evaluate the academic staff. Five YES slips and NO slips that corresponded with the total number of male students in that class were written. The slips were folded and put in a container.

Another set of five YES slips and NO slips that corresponded with the total number of female students in the class were written. The slips were folded and put in another container. After thorough reshuffling, each student, male or female, not looking into the container, dipped his/her hand and picked one slip. He or she unfolded the slip. If he/she picked a YES slip, he/she was given a questionnaire (USETEQ) to fill. He/she folded the slip again and put back into the container. If he/she picked a NO slip, he/she folded the slip again, put back into the container, and was not given USETEQ to fill. This process was repeated until the five male students and five female students were selected, and given USETEQ to fill. In all, across the 10 faculties used for the study, 3800 undergraduate

students (1900 male, 1900 female) were selected to evaluate the teaching effectiveness of the sampled 380 academic staff (see Table 1).

The variables under academic staff characteristics selected for the study were six, namely: gender, age, qualification, subject matter area (faculty), rank and teaching experience; while students' characteristic selected for the study was: gender. It would be difficult to draw a sample where members were equally represented on those characteristics. Hence, two of these characteristics, discipline (faculty) for academic staff and gender for students, were chosen as the bases for stratification, and equal stratification was used. This will therefore mean that irrespective of the differentials in the number of departments in a faculty, and in the number of academic staff and students (male and female) in the 10 faculties used for this study, approximately equal number of academic staff and equal number of male and female students in each faculty (except for Law) was sampled for the study (see Table 2).

3.5 The sample

The sample for this study comprised 380 academic staff (40 from each of the 10 faculties used for the study) except law with 20 academic staff. However, 3800 undergraduate students-1900 male and 1900 female-were selected to evaluate the teaching effectiveness of the 380 academic staff, that is 10 students (five male and five female) to evaluate one academic staff. This sample size of 380 academic staff is believed by the researcher to be large enough to ensure realistic conclusions and appropriate generalizations.

TABLE 1

Distribution of Faculty, Academic Staff and Students selected for the study

S/NO	Faculties in the University of Calabar	No. of academic staff			No of academic staff selected for the study			No of students selected to evaluate academic staff (10 students for each academic staff)		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1.	Agriculture	59	8	67	34	6	40	200	200	400
2.	Arts	81	21	102	27	13	40	200	200	400
3.	Basic Medical Sc.	34	10	44	32	8	40	200	200	400
4.	Clinical Sciences	36	12	51	32	8	40	200	200	400
5.	Education	54	23	77	24	16	40	200	200	400
6.	Lab. & Allied Health Sc.	40	18	58	26	14	40	200	200	400
7.	Law	17	6	23	15	5	20	100	100	200
8.	Management Sc.	36	7	43	36	4	40	200	200	400
9.	Science	102	26	128	30	10	40	200	200	400
10.	Social Sciences	42	11	53	34	6	40	200	200	400
	TOTAL	504	142	646	290	90	380	1900	1900	3800

Source: ASUU-UCB records, 2005.

TABLE 2

Distribution of respondent according to academic staff/students characteristics used in the study

S/No	Academic staff/ student characteristics	Group		Frequency	Percentage
1.	**Gender**	1	Male	290	76.3
		2	Female	90	23.7
				380	**100.0**
2.	**Age (in years)**	1	20 – 30 yrs	54	14.2
		2	31 – 40 yrs	132	34.7
		3	41 – 50 yrs	110	29.0
		4	51 yrs and above	84	22.1
				380	**100.0**
3.	**Qualification**	1	Masters	167	43.9
		2	Doctorate	213	56.1
				380	**100.0**
4.	**Subject (Faculty)**	1	Agriculture	40	10.5
		2	Arts	40	10.5
		3	Basic Medical Sciences	40	10.5
		4	Clinical Sciences	40	10.5
		5	Education	40	10.5
		6	Lab & Allied Health Sciences	40	10.5
		7	Law	20	5.5
		8	Management	40	10.5
		9	Science	40	10.5
		10	Social Sciences	40	10.5
				380	**100.0**
5.	**Rank**	1	Assistant Lecturer	78	20.5
		2	Lecturer II / I	125	32.9
		3	Snr. Lecturer / Reader	130	34.2
		4	Professor	47	12.4
				380	**100.0**
6.	**Teaching experience**	1	Below 10 yrs	84	22.1
		2	11 – 20 yrs	107	28.2
		3	21 – 30 yrs	121	31.8
		4	31 yrs and above	68	17.9
				380	**100.0**
7.	**Discipline**	1	Sciences	200	52.6
		2	Humanities	140	36.9
		3	Education	40	10.5
				380	**100.0**
8.	**Student gender**	1	Male	1900	50.0
		2	Female	1900	50.0
				380	**100.0**

3.6 Instrumentation

The instruments used for this study were constructed by the researcher. The construction of the instruments was based on the knowledge derived from literature (Gadzello, 1968; Marsh, 1982; 1987; Onocha, 1995). The first instrument (Appendix A) elicited responses on the personal/demographic characteristics of the academic staff such as name, gender, age, academic qualification, discipline (faculty), rank, and teaching experience.

The second instrument (Appendix B) has two major sections. Section A elicited from the respondents (students) personal/demographic information on their gender. Section B was a 42-item likert type scale designed to measure students' evaluation of teaching effectiveness of their instructors. It had six parts, each with six questionnaire items on one of the seven identified professional characteristics of teaching effectiveness, namely: knowledge of subject matter; classroom communication skill; effective teaching methods/strategies; classroom management skill; ability to motivate students, relationship with students; and evaluation of students learning activities. All the 42 items of section B were of likert type on a six-point scale. The six points for positive items were: very strongly agree (6 points), strongly agree (5 points); agree (4 points); disagree (3 points); strongly disagree (2 points), and very strongly disagree (1 point). The points were reversed for negative items.

3.7 Validation of the research instrument

There are two indices that need to be established for a research instrument (questionnaire) before it is used for a study. These are 'validity' and 'reliability' indices. Validity refers to the degree to which an instrument measures what it is intended to measure, or the extent to which a true and accurate measure of a trait is probable. Reliability refers to the degree of consistency that the instrument demonstrates in measuring what it does. There are many ways of determining validity and reliability of psychological measuring instruments (Anastasi, 1988; Best & Kahn, 1989).

Two kinds of validity were established for the instrument for this study. These were 'face validity' and 'content validity'. Face validity refers to the way test or questionnaire items appear to take care of relevant content in the subject area of interest. Content validity refers to the extent to which the instrument represents the content of interest, or how well the items on the instrument represent or sample the content to be measured (Joshua, 1998a). Both validity types cannot be expressed mathematically, but are usually obtained by inspection and scrutiny of the items by experts (Ary et al, 1985; Brown, 1983). For this study, the questionnaire was subjected to rigorous scrutiny by three experts in educational measurement and evaluation, including the researcher's supervisors. They affirmed with very high percentage of agreement that the questionnaire appeared suitable for measuring what it was designed to measure.

3.7.1 Reliability of the instrument

Reliability refers to the extent which the test or instrument measures whatever it does measure in a consistent way or the degree of consistency that the instrument demonstrates in measuring what it does (Brown, 1983). To establish the reliability of the instrument, the questionnaires were trial-tested using 10 academic staff drawn from two institutes (Institutes of Education and IPPA–Institute of Public Policy and Administration), five academic staff from each Institute who were randomly selected from the University respectively. A total of 100 undergraduate students were used to evaluation the 10 academic staff, split-half reliability coefficients were computed for each of the seven parts of section B and for the entire section B of the instrument USETEQ (the section actually measured the dependent variables of the study). Split-half method is one of the internal consistency measures which depict the degree the instrument items are internally consistent in measuring variables of interest. For the above purpose, correlations of the two halves of the test, that is, between the odd-numbered and even-numbered items were computed and corrected using Spearman Brown prophecy formula to give the appropriate estimates of reliability of the instrument's components (Ary *et al*, 1985; Brown, 1985; Denga, 1987; Isangedighi, Joshua, Asim, and Ekuri, 2004). The reliability estimates are as shown on Table 3. The derived values which ranged from .83 to .91 were considered high enough to justify the use of the instrument for the study.

TABLE 3

Result of split-half reliability estimates of research instrument

Components of the instrument	No. of items	Means $\bar{X}$	Means $\bar{Y}$	SD X	SD Y	Split-half correlation	Spearman Brown reliability estimates
Knowledge of subject matter	6	24.23	23.98	2.43	2.21	.85	.91
Communication skill	6	21.62	21.94	2.13	2.88	.77	.87
Effective teaching strategies	6	20.79	21.21	2.34	2.56	.78	.88
Classroom management skill	6	22.41	22.87	1.98	2.08	.74	.85
Ability to motivate students	6	23.28	23.52	2.52	2.66	.80	.89
Relationship with students	6	23.57	23.81	2.82	2.71	.76	.86
Evaluation of students learning activities	6	24.01	24.28	2.76	2.83	.81	.90
The entire instrument (section B)	42	149.30	148.83	8.44	7.92	.71	.83

X = odd-numbered items

Y = even-numbered items

SD = standard deviations

3.8 Data collection procedure

The researcher got membership list (2005) containing names departments and rank of academic staff in the University of Calabar (the study area) from the secretariat of Academic Staff Union of Universities, University of Calabar Branch (ASUU-UCB) from where the sample was drawn using stratified random sampling technique. Questionnaire (Appendix A) that elicited responses on the personal/ demographic variables i.e. name, gender, age, qualification, subject matter area (faculty), rank, and teaching experience of the academic staff (independent variables) were administered on the sampled academic staff. Completed copies of the questionnaire were collected by the researcher, possibly on the spot in a bid to ensure high return rate for the instrument. Research assistants who know the academic staff assisted in the administration and collection of the instrument.

Using the academic staff selected as guides, students' questionnaires (Appendix B) constituting students' personal /demographic characteristics-gender, (independent variable) and professional characteristics of teaching effectiveness of academic staff (dependent variables) were administered to 3800 students to enable them evaluate the 380 academic staff. In each faculty, the researcher explained the objectives of the study to the respondents and also solicited their co-operation. The respondents were assured that all information collected will be used only for research purposes. Completed students questionnaires were collected by the researcher on the spot in a bid to ensure high return rate for the instrument.

However, the assistance of Research Assistants was solicited for the administration and collection of the questionnaire from the respondents.

3.9 Scoring the instrument

The personal/demographic information in the instruments (that constituted mainly the independent variables) were appropriately coded. For section B of the students' questionnaire (professional characteristics of teaching effectiveness of academic staff), the scores given to the response categories were:

a) Positive Statements:-

Very Strongly Agree (VSA)	-	6 points
Strongly Agree (SA)	-	5 points
Agree (A)	-	4 points
Disagree (D)	-	3 points
Strongly Disagree (SA)	-	2 points
Very Strongly Disagree (VSA)	-	1 point

b) Negative Statements:-

Very Strongly Agree (VSA)	-	1 points
Strongly Agree (SA)	-	2 points
Agree (A)	-	3 points
Disagree (D)	-	4 points
Strongly Disagree (SD)	-	5 points
Very Strongly Disagree (VSA)	-	6 point

The response score of each respondent was computed and mean and standard deviation calculated; and also mean and standard deviation for each of the groups. A cut-off point of 3.50 was arrived at thus: (6+5+4+3+2+1 = 21/6 = 3.50). Any mean response above 3.50 indicated student evaluation of teaching of academic staff as effective, while the mean score of 3.50 or below indicated student evaluation of teaching of academic staff as not being effective.

On the whole, all the variables were identified by their appropriate names and codes, and were assigned the necessary columns for data entry and analyses on the computer as shown in Table 4.

TABLE 4

Data coding schedule

S/N	Variables	Code
1.	Serial number of academic staff	001 – 380
2.	Academic staff sex	Male –1 Female – 2
3.	Age	(20 – 30 years) – 1 (31 – 40 years) – 2 (41 – 50 years) – 3 (51 years) - 4
4.	Subject matter area (faculty)	Agric – 1 Arts - 2 Basic mal. Sc. – 3 Clinical Sc. – 4 Education - 5 Lab & Allied Sc. – 6 Law - 7 Management Sc. – 8 Science - 9 Social Sc. – 10
5.	Discipline	Sciences – 1 Humanities – 2 Education – 3
6.	Academic qualification	Masters – 1 Doctorate – 2
7.	Rank	Assist. Lecturer – 1 Lecturer II/I – 2 Senior Lecturer/Reader – 3 Professor – 4
8.	Teaching experience	(≤ 10 years) - 1 (11 – 20 years) - 2 (21 – 30 years) - 3 (≥ 31 years) - 4
9.	Student sex	Male - 1 Female - 2
10.	Students serial number	0001 – 3800

3.10 Operational definitions of variables

The following variables associated with this study are hereby defined operationally in order to depict their contextual meanings as used in the study:

Gender: This carries the conventional meaning in this study. It had two levels : **1** – male; **2**- female.

Age: This also carries the conventional meaning in this study. It is here counted in years. It had four levels: 20-30yrs-**1**; 31-40yrs-**2**; 41-50yrs-**3**; 31 yrs and above -**4**.

Academic qualification: This implies the highest degree acquired by the academic staff. It had two levels: Masters - **1**; Doctorate - 2.

Teaching experience: This implies the number of years the academic staff has spent in teaching in the University. It had four levels: (≤ 10 yrs) - **1**; (11-20 yrs) - **2**; (21-30 yrs) - **3**; (≥ 31 yrs) - **4**.

Rank: This implies the designation or status that academic staff has reached in his/her teaching career in the University. It had four levels: Assistant Lecturer-**1**; Lecturer II/I-**2**; Senior Lecturer/Reader-**3**; Professor - **4**.

Subject matter area: This implies the faculty/broad area of study in which the lecturer is teaching in the university. It had eight levels: Agriculture-**1**; Arts-**2**; Basic Medical Sciences-**3**; Clinical Sciences- **4**; Education-**5**; Lab. & Allied Health Sciences–**6**; Law-**7**; Management Sciences–**8**; Science-**9**; Social Science-**10**.

Knowledge of subject matter: This refers to a teacher characteristic that shows the level of knowledge a teacher has of the subject as perceived by the students. This was measured by the sum of responses to items 2-7 in Section B of USETE Questionnaire.

Classroom Communication Skills: This refers to a teacher characteristic which shows that the teacher clearly transmits and receives information for the achievement of educational goals. It was measured by the sum of responses to items 8-13 in Section B of USETE Questionnaire.

Effective teaching method/strategy: This refers to the teachers' overt and covert methods/strategies used in the classroom designed to enhance effective teaching. It is operationalized as student responses on items 14-19 in Section B of the USETE Questionnaire.

Classroom management skill: This refers to the teacher ability to control and discipline in class to provide conducive atmosphere for learning. This was measured by the sum of responses to items 20-25 in Section B of the USETE Questionnaire.

Ability to motivate students: This implies the teacher's conscious efforts in encouraging his/her students to learn. This was measured by the sum of responses to items 26-31 in Section B of USETE Questionnaire.

Evaluation of students learning activities: This implies a conscious attempt at getting feedback from the students by the teacher on how much the students have learnt what has been taught. This could be done through observation, quizzes, test, assignment, examination, etc. This was measured by the sum of responses to items 32-37 in section B of the USETE Questionnaire.

Relationship with students: This implies a teacher characteristic, which refers to the way a teacher, interacts, treats or deals with his students. This was measured by the sum of responses to items 38-43 in Section B of USETE Questionnaire.

Teacher professional characteristics: This implies overt and covert behaviour, exhibited by the teacher in interaction with students in the classroom. It is the sum total of students responses on items 2-43 (overall teaching effectiveness) in Section B of the USETE Questionnaire.

Teaching effectiveness: This implies inputs from the teacher in the teaching –learning situation designed to enhance effective learning. It manifests in students' academic achievement. It is operationalized as the average score performance of each student in the teacher –made and validated test in any area of study or in the rewarding application of the knowledge gained in the course in achieving success in other courses.

Academic staff: In this study, academic staff specifically implies the teachers of academic courses or lessons in University of Calabar, Nigeria.

3.11 Procedure for testing hypotheses

Each hypothesis was re-stated here, the variable(s) inherent in it were identified, and the appropriate statistical analysis technique for testing it was given. All the hypotheses were stated in the null form, and were tested at .05 level of significance.

3.11.1 Hypothesis one

The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly high.

Variable involved: Academic staff's teaching effectiveness.

Statistical analysis technique: Population t-test (or t-test of one sample mean).

3.11.2 Hypothesis two

The teaching effectiveness of academic staff is not significantly influenced by the gender of the academic staff.

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Gender of the academic staff. (male, Female).

Statistical analysis technique: Independent t-test.

3.11.3 Hypothesis three

The teaching effectiveness of academic staff is not significantly influenced by the age of the academic staff.

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Age of the academic staff (20-30 yrs; 31-40 yrs; 41 – 50 yrs; 51 yrs and above).

Statistical analysis technique: One-way analysis of variance (ANOVA).

3.11.4 Hypothesis four

Academic staff's discipline has no significant influence on the teaching effectiveness of academic staff.

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Academic staff's discipline – Sciences; Humanities, and Education.

Statistical analysis technique: One-way ANOVA.

3.11.5 Hypothesis five

Academic qualification has no significant influence on the teaching effectiveness of academic staff.

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Academic staff's qualification (Masters; Doctorate).

Statistical analysis technique: Independent t-test.

3.11.6 Hypothesis six

Rank (designation) has no significant influence on the teaching effectiveness of academic staff.

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Academic staff's rank (assistant lecturer; Lecturer II/I; Senior Lecturer/Reader; Professor).

Statistical analysis technique: One-way ANOVA.

3.11.7 Hypothesis seven

The teaching effectiveness of academic staff is not significantly influenced by their number of years in teaching (teaching experience).

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Academic staff's teaching experience (below 10 yrs; 11-20 yrs; 21-30 yrs; 31 yrs and above).

Statistical analysis technique: One-way ANOVA.

3.11.8 Hypothesis eight

There is no significant interaction effect of gender, discipline, and rank, on the teaching effectiveness of academic staff in University of Calabar.

Dependent variable: Academic staff's teaching effectiveness.

Independent variable: Academic staff's gender, discipline, and rank and teaching experience.

Statistical analysis technique: Three-way ANOVA.

3.11.9 Hypothesis nine

The evaluation of academic staff's teaching effectiveness made by male students is not significantly different from the evaluation made by female students.

Dependent variable: Academic staff teaching effectiveness.

Independent variable: Male and female students evaluation.

Statistical analysis technique: Dependent t-test.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter is concerned with the analysis of data relevant to testing each hypothesis, the presentation, interpretation and discussion of the results. The result of each analysis was examined with respect to the corresponding hypothesis. The study was carried out to examine the teaching effectiveness of academic staff, as evaluated by their students in University of Calabar, Nigeria. In order to achieve the purpose of the study, nine hypotheses stated as formulated were tested using appropriate statistical analysis. For the analysis, the statistical package for the social science (SPSS) was used; and all hypotheses were tested at .05 alpha level. Specifically, the chapter is presented under the following sub-heading:

(i) General description of data

(ii) Hypothesis–by–hypothesis presentation of results

(iii) Discussion of findings.

4.1 General description of data

This is presented in two parts. The first part shows the description of the variables that constituted academic staff personal characteristics and students' gender which were the independent variables of the study. The second part shows the description of the variables that constituted sub-variables relating to academic staff's teaching effectiveness which were the dependent variables of the study. The independent variables were categorical in nature, and their

description, therefore, utilized frequencies and percentages. The dependent variables were continuous in nature, and their description involved the use of means and standard deviations.

4.1.1 Description of academic staff personal variables and students' gender

In this study, seven attributes namely: academic staff's gender, age, academic qualification, subject matter area (discipline), rank, teaching experience, and students' gender were used as independent variables. Table 4 shows the distribution of respondents along the lines of these variables.

Table 2 shows how the 380 academic staff and 3800 students in the sample were distributed along the lines of the eight independent variables. The 10 subject matter areas (faculties) were later collapsed into discipline with three categories, namely: Sciences (include faculties of Agriculture, Basic Medical Sciences, Clinical Sciences, Laboratory and Allied Health Sciences, and Science); Humanities (include faculties of Arts, Law, Management Sciences and Social Sciences); and Education faculty.

4.1.2 Description of teaching effectiveness variables

In this study, the components relating to academic staff teaching effectiveness selected for the study were eight (8). They constituted the dependent variables. Table 5 shows the mean and standard deviation for each of the components of teaching effectiveness variable. The number of items on the research instrument used to measure each of the variables are also indicated on Table 5. N = 380 in all cases.

TABLE 5

Number of items, means and standard deviations of components relating to academic staff teaching effectiveness (N = 380)

S/no	Variable	No. of items	Max score	Mean $(\bar{X})$	SD
1	Knowledge of subject matter	6	36	25.59	2.70
2.	Communication skills	6	36	24.20	2.20
3.	Effective teaching methods / Strategies	6	36	24.29	2.21
4.	Classroom management skills	6	36	21.71	2.46
5.	Ability to motivate students	6	36	23.92	2.05
6.	Evaluation of students learning activities	6	36	23.78	2.09
7.	Relationship with students	6	36	22.93	2.37
8.	Overall teaching effectiveness	42	252	166.06	12.07

N = 380 in all cases

4.2 Hypothesis – by – hypothesis presentation of results

4.2.1 Hypothesis I

The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly high.

The only variable involved in this hypothesis is the teaching effectiveness of academic staff. To test this hypothesis the researcher considered that, for the teaching effectiveness of the academic staff to be considered high, the respondents score on each of the items measuring teaching effectiveness should be significantly higher than 21.00 (which is the mid-point between "agree" and "disagree"), which is 1+2+3+4+5+6 = 21/6 = 3.50 multiplied by 6, which is the number of items in each sub-variable. The reference mean score for each component of this variable is 21.00. The mean score ($\overline{X}$) is higher than the 21.00 in all the sub-categories of teaching effectiveness as shown in the table as compared to the reference test value.

Thus, hypothesis one can be re-stated statistically as: the mean score of teaching effectiveness of academic staff is not significantly higher than 21.00. The statistical analysis technique adopted in testing this hypothesis was the population t-test. The result of the analysis is presented in Table 6.

TABLE 6

Population t-test analysis of academic staff teaching effectiveness (N = 380)

(Reference mean score = 21.00)

Sub-variable	N	Mean	SD	Df	t-value
Knowledge of subject matter	380	25.59	2.70	379	33.147*
Communication skills	380	24.20	2.20	379	28.301*
Effective teaching methods/strategies	380	24.29	2.21	379	29.084*
Classroom management skills	380	21.71	2.49	379	5.607*
Ability to motivate students	380	23.92	2.06	379	27.684*
Evaluation of students learning activities	380	23.78	2.09	379	25.884*
Relationship with students	380	22.93	2.37	379	15.922*
Overall teaching effectiveness	380	166.06	12.07	379	30.788*

t_{cri} = 1.960, *Significant at .05 alpha level.

The entries in Table 6 show the means, standard deviations, and t-values for the various sub-categories of the academic staff's teaching effectiveness, as evaluated by their students. From the table it can be observed that the mean scores for Knowledge of subject matter (25.59), Communication skills (24.20), Effective teaching methods/strategies (24.29), Classroom management skills (21.71), Ability to motivate students (23.92), Evaluation of students learning activities (23.78), and Relationship with students (22.93) are all higher than the hypothesized reference test value of 21.00. Also, the mean score of Overall teaching effectiveness (166.06) is higher than the hypothesized total score of 147.00. This implies that academic staff teaching effectiveness, as evaluated by their students, is high with respect to these sub-categories. The calculated t-values of Knowledge of students matter (33.147), Communication skills (28.301), Effective teaching methods/strategies (29.084), Classroom management skills (5.684), Ability to motivate students (27.684), Evaluation of students learning activities (25.884), Relationship with students (15.922), and Overall teaching effectiveness (30.788) are all higher than the critical t-value of 1.960. The null hypothesis is therefore rejected for these sub-categories. This means that the teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is significantly high in each of the seven sub-categories and in the total effect.

4.2.2 Hypothesis 2

There is no significant difference between male and female academic staff in their teaching effectiveness, as evaluated by their students.

The independent variable in this hypothesis is academic staff's gender while the dependent variable is academic staff's teaching effectiveness as evaluated by their students.

In testing this hypothesis, the mean scores of teaching effectiveness of male academic staff, as evaluated by their students, for the eight sub-categories of the dependent variable were compared with the mean scores of the female academic staff.

The statistical analysis technique used to test this hypothesis was the independent t-test analysis. The results of the analysis are presented in Table 7.

TABLE 7

Results of independent t-test analysis of the difference between male and female academic staff in their teaching effectiveness

Sub-variable	Group		N	Mean	SD	df	t-value
Knowledge of subject matter	1	Male	290	25.65	2.84	378	.771
	2	Female	90	25.42	2.29		
		Total	**380**				
Communication skills	1	Male	290	24.25	2.24	378	.906
	2	Female	90	24.02	2.09		
		Total	**380**				
Effective teaching methods / strategies	1	Male	290	24.34	2.25	378	1.260
	2	Female	90	24.05	2.05		
		Total	**380**				
Classroom management skills	1	Male	290	21.63	2.05	378	-.885
	2	Female	90	21.97	3.47		
		Total	**380**				
Ability to motivate students	1	Male	290	23.97	2.13	378	.928
	2	Female	90	23.76	1.78		
		Total	**380**				
Evaluation of students learning activities	1	Male	290	23.90	2.16	378	2.255*
	2	Female	90	23.39	1.80		
		Total	**380**				
RWS Relationship with students	1	Male	290	22.94	2.39	378	.113
	2	Female	90	22.91	2.30		
		Total	**380**				
Overall teaching effectiveness	1	Male	290	166.43	12.35	378	.121
	2	Female	90	164.88	11.11		
		Total	**380**				

t_{cri} = 1.97, *Significant at .05 alpha level.

The result presented in Table 7 shows the various mean values for the students' evaluation of male and female academic staff on the eight sub-categories of teaching effectiveness of academic staff. These results show calculated t-values as follows:

Knowledge of subject matter	:	.771
Communication skills	:	.906
Effective teaching methods/strategies	:	1.260
Classroom management skills	:	.885
Ability to motivate students	:	.928
Evaluation of students learning activities	:	2.255*
Relationship with students	:	.113
Overall teaching effectiveness	:	.121

From the above results, the calculated t-values of Knowledge of subject matter (.771), Communication skill (.906), Effective teaching methods/strategies (1.260), Classroom management skills (.885), Ability to motivate students (.928), Relationship with students (.113), and Overall teaching effectiveness (.121) are each lower than the critical t-value of 1.97 at .05 alpha level with 378 degrees of freedom. The null hypothesis was therefore retained (not rejected) for each of these sub-categories. This therefore means that, there is no significant difference between male and female academic staff in their teaching effectiveness, as evaluated by their students, with respect to Knowledge of subject matter, Communication skill, Effective teaching methods/strategies, Classroom management skills, Ability to motivate

students, Relationship with students, and Overall teaching effectiveness.

The calculated t-value for Elevation of students learning activities (2.255) is higher than the critical t-value of 1.97 at .05 level of significance with 378 degrees of freedom. Following this, the null hypothesis was rejected and its alternative upheld for this sub-category. This means that there is a significant difference between male and female academics staff in their teaching effectiveness, as evaluated by their students, with respect to Elevation of students learning activities. The direction of significance is in favour of male academic staff. This implies that male academic staff's teaching effectiveness with regards to Elevation of students learning activities (mean = 23.901) is significantly higher than female academic staff's teaching effectiveness with respect to EVSLA (mean = 23.387).

4.2.3 Hypothesis 3

The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly influenced by the age of the academic staff.

The independent variable in this hypothesis is age of the academic staff, while the dependent variable is academic staff teaching effectiveness. The respondents in the sample were categorized into four groups based on the categories as indicated for age of the academic staff. These groups were categorized based on the following score range:

Group 1 (20–30 yrs), Group 2 (31–40 yrs), Group 3 (41–50 yrs), Group 4 (51 yrs and above).

The dependent variable in the study and in this hypothesis had seven components or sub-variables, namely

KSM	:	Knowledge of subject matter
COMSK	:	Communication skills
ETM	:	Effective teaching methods/strategies
CLMSK	:	Classroom management skills
ABMS	:	Ability to motivate students
EVSLA	:	Evaluation of students learning activities
RWS	:	Relationship with students

The total effects of the overall sub-variable (or components) of the dependent variable were also studied under Overall teaching effectiveness.

The statistical technique used to test this hypothesis was one-way analysis of variance (one-way ANOVA). The hypothesis was tested on each of the eight sub-categories of the dependent variable. The results of the data analysis are presented in Tables 8, 9 and 10. The group means and standard deviations for the four groups on each of the eight sub-categories of the dependent variable are presented in Table 8. The actual results of ANOVA are presented in Table 9, while Fisher's LSD multiple comparison analysis are presented in Table 10.

TABLE 8

Group means and standard deviations of academic staff teaching effectiveness based on their age

Sub-variable	Group	N	Mean	SD
Knowledge subject matters	1 (20 – 30 yrs)	54	24.13	2.94
	2 (31 – 40 yrs)	132	25.30	3.01
	3 (41 – 50 yrs)	110	25.61	2.32
	4 (51 yrs and above)	84	26.97	1.72
	Total	**380**	**25.59**	**2.70**
Communication skill	1 (20 – 30 yrs)	54	22.61	1.98
	2 (31 – 40 yrs)	132	23.61	1.76
	3 (41 – 50 yrs)	110	24.56	2.11
	4 (51 yrs and above)	84	25.66	2.09
	Total	**380**	**24.20**	**2.20**
Effective teaching method/strategies	1 (20 – 30 yrs)	54	22.69	1.92
	2 (31 – 40 yrs)	132	23.62	1.88
	3 (41 – 50 yrs)	110	24.56	2.02
	4 (51 yrs and above)	84	26.05	1.84
	Total	**380**	**24.29**	**2.21**
Classroom management skills	1 (20 – 30 yrs)	54	20.56	1.74
	2 (31 – 40 yrs)	132	21.41	3.01
	3 (41 – 50 yrs)	110	21.55	1.82
	4 (51 yrs and above)	84	23.11	1.98
	Total	**380**	**21.71**	**2.46**
Ability to motivate students	1 (20 – 30 yrs)	54	22.37	1.40
	2 (31 – 40 yrs)	132	23.49	1.66
	3 (41 – 50 yrs)	110	24.10	1.94
	4 (51 yrs and above)	84	25.35	2.19
	Total	**380**	**23.92**	**2.05**
Evaluation of students learning activities	1 (20 – 30 yrs)	54	22.27	1.71
	2 (31 – 40 yrs)	132	23.17	1.66
	3 (41 – 50 yrs)	110	23.97	1.94
	4 (51 yrs and above)	84	25.50	1.93
	Total	**380**	**23.78**	**2.09**
Relationship with students	1 (20 – 30 yrs)	54	21.57	2.52
	2 (31 – 40 yrs)	132	22.45	2.10
	3 (41 – 50 yrs)	110	22.88	2.07
	4 (51 yrs and above)	84	24.66	2.08
	Total	**380**	**22.93**	**2.37**
Overall teaching effectiveness	1 (20 – 30 yrs)	54	155.47	10.65
	2 (31 – 40 yrs)	132	162.26	9.15
	3 (41 – 50 yrs)	110	167.18	10.23
	4 (51 yrs and above)	84	177.38	10.19
	Total	**380**	**166.06**	**12.07**

TABLE 9

Results of analysis of variance of the influence of age on academic staff teaching effectiveness

Sub-variable	Source of variation	Sum of squares	df	Mean square	F_{cal}
Knowledge of subject matter	Between groups	286.369	3	95.456	14.488*
	Within groups	2477.362	376	6.589	
	Total	**2763.731**	**379**		
Communication skills	Between groups	376.432	3	125.477	32.332*
	Within groups	1459.222	376	3.881	
	Total	**1835.653**	**379**		
Effective teaching methods	Between groups	463.677	3	154.559	42.080*
	Within groups	1381.056	376	3.673	
	Total	**1844.733**	**379**		
Classroom management skill	Between groups	251.568	3	83.856	15.462*
	Within groups	2039.233	376	5.423	
	Total	**2290.801**	**379**		
Ability to motivate students	Between groups	329.139	3	109.713	32.456*
	Within groups	1271.005	376	3.380	
	Total	**1600.144**	**379**		
Evaluation of students learning activities	Between groups	422.431	3	140.810	
	Within groups	1237.162	376	3.290	42.795*
	Total	**1659.593**	**379**		
Relationship with students	Between groups	381.341	3	127.114	27.386*
	Within groups	1745.231	376	4.642	
	Total	**2126.571**	**379**		
Overall teaching effectiveness	Between groups	18862.129	3	6287.376	65.053*
	Within groups	36340.631	376	96.651	
	Total	**55202.760**	**379**		

F_{cri} at $df_{3,376} = 2.61$, Decision: *Significant at .05 alpha level.

The result of the actual analysis of variance of the influence of academic staff's age on their teaching effectiveness are shown in Table 9. These results show calculated F-values as follows:

Knowledge of subject matter	: 14.488*
Communication skills	: 32.332*
Effective teaching methods/strategies	: 42.080*
Classroom management skills	: 15.462*
Ability to motivate students	: 32.456*
Evaluation of students learning activities	: 42.795*
Relationship with students	: 27.386*
Overall teaching effectiveness	: 65.053*

From the above results, the calculated F-values of the eight sub-categories of the dependent variable are each higher than the critical F-ratio of 2.61 at .05 alpha level with 3 and 376 degrees of freedom. The null hypothesis was, therefore, rejected for each of these sub-categories. This means that there is a significant influence of academic staff's age on their teaching effectiveness, with regards to all of these sub-categories of the teaching effectiveness.

Given the significant F-values, a detailed multiple comparison analysis using Fisher's Least Square Difference (LSD) was done to determine exactly which group (20 – 30 yrs; 31 – 40 yrs; 41 – 50 yrs; 51 yrs and above) differed significantly from each other in terms of the academic staff teaching effectiveness in University of Calabar, Nigeria. The results of these analyses were presented in Table 10.

TABLE 10

Results of Fisher's LSD multiple comparison analysis of influence of age on academic staff teaching effectiveness

Sub-categories of teaching effectiveness	Age	20-30yrs (N = 54)	31-40yrs (N = 132)	41-50yrs (N=110)	51yrs above (N = 84)
Knowledge of subject matter	20-30 yrs	24.13[a]	-1.17[b]	-1.48	-2.84
	31-40 yrs	-2.82[c*]	25.30	-0.31	-1.67
	41-50 yrs	-3.47*	-0.94	25.61	-1.36
	≥ 51 yrs	-6.35*	-4.66*	-3.66*	26.97
		MSW = 6.589			
Classroom communication skills	20-30 yrs	22.61[a]	-1.00[b]	-1.95	-3.05
	31-40 yrs	-3.14[c*]	23.61	-0.95	-2.05
	41-50 yrs	-5.96*	-3.73*	24.56	-1.10
	≥ 51 yrs	-8.88*	-7.45*	-3.85	25.66
		MSW = 3.881			
Effective teaching methods / strategies	20-30 yrs	22.69[a]	-0.93[b]	-1.86	-3.36
	31-40 yrs	-3.00[c*]	23.62	-0.93	-2.43
	41-50 yrs	-5.84*	-3.75*	24.55	-1.50
	≥ 51 yrs	-10.06*	-9.08*	-5.40*	26.05
		MSW = 3.673			
Classroom management skills	20-30 yrs	20.56[a]	-0.85[b]	-0.99	-2.55
	31-40 yrs	-2.26[c*]	21.41	-0.14	-1.70
	41-50 yrs	-2.56*	-.47	21.55	-1.56
	≥ 51 yrs	-6.28*	-5.23*	-4.62*	23.11
		MSW = 5.423			
Ability to motivate students	20-30 yrs	22.37[a]	-1.12[b]	-1.73	-2.98
	31-40 yrs	-3.78[c*]	23.49	-0.61	-1.86
	41-50 yrs	-5.66*	-2.57*	24.10	-1.25
	≥ 51 yrs	-9.30*	-7.25*	-4.69*	25.35
		MSW = 3.380			
Evaluation of students learning activities	20-30 yrs	22.27[a]	-0.90[b]	-1.70	-3.23
	31-40 yrs	-3.07[c*]	23.17	-0.80	-2.33
	41-50 yrs	-5.64*	-3.41*	23.97	-1.53
	≥ 51 yrs	-10.21*	-9.20*	-5.82*	25.50
		MSW = 3.290			
Relationship with students	20-30 yrs	21.57[a]	-0.88[b]	-1.31	-3.09
	31-40 yrs	-2.53[c*]	22.45	-0.43	-2.21
	41-50 yrs	-3.66*	-1.54	22.88	-1.78
	≥ 51 yrs	-8.23*	-7.35*	-5.70*	24.66
		MSW = 4.642			
Overall teaching effectiveness	20-30 yrs	155.47[a]	-6.79[b]	-11.71	-21.91
	31-40 yrs	-4.28[c*]	162.26	-4.92	-15.12
	41-50 yrs	-7.17*	-3.87*	167.18	-10.20
	≥ 51 yrs	-12.78*	-11.01*	-5.03*	177.38
		MSW = 96.651			

a = Group means are placed along the major diagonals

b = Differences between group means are above the major diagonals

c = Fisher's t-values are below the major diagonals

*Significant at .05 alpha level (t_{cri} = 1.97).

The pattern of the influence of academic staff's age on their teaching effectiveness is as follows:

(i) **Knowledge of subject matter (KSM)**

The significant Fisher's t-values of –2.82, -3.47 and -6.35 indicate that academic staff's teaching effectiveness with respect to knowledge of subject matter for the academic staff aged 31-40 yrs (mean = 25.30), 41-50 yrs (mean = 25.61) and 51 yrs and above (mean = 26.97) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of the subject matter for academic staff aged 20 – 30 yrs (mean = 24.13). Also, the significant Fisher's t-value of –4.66 and –3.66 indicate that academic staff teaching effectiveness with respect to knowledge of subject matter for the academic staff aged 41 – 50 yrs (mean = 25.61) and 51 yrs and above (mean = 26.97) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff aged 31 – 40 yrs (mean = 25.30).

The non-significant Fisher's t-value of –0.94 indicates that academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff aged 41 – 50 yrs (mean = 25.61) is not significantly different from academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff aged 31 – 40 yrs (mean = 25.30).

(ii) **Classroom communication skills (COMSK)**

The significant Fisher's t-values of –3.14, -5.96 and -8.88 indicate that academic staff's teaching effectiveness with respect to classroom communication skills for the academic staff aged 31-40 yrs (mean = 23.6), 41-50 yrs (mean = 24.56) and 51 yrs and above (mean = 25.66) are significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for academic staff aged 20 – 30 yrs (mean = 22.61). Also, the significant Fisher's t-value of –3.73 and –7.45 indicate that academic staff teaching effectiveness with respect to classroom communication skills for the academic staff aged 41 – 50 yrs (mean = 24.56) and 51 yrs and above (mean = 25.66) are significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for academic staff aged 31 – 40 yrs (mean = 23.61). The significant Fisher's t-value of –3.85 indicates that academic staff's teaching effectiveness with respect to classroom communication skills for academic staff aged 51 yrs and above (mean = 25.66) is significantly higher than teaching effectiveness with respect to classroom communication skills for academic staff aged 41 – 50 yrs (mean = 24.56).

(iii) **Effective teaching methods / strategies (ETM)**

The significant Fisher's t-values of –3.00, -5.84, and -10.06 indicate that academic staff's teaching effectiveness with

respect to effective teaching methods/strategies for the academic staff aged 31-40 yrs (mean = 23.62), 41-50 yrs (mean = 24.55) and 51 yrs and above (mean = 26.05) are significantly higher than academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff aged 20 – 30 yrs (mean = 22.69). The Fisher's t-value of –3.75 and –9.08 indicate that academic staff teaching effectiveness with respect to effective teaching methods/strategies for the academic staff aged 41 – 50 yrs (mean = 24.55) and 51 yrs and above (mean = 26.05) are significantly higher than academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff aged 31 – 40 yrs (mean = 23.62). Also, the significant Fisher's t-value of –5.40 indicates that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff aged 51 yrs and above (mean = 26.05) is significantly higher than teaching effectiveness with respect to effective teaching methods/strategies for academic staff aged 41 – 50 yrs (mean = 24.55).

(iv) **Classroom management skills (CLMSK)**

The significant Fisher's t-values of –2.26, -2.56, and -6.28 indicate that academic staff's teaching effectiveness with respect to classroom management skills for the academic staff aged 31-40 yrs (mean = 21.41), 41-50 yrs (mean = 21.55) and 51 yrs and above (mean = 23.11) are significantly higher than

academic staff's teaching effectiveness with respect to classroom management skills for academic staff aged 20 – 30 yrs (mean = 20.56). Also, the significant Fisher's t-value of –5.23 and –4.62 indicate that academic staff teaching effectiveness with respect to classroom management skills for the academic staff aged 41 – 50 yrs (mean = 21.55) and 51 yrs and above (mean = 23.11) are significantly higher than academic staff's teaching effectiveness with respect to classroom management skills for academic staff aged 31 – 40 yrs (mean = 21.41).

The non-significant Fisher's t-value of –0.47 indicates that academic staff's teaching effectiveness with respect to classroom management skills for academic staff aged 41 - 50 yrs (mean = 21.55) is not significantly different from academic staff's teaching effectiveness with respect to classroom management skills for academic staff aged 31 – 40 yrs (mean = 21.41).

(v) **Ability to motivate students (ABMS)**

The significant Fisher's t-values of –3.78, -5.66, and -9.30 indicate that academic staff's teaching effectiveness with respect to ability to motivate students for the academic staff aged 31-40 yrs (mean = 23.49), 41-50 yrs (mean = 24.10) and 51 yrs and above (mean = 25.35) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for academic staff aged 20 – 30 yrs (mean =

22.37). The significant Fisher's t-value of –2.57 and –7.25 indicate that academic staff teaching effectiveness with respect to ability to motivate students for the academic staff aged 41 – 50 yrs (mean = 24.10) and 51 yrs and above (mean = 25.35) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for academic staff aged 31 – 40 yrs (mean = 23.49). Also, the significant Fisher's t-value of –4.69 indicates that academic staff's teaching effectiveness with respect to ability to motivate students for academic staff aged 51 yrs and above (mean = 25.35) is significantly higher than teaching effectiveness with respect to ability to motivate students for academic staff aged 41 – 50 yrs (mean = 24.10).

(vi) **Evaluation of students learning activities (EVSLA)**

The significant Fisher's t-values of –3.07, -5.64, and -10.21 indicate that academic staff's teaching effectiveness with respect to evaluation of students learning activities for the academic staff aged 31-40 yrs (mean = 23.17), 41-50 yrs (mean = 23.97) and 51 yrs and above (mean = 25.50) are significantly higher than academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff aged 20 – 30 yrs (mean = 22.27). The significant Fisher's t-value of –3.41 and –9.20 indicate that academic staff teaching effectiveness with respect to evaluation of students learning activities for the academic staff aged 41 – 50 yrs (mean =

23.97) and 51 yrs and above (mean = 25.50) are significantly higher than academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff aged 31 – 40 yrs (mean = 23.17). Also, the significant Fisher's t-value of –5.82 indicates that academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff aged 51 yrs and above (mean = 25.50) is significantly higher than teaching effectiveness with respect to evaluation of students learning activities for academic staff aged 41 – 50 yrs (mean = 23.97).

(vii) **Relationship with students (RWS)**

The significant Fisher's t-values of –2.53, -3.66, and -8.23 indicate that academic staff's teaching effectiveness with respect to relationship with students for the academic staff aged 31-40 yrs (mean = 22.45), 41-50 yrs (mean = 22.88) and 51 yrs and above (mean = 24.66) are significantly higher than academic staff's teaching effectiveness with respect to relationship with students for academic staff aged 20 – 30 yrs (mean = 21.57). Also, the significant Fisher's t-value of –7.35 and –5.70 indicate that academic staff teaching effectiveness with respect to relationship with students for the academic staff aged 41 – 50 yrs (mean = 22.88) and 51 yrs and above (mean = 24.66) are significantly higher than academic staff's teaching effectiveness with respect to relationship with students for academic staff aged 31 – 40 yrs (mean = 22.45).

The non-significant Fisher's t-value of –1.54 indicates that academic staff's teaching effectiveness with respect to

relationship with students for academic staff aged 41 - 50 yrs (mean = 22.88) is not significantly different from academic staff's teaching effectiveness with respect to relationship with students for academic staff aged 31 – 40 yrs (mean = 22.45).

(viii) **Overall teaching effectiveness (OVTE)**

This implies the overall effects of the various sub-categories or components of teaching effectiveness. The significant Fisher's t-values of –4.28, -7.17, and -12.78 indicate that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for the academic staff aged 31-40 yrs (mean = 162.26), 41-50 yrs (mean = 167.18) and 51 yrs and above (mean = 177.38) are significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff aged 20 – 30 yrs (mean = 155.47). The significant Fisher's t-value of –3.87 and –11.01 indicate that academic staff teaching effectiveness with respect to interactive effects of the various sub-categories for the academic staff aged 41 – 50 yrs (mean = 167.18) and 51 yrs and above (mean = 177.38) are significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff aged 31 – 40 yrs (mean = 162.26). Also, the significant Fisher's t-value of 5.03 indicates that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff aged 51 yrs and above (mean = 177.38) is significantly higher than teaching effectiveness with respect to interactive

effects of the various sub-categories for academic staff aged 41 – 50 yrs (mean = 167.18).

4.2.4 Hypothesis 4

The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly influenced by the discipline of the academic staff.

The independent variable in this hypothesis is the discipline (broad area of knowledge) of the academic staff, while the dependent variable is academic staff's teaching effectiveness. The respondents in the sample were categorized into four groups based on their categories as indicated for their discipline. These groups were categorized based on the following ranges:

Group 1: Sciences (comprising academic staff in the Faculties of Agriculture, Basic Medical Sciences, Clinical Sciences, Laboratory and Allied Health Sciences, and Science).

Group 2: Humanities (comprising academic staff in the Faculties of Arts, Law, Management Sciences and Social Sciences).

Group 3: Education (comprising academic staff in Faculty of Education).

The dependent variable in the study and this hypothesis had eight components (sub-categories), namely:

KSM : Knowledge of subject matter

COMSK : Communication skills

ETM : Effective teaching methods / strategies

CLMSK : Classroom management skills

ABMS : Ability to motivate students

EVSLA : Evaluation of students learning activities

RWS : Relationship with students

OVTE : Overall teaching effectiveness

The statistical analysis technique used to test this hypothesis was one-way analysis of variance (ANOVA). The hypothesis was tested on each of the eight sub-categories of the dependent variable. The results of the data analysis are presented in Table 11, 12, and 13. The group means and standard deviations for the three groups on each of the eight sub-categories of the dependent variable are presented in Table 11; the actual results of ANOVA are presented in Table 12; while Fisher's protected t-test analysis of differences among means is presented in Table 13.

TABLE 11

Group means and standard deviations of academic staff teaching effectiveness based on their discipline

Sub-variable		Group	N	Mean	SD
Knowledge of subject matter	1	Sciences	200	25.68	2.75
	2	Humanities	140	25.02	2.77
	3	Education	40	27.17	1.15
		Total	**380**	**25.59**	**2.70**
Communication skills	1	Sciences	200	24.12	2.22
	2	Humanities	140	24.05	2.28
	3	Education	40	25.11	1.55
		Total	**380**	**24.20**	**2.20**
Effective teaching methods/strategies	1	Sciences	200	24.15	2.07
	2	Humanities	140	23.91	2.27
	3	Education	40	26.36	1.43
		Total	**380**	**24.29**	**2.21**
Classroom management skills	1	Sciences	200	21.88	2.63
	2	Humanities	140	21.37	2.40
	3	Education	40	22.01	1.54
		Total	**380**	**21.71**	**2.46**
Ability to motivate students	1	Sciences	200	23.98	2.02
	2	Humanities	140	23.71	2.16
	3	Education	40	24.31	1.81
		Total	**380**	**23.92**	**2.06**
Evaluation of students learning activities	1	Sciences	200	23.66	2.07
	2	Humanities	140	23.77	2.19
	3	Education	40	24.40	1.79
		Total	**380**	**23.78**	**2.09**
Relationship with students	1	Sciences	200	22.89	2.29
	2	Humanities	140	22.56	2.51
	3	Education	40	24.49	1.59
		Total	**380**	**22.94**	**2.37**
Overall teaching effectiveness	1	Sciences	200	165.72	11.33
	2	Humanities	140	164.33	13.12
	3	Education	40	173.82	8.64
		Total	**380**	**16606**	**12.07**

Sciences: Agriculture (40), Basic Med. Sc. (40), Clinical Sc. (40), Lab & Allied Health Sc. (40), Science (40)

Humanities: Arts (40), Law (20), Management Sc. (40), Social Sc. (40)

Education: Education (40)

TABLE 12

Results of analysis of variance of the influence of discipline on academic staff teaching effectiveness

Sub-variable	Source of variation	Sum of squares	df	Mean square	F_{cal}
Knowledge of subject matter	Between groups	147.241	2	73.621	10.608*
	Within groups	2616.490	377	6.940	
	Total	**2763.731**	**379**		
Communication skills	Between groups	38.076	2	19.038	3.993*
	Within groups	1797.577	377	4.768	
	Total	**1835.653**	**379**		
Effective teaching Methods / strategies	Between groups	195.074	2	97.537	22.290*
	Within groups	1649.659	377	4.376	
	Total	**1844.733**	**379**		
Classroom management skills	Between groups	25.477	2	12.739	2.120
	Within groups	2265.323	377	6.009	
	Total	**2290.801**	**379**		
Ability to motivate students	Between groups	12.911	2	6.456	1.533
	Within groups	1587.233	377	4.210	
	Total	**1600.144**	**379**		
Evaluation of students Learning activities	Between groups	18.097	2	9.049	2.078
	Within groups	1641.495	377	4.354	
	Total	**1659.593**	**379**		
Relationship with students	Between groups	117.065	2	58.532	10.981*
	Within groups	2009.507	377	5.330	
	Total	**2126.571**	**379**		
Overall teaching effectiveness	Between groups	2850.435	2	1425.218	10.263*
	Within groups	52352.325	377	138.866	
	Total	**55202.760**	**379**		

F_{cri} at $df_{3,376}$ = 3.02, Decision: *Significant at .05 alpha level.

The result of the analysis of variance of the influence of discipline on academic staff's teaching effectiveness are shown in Table 12. These results show calculated F-values as follows:

Knowledge of subject matter	: 10.608*
Communication skills	: 3.993*
Effective teaching methods/strategies	: 22.290*
Classroom management skills	: 2.120
Ability to motivate students	: 1.533
Evaluation of students learning activities	: 2.078
Relationship with students	: 10.981*
Overall teaching effectiveness	: 10.263*

From these results, the calculated F-values for Classroom management skills (2.120), Ability to motivate students (1.533), and Evaluation of students learning activities (2.078) are each lower than the critical F-ratio of 3.02 at .05 alpha level of significance with 2 and 377 degrees of freedom. Following this results, the null hypothesis four was retained for these sub-categories. This means that academic staff's teaching effectiveness does not significantly depend on the discipline of the academic staff with respect to classroom management skills, ability to motivate students, and evaluation of students learning activities.

From the above results (Table 12), the calculated F-values of Knowledge of subject matter (10.608), Communication skills (3.993), Effective teaching methods/strategies (22.290), Relationship with students (10.981), and Overall teaching effectiveness (10.263) are

each higher than the critical F-ratio of 3.02 at .05 alpha level with 2 and 377 degrees of freedom. The null hypothesis was therefore rejected for each of these sub-categories. This therefore means that academic staff's teaching effectiveness significantly depends on the discipline of the academic staff with regards to the Knowledge of subject matter, Communication skill, Effective teaching methods/strategies, Relationship with students, and Overall teaching effectiveness (the interactive effects of all various sub-categories).

The pattern of the influence of the discipline of the academic staff on their teaching effectiveness with respect to Knowledge of subject matter, Communication skills, Effective teaching methods/ strategies, Relationship with students, and Overall teaching effectiveness was further explored using Fisher's Least Significant Difference (LSD) multiple comparison analysis. The result of the analysis is presented in Table 13.

TABLE 13

Results of Fisher's LSD multiple comparison analysis of the significance influence of discipline on academic staff teaching effectiveness

Sub-categories of teaching effectiveness	Discipline	Sciences (N = 200)	Humanities (N = 140)	Education (N = 40)
Knowledge of subject matter	Sciences	25.68[a]	-0.66[b]	-1.49
	Humanities	2.28[c*]	25.02	-2.15
	Education	-3.27*	-4.56*	27.17
		MSW = 6.940		
Communication skills	Sciences	24.12[a]	-0.07[b]	-0.99
	Humanities	0.29[c*]	24.05	-1.06
	Education	-2.62*	-2.71*	25.11
		MSW = 4.768		
Effective teaching methods/strategies	Sciences	24.15[a]	0.24[b]	-2.21
	Humanities	1.04[c*]	23.91	-2.45
	Education	-6.10*	-6.54*	26.36
		MSW = 4.376		
Relationship with students	Sciences	22.89[a]	-0.33[b]	-1.60
	Humanities	1.30[c*]	22.56	-1.93
	Education	-4.00*	-4.67*	24.49
		MSW = 5.330		
Overall teaching effectiveness	Sciences	165.72[a]	1.39[b]	-8.10
	Humanities	1.07[c*]	164.33	-9.49
	Education	-3.97*	-4.49*	173.82
		MSW = 138.866		

a = Group means are placed along the major diagonals

b = Differences between group means are above the major diagonals

c = Fisher's t-values are below the major diagonals

*Significant at .05 alpha level (t_{cri} = 1.97).

The pattern of this influence is as follows:

(i) **Knowledge of subject matter (KSM)**

The significant Fisher's t-values of 2.28, and -3.27 indicate that academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff in Education (mean = 27.17), and Sciences (mean = 25.68) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of the subject matter for academic staff in the Humanities (mean = 25.02). Also, the significant Fisher's t-value of -4.56 indicate that academic staff teaching effectiveness with respect to knowledge of subject matter for academic staff in Education (mean = 27.17) is significantly higher than academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff in the Humanities (mean = 25.02).

(ii) **Classroom communication skills (COMSK)**

The significant Fisher's t-values of –2.62, and -2.71 indicate that academic staff's teaching effectiveness with respect to classroom communication skills for academic staff in Education (mean = 25.11) is significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for academic staff in the Sciences (mean = 24.12) and Humanities (mean = 24.05).

The non-significant Fisher's t-value of –0.29 indicate that academic staff teaching effectiveness with respect to classroom communication skills for academic staff in the Sciences (mean = 24.12) is not significantly different from academic staff's teaching

effectiveness with respect to classroom communication skills for academic staff in the Humanities (mean = 24.05).

(iii) **Effective teaching methods / strategies (ETM)**

The significant Fisher's t-values of –6.10, and -6.54 indicate that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff in education (mean = 26.36) is significantly higher than academic staff's teaching effectiveness with respect to effective teaching methods/strategies for sciences (mean = 24.15) and the humanities (mean = 23.91).

The non-significant Fisher's t-value of 1.04 indicates that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff in the sciences (mean = 24.15) is not significantly different from academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff in the humanities (mean = 23.91).

(iv) **Relationship with students (RWS)**

The significant Fisher's t-values of –4.00, and -4.67 indicate that academic staff's teaching effectiveness with respect to relationship with students for academic staff in education (mean = 24.49) is significantly higher than academic staff's teaching effectiveness with respect to relationship with students for academic staff in the sciences (mean = 22.89) and humanities (mean = 22.56).

The non-significant Fisher's t-value of 1.30 indicate that academic staff teaching effectiveness with respect to relationship with students for academic staff in the science discipline (mean = 22.89) is

not significantly difference from academic staff's teaching effectiveness with respect to relationship with students for academic staff in the humanities discipline (mean = 22.56).

(v) **Overall teaching effectiveness (OVTE)**

This implies the interactive effects of the seven various components or sub-categories of the dependent variable (academic staff's teaching effectiveness).

The significant Fisher's t-values of -3.97, and -4.49 indicate that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff in education discipline (mean = 173.82) is significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff in science discipline (mean = 165.72) and humanities discipline (mean = 164.33).

The non-significant Fisher's t-value of 1.07 indicate that academic staff teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff in the science discipline (mean = 165.72) is not significantly different from the academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff in the humanities discipline (mean = 164.33).

4.2.5 Hypothesis 5

There is no significant influence of academic staff's qualification on their teaching effectiveness, as evaluated by their students.

The independent variable in this hypothesis is academic staff academic qualification, while the dependent variable is academic staff's teaching effectiveness. The respondents in the sample were categorized into two groups based on their categories as indicated for academic qualification. These groups were categorized based on the following score ranges.

Group 1 (Masters)

Group 2 (Doctorate)

The dependent variable in this hypothesis is academic staff's teaching effectiveness with eight components (sub-categories), namely:

KSM : Knowledge of subject matter

COMSK : Communication skills

ETM : Effective teaching methods/strategies

CLMSK : Classroom management skills

ABMS : Ability to motivate students

EVSLA : Evaluation of students learning activities

RWS : Relationship with students

OVTE : Overall teaching effectiveness

The statistical analysis technique used to test this hypothesis was independent t-test analysis. The results of the analysis are presented in Table 14.

TABLE 14

Results of independent t-test analysis of the difference between masters and doctorate as their highest qualification on their teaching effectiveness

Sub-variable	Group		N	Mean	SD	df	t-value
Knowledge of subject matter	1	Master	167	24.37	2.47	378	8.541*
	2	Doctorate	213	26.55	2.48		
		Total	**380**				
Communication skills	1	Master	167	23.05	1.97	378	10.120*
	2	Doctorate	213	25.10	1.94		
		Total	380				
Effective teaching methods / strategies	1	Master	167	23.08	1.93	378	10.862*
	2	Doctorate	213	25.24	1.93		
		Total	**380**				
Classroom management skills	1	Master	167	21.03	2.96	378	4.626*
	2	Doctorate	213	22.24	1.82		
		Total	**380**				
Ability to motivates students	1	Master	167	22.89	1.72	378	9.794*
	2	Doctorate	213	24.73	1.93		
		Total	**380**				
Evaluation of students Learning activities	1	Master	167	22.78	1.80	378	9.152*
	2	Doctorate	213	24.56	1.97		
		Total	**380**				
Relationship with students	1	Master	167	22.08	2.38	378	6.499*
	2	Doctorate	213	23.61	2.14		
		Total	**380**				
Overall teaching effectiveness	1	Master	167	158.54	10.78	378	12.692*
	2	Doctorate	213	171.96	9.48		
		Total	**380**				

t_{cri} = 1.960, Decision: *Significant at .05 alpha level.

The result presented in Table 14 shows various mean values for the students' evaluation of academic staff with masters and doctorate degrees on the eight sub-categories of teaching effectiveness of academic staff. These results show calculated t-values as follows:

Knowledge of subject matter	:	8.541*
Communication skills	:	10.120*
Effective teaching methods/strategies	:	10.862*
Classroom management skills	:	4.626*
Ability to motivate students	:	9.794*
Evaluation of students learning activities	:	9.152*
Relationship with students	:	6.499*
Overall teaching effectiveness	:	12.692*

From the above results, the calculated t-values of Knowledge of subject matter (8.541), communication skills (10.120), Effective teaching methods/strategies (10.862), Classroom management skills (4.626), Ability to motivate students (9.794), evaluation of students learning activities (9.152), Relationship with students (6.499), and Overall teaching effectiveness (12.626) are each higher than the critical t-value of 1.97 at .05 alpha level of significance with 378 degrees of freedom. The null hypothesis was therefore rejected and its alternative upheld for each of these sub-categories. This therefore means that, there is significant difference between holders of masters and holders of doctorate degrees in their teaching effectiveness as evaluated by their students, with respect to Knowledge of subject matter, Communication skills, Effective teaching methods/strategies,

Classroom management skills, Ability to motivate students, evaluation of students learning activities, Relationship with students, and Overall teaching effectiveness. The direction of significance is in favour of academic staff with doctorate degrees. This implies that teaching effectiveness of academic staff with doctorate degrees is significantly higher than teaching effectiveness of academic staff with masters degrees with regards to these sub-categories.

4.2.6 Hypothesis 6

The teaching effectiveness of academic staff in University of Calabar is not significantly influenced by their rank (professional status).

The independent variable in this hypothesis is the rank (professional status) of the academic staff, while the dependent variable is academic staff's teaching effectiveness. The respondents in the sample were categorized into four groups based on their categories as indicated for their teaching rank. These groups were categorized based on the following ranges.

Group 1: Assistant Lecturers

Group 2: Lecturers II/I

Group 3: Senior Lecturers / Readers

Group4: Professors

The dependent variable in the study and this hypothesis had eight components or sub-categories, namely:

KSM : Knowledge of subject matter

COMSK : Communication skills

ETM	:	Effective teaching methods / strategies
CLMSK	:	Classroom management skills
ABMS	:	Ability to motivate students
EVSLA	:	Evaluation of students learning activities
RWS	:	Relationship with students
OVTE	:	Overall teaching effectiveness

The statistical analysis technique used to test this hypothesis was one-way analysis of variance (ANOVA). The hypothesis was tested on each of the eight sub-categories of the dependent variable. The results of the analysis are presented in Table 15, 16, and 17. The group means and standard deviations for the four groups on each of the eight components of the dependent variable are presented in Table 15; the actual results of ANOVA are presented in Table 16; while Fisher's protected t-test analysis of differences among means is presented in Table 17.

TABLE 15

Group mean and standard deviations of academic staff teaching effectiveness based on their rank

Sub-variable		Group	N	Mean	SD
Knowledge of subject matter	1	(Assistant Lecturer)	78	24.10	2.71
	2	(Lecturer II/I)	125	25.22	3.10
	3	(Snr. Lecturer / Reader)	130	26.08	1.97
	4	(Professor)	47	27.71	1.30
		Total	**380**	**25.59**	**2.70**
Communication skills	1	(Assistant Lecturer)	78	22.54	1.87
	2	(Lecturer II/I)	125	23.70	1.73
	3	(Snr. Lecturer / Reader)	130	24.77	1.92
	4	(Professor)	47	26.70	1.75
		Total	**380**	**24.20**	**2.20**
Effective teaching methods / strategies	1	(Assistant Lecturer)	78	22.63	1.95
	2	(Lecturer II/I)	125	23.71	1.80
	3	(Snr. Lecturer / Reader)	130	24.84	1.77
	4	(Professor)	47	27.10	1.33
		Total	**380**	**24.29**	**2.21**
Classroom management skills	1	(Assistant Lecturer)	78	20.75	3.70
	2	(Lecturer II/I)	125	21.39	1.77
	3	(Snr. Lecturer / Reader)	130	21.95	1.83
	4	(Professor)	47	23.48	1.96
		Total	**380**	**21.71**	**2.46**
Ability to motivate students	1	(Assistant Lecturer)	78	22.37	1.43
	2	(Lecturer II/I)	125	23.53	1.62
	3	(Snr. Lecturer / Reader)	130	24.29	1.85
	4	(Professor)	47	26.47	1.78
		Total	**380**	**23.92**	**2.06**
Evaluation of students learning activities	1	(Assistant Lecturer)	78	22.24	1.71
	2	(Lecturer II/I)	125	23.25	1.60
	3	(Snr. Lecturer / Reader)	130	24.21	1.78
	4	(Professor)	47	26.55	1.48
		Total	**380**	**23.78**	**2.09**
Relationship with students	1	(Assistant Lecturer)	78	21.42	2.34
	2	(Lecturer II/I)	125	22.74	1.98
	3	(Snr. Lecturer / Reader)	130	23.32	2.01
	4	(Professor)	47	24.89	2.62
		Total	**380**	**22.94**	**2.37**
Overall teaching effectiveness	1	(Assistant Lecturer)	78	154.85	9.32
	2	(Lecturer II/I)	125	163.09	8.93
	3	(Snr. Lecturer / Reader)	130	169.52	9.19
	4	(Professor)	47	183.00	6.25
		Total	**380**	**166.06**	**12.07**

TABLE 16

Results of analysis of variance of the influence of rank on academic staff teaching effectiveness

Sub-variable	Source of variation	Sum of squares	df	Mean square	F_{cal}
Knowledge of subject matter	Between groups	430.980	3	143.660	23.156*
	Within groups	2332.751	376	6.204	
	Total	**2763.731**	**379**		
Communication skills	Between groups	581.918	3	193.973	58.173*
	Within groups	1253.735	376	3.334	
	Total	**1835.653**	**379**		
Effective teaching methods / strategies	Between groups	667.418	3	222.473	71.051*
	Within groups	1177.315	376	3.131	
	Total	**1844.733**	**379**		
Classroom management skills	Between groups	239.984	3	79.995	14.666*
	Within groups	2050.817	376	5.454	
	Total	**2290.801**	**379**		
Ability to motivates Students	Between groups	530.092	3	176.697	62.089*
	Within groups	1070.052	376	2.846	
	Total	**1600.144**	**379**		
Evaluation of students Learning activities	Between groups	606.004	3	202.001	72.089*
	Within groups	1053.588	376	2.802	
	Total	**1659.593**	**379**		
Relationship with students	Between groups	383.431	3	127.810	27.569*
	Within groups	1743.140	376	4.636	
	Total	**2126.571**	**379**		
Overall teaching Effectiveness	Between groups	25943.358	3	8647.786	111.129*
	Within groups	29259.402	376	77.818	
	Total	**55202.760**	**379**		

F_{cri} at $df_{3,376}$ = 2.62, Decision: *Significant at .05 alpha level.

The result of the analysis of variance of the influence of rank on academic staff's teaching effectiveness are shown in Table 16. These results show calculated F-values as follows:

Knowledge of subject matter	: 23.156*
Communication skills	: 58.173*
Effective teaching methods/strategies	: 71.051*
Classroom management skills	: 14.666*
Ability to motivate students	: 62.089*
Evaluation of students learning activities	: 72.089*
Relationship with students	: 27.569*
Overall teaching effectiveness	: 111.129*

From these results, the calculated F-values are each higher than the critical F-ratio of 2.62 at .05 alpha level with 3 and 376 degrees of freedom. The null hypothesis was therefore rejected and its alternative upheld for each of these sub-categories. This therefore means that, academic staff's teaching effectiveness significantly depends on the rank of the academic staff, with respect to these sub-categories of the dependent variable.

Given the significant F-value, a detailed multiple comparison analysis using Fisher's Least Square Difference (LSD) was done to determine exactly which of the group (Assistant Lecturer, Lecturers II/I, Senior Lecturer/Readers, or Professors) differed significantly from each other in terms of their teaching effectiveness. The result of these analysis is presented in Table 17.

TABLE 17

Results of Fisher's LSD multiple comparison analysis of influence of rank on academic staff teaching effectiveness

Sub-categories of teaching effectiveness	Rank	Assistant Lecturers (N = 78)	Lect. II/I (N = 125)	Senior Lect. / Reader (N = 130)	Professor (N = 47)
Knowledge of subject matter	Assist. Lecturer	24.10[a]	-1.12[b]	-1.98	-3.61
	Lecturer II/I	-3.12[c*]	25.22	-.086	-2.49
	Snr. Lect/Reader	-5.55*	-2.76*	26.08	-1.63
	Professor	-7.85*	-5.84*	-3.84*	27.71
		MSW = 6.204			
Communication skills	Assist. Lecturer	22.54[a]	-1.16[b]	-2.23	-4.16
	Lecturer II/I	-4.41[c*]	23.70	-1.07	-3.00
	Snr. Lect/Reader	-8.53*	-4.68*	24.77	-1.93
	Professor	-12.34*	-9.60*	-6.21	26.70
		MSW = 3.334			
Effective teaching method / strategies	Assist. Lecturer	22.63[a]	-1.08[b]	-2.21	-4.47
	Lecturer II/I	-4.23[c*]	23.71	-1.13	-3.39
	Snr. Lect/Reader	-8.72*	-5.10*	24.84	-2.26
	Professor	-13.68*	-11.19*	-7.50*	27.10
		MSW = 3.131			
Classroom management skills	Assist. Lecturer	20.75[a]	-0.64[b]	-1.20	-2.73
	Lecturer II/I	-1.90[c*]	21.39	-0.56	-2.09
	Snr. Lect/Reader	-3.59*	-1.91	21.95	-1.53
	Professor	-6.33*	-5.23*	-3.85*	23.48
		MSW = 5.454			
Ability to motivate students	Assist. Lecturer	22.37[a]	-1.16[b]	-1.92	-4.10
	Lecturer II/I	-4.78[c*]	23.53	-0.76	-2.94
	Snr. Lect/Reader	-7.95*	-3.60*	24.29	-2.18
	Professor	-13.16*	-10.18*	-7.59*	26.47
		MSW = 2.846			
Evaluation of students Learning activities	Assist. Lecturer	22.24[a]	-1.01[b]	-1.97	-4.31
	Lecturer II/I	-4.18[c*]	23.25	-0.96	-3.30
	Snr. Lect/Reader	-8.22*	-4.58*	24.21	-2.34
	Professor	-13.94*	-11.52*	-8.21*	26.55
		MSW = 2.802			
Relationship with students	Assist. Lecturer	21.42[a]	-1.32[b]	-1.90	-3.47
	Lecturer II/I	-4.25[c*]	22.74	-0.58	-2.15
	Snr. Lect/Reader	-6.16*	-2.15*	23.32	-1.57
	Professor	-8.73*	-5.83*	-4.28*	24.89
		MSW = 4.636			
Overall teaching effectiveness	Assist. Lecturer	154:85[a]	-8.24[b]	-14.67	-28.15
	Lecturer II/I	-6.48[c*]	163.09	-6.43	-19.91
	Snr. Lect/Reader	-11.62*	-5.82*	169.52	-13.48
	Professor	-17.28*	-13.19*	-8.97*	183.00
		MSW = 77.818			

a = Group means are placed along the major diagonals

b = Differences between group means are above the major diagonals

c = Fisher's t-values are below the major diagonals

*Significant at .05 alpha level (t_{cri} = 1.96).

(i) **Knowledge of subject matter (KSM)**

The significant Fisher's t-values of –3.12, -5.55, and -7.85 indicate that academic staff's teaching effectiveness with respect to knowledge of subject matter for Lecturers II/I (mean = 25.22), Senior lecturers/Readers (mean = 26.08) and Professors (mean = 27.71) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of the subject matter for assistant lecturers (mean = 24.10). Also, the significant Fisher's t-value of -2.76 and –5.84 indicate that academic staff teaching effectiveness with respect to knowledge of subject matter for Senior lecturers/Readers (mean = 26.08) and professors (mean = 27.71) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of subject matter for lecturers II/I (mean = 25.22). Further more, the significant Fisher's t-value of –3.84 indicates that academic staff's teaching effectiveness with respect to knowledge of subject matter for professors (mean = 27.71) is significantly higher than academic staff's teaching effectiveness with respect to knowledge of subject matter for Senior lecturers/readers (mean = 26.08).

(ii) **Classroom communication skills (COMSK)**

The significant Fisher's t-values of –4.41, -8.53 and -12.34 indicate that academic staff's teaching effectiveness with respect to classroom communication skills for lecturers II/I

(mean = 23.70), Senior lecturers/readers (mean = 24.77) and professors (mean = 26.70) are significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for assistant lecturers (mean = 22.54). Also, the significant Fisher's t-value of –4.68 and –9.60 indicate that academic staff teaching effectiveness with respect to classroom communication skills for senior lecturers (mean = 24.77) and professors (mean = 26.70) are significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for lecturers II/I (mean = 23.70).

Furthermore, the significant Fisher's t-value of –6.21 indicates that academic staff's teaching effectiveness with respect to classroom communication skills for professors (mean = 26.70) is significantly higher than teaching effectiveness with respect to classroom communication skills for senior lecturers/readers (mean = 24.77).

(iii) **Effective teaching methods/strategies (ETM)**

The significant Fisher's t-values of –4.23, -8.72, and -13.68 indicate that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for lecturers II/I (mean = 23.71), senior lecturers/readers (mean = 24.84) and professors (mean = 27.10) are significantly higher than academic staff's teaching effectiveness with respect to effective

teaching methods/strategies for assistant lecturers (mean = 22.63). Also, the significant Fisher's t-value of –5.10 and –11.19 indicate that academic staff teaching effectiveness with respect to effective teaching methods/strategies for senior lecturers/readers (mean = 24.84) and professors (mean = 27.10) are significantly higher than academic staff's teaching effectiveness with respect to effective teaching methods/strategies for lecturers II/I (mean = 23.71). Furthermore, the significant Fisher's t-value of –7.50 indicates that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for professors (mean = 27.10) is significantly higher than teaching effectiveness with respect to effective teaching methods/strategies for senior lecturers/readers (mean = 24.84).

(iv) **Classroom management skills (CLMSK)**

The significant Fisher's t-values of –3.59, and -6.33 indicate that academic staff's teaching effectiveness with respect to classroom management skills for senior lecturers/ readers (mean = 21.19), and professors (mean = 23.48) are significantly higher than academic staff's teaching effectiveness with respect to classroom management skills for assistant lecturers (mean = 20.75) and lecturers II/I (mean = 21.39). Also, the significant Fisher's t-value of –5.23 indicate that academic staff teaching effectiveness with respect to classroom

management skills for professors (mean = 23.48) is significantly higher than academic staff's teaching effectiveness with respect to classroom management skills for senior lecturers/readers (mean = 21.95) and lecturers II/I (mean = 21.39). Furthermore, the significant Fisher's t-value of –3.85 indicates that academic staff's teaching effectiveness with respect to classroom management skills for professors (mean = 23.48) is significantly higher than academic staff's teaching effectiveness with respect to classroom management skills for senior lecturers/readers.

The non-significant Fisher's t-value of –1.90 indicates that academic staff's teaching effectiveness with respect to classroom management skills for lecturers II/I (mean = 21.39) is not significantly different from academic staff's teaching effectiveness with respect to classroom management skills for assistant lecturers (mean = 20.75). Also, the non-significant Fisher's t-value of –1.91 indicates that academic staff' teaching effectiveness with respect to classroom management skills for senior lecturers / readers (mean = 21.95) is not significantly different from academic staff's teaching effectiveness with respect to classroom management skills for lecturers II/I (mean = 21.39).

(v) Ability to motivate students (ABMS)

The significant Fisher's t-values of –4.78, -7.95, and -13.16 indicate that academic staff's teaching effectiveness with

respect to ability to motivate students for lecturers II/I (mean = 23.53), senior lecturers/readers (mean = 24.29), and professors (mean = 26.47) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for professors (mean = 26.47) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for assistant lecturers (mean = 22.37).

Also, the significant Fisher's t-value of –3.60 and –10.18 indicate that academic staff teaching effectiveness with respect to ability to motivate students for senior lecturers/readers (mean = 24.29) and professors (mean = 26.47) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for lecturers II/I (mean = 23.53).

Furthermore, the significant Fisher's t-value of –7.59 indicates that academic staff's teaching effectiveness with respect to ability to motivate students for professors (mean = 26.47) is significantly higher than teaching effectiveness with respect to ability to motivate students for senior lecturers/ readers (mean = 24.29).

(vi) **Evaluation of students learning activities (EVSLA)**

The significant Fisher's t-values of –4.18, -8.22, and -13.94 indicate that academic staff's teaching effectiveness with respect to evaluation of students learning activities for lecturers

II/I (mean = 23.25), senior lecturers/readers (mean = 24.21) and professors (mean = 26.55) are significantly higher than academic staff's teaching effectiveness with respect to evaluation of students learning activities for assistant lecturers (mean = 22.24). Also, the significant Fisher's t-value of –4.58 and –11.52 indicate that academic staff teaching effectiveness with respect to evaluation of students learning activities for senior lecturers/readers (mean = 24.21) and professors (mean = 26.55) are significantly higher than academic staff's teaching effectiveness with respect to evaluation of students learning activities for lecturers II/I (mean = 23.25).

Furthermore, the significant Fisher's t-value of –8.21 indicates that academic staff's teaching effectiveness with respect to evaluation of students learning activities for professors (mean = 26.55) is significantly higher than teaching effectiveness with respect to evaluation of students learning activities for senior lecturers / readers (mean = 24.21).

(vii) **Relationship with students (RWS)**

The significant Fisher's t-values of –4.25, -6.16, and -8.73 indicate that academic staff's teaching effectiveness with respect to relationship with students for lecturers II/I (mean = 22.74), senior lecturers/readers (mean = 23.32) and professors (mean = 24.89) are significantly higher than academic staff's

teaching effectiveness with respect to relationship with students for assistant lecturers (mean = 21.42).

Also, the significant Fisher's t-value of –2.15 and –5.83 indicate that academic staff teaching effectiveness with respect to relationship with students for senior lecturers/readers (mean = 23.32) and professors (mean = 24.89) are significantly higher than academic staff's teaching effectiveness with respect to relationship with students for Lecturers II/I (mean = 22.74).

Furthermore, the significant Fisher's t-value of –4.28 indicates that academic staff's teaching effectiveness with respect to relationship with students for professors (mean = 24.89) is significantly different from academic staff's teaching effectiveness with respect to relationship with students for senior lecturers/readers (mean = 23.32).

(viii) **Overall teaching effectiveness (OVTE)**

The significant Fisher's t-values of –6.48, -11.62, and 17.28 indicate that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for lecturers II/I (mean = 163.09), senior lecturers/readers (mean = 169.52) and professors (mean = 183.00) are significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for assistant lecturers (mean = 154.85).

Also, the significant Fisher's t-value of –5.82 and –13.19 indicate that academic staff teaching effectiveness with respect

to interactive effects of the various sub-categories for senior lecturers/readers (mean = 169.52) and professors (mean = 183.00) are significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for lecturers II/I (mean = 163.09).

Furthermore, the significant Fisher's t-value of -8.97 indicates that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for professors (mean = 183.00) is significantly higher than teaching effectiveness with respect to interactive effects of the various sub-categories for senior lecturers/readers (mean = 169.52).

4.2.7 Hypothesis 7

The teaching effectiveness of academic staff in University of Calabar is not significantly influenced by the number of years in teaching (teaching experience).

The independent variable in this hypothesis is teaching experience of the academic staff, while the dependent variable is academic staff teaching effectiveness. The respondents in the sample were categorized into four groups based on the categories as indicated for their teaching experience. These groups were categorized based on the following score range:

Group 1 : ≤ 10 yrs

Group 2 : 11 – 20 yrs

Group 3 : 21 – 30 yrs

Group 4 : ≥ 31 yrs.

The dependent variable in the study and in this hypothesis had eight sub-categories, namely

KSM	:	Knowledge of subject matter
COMSK	:	Communication skills
ETM	:	Effective teaching methods/strategies
CLMSK	:	Classroom management skills
ABMS	:	Ability to motivate students
EVSLA	:	Evaluation of students learning activities
RWS	:	Relationship with students
OVTE	:	Overall teaching effectiveness

The statistical analysis technique used to test this hypothesis was one-way analysis of variance (ANOVA). The hypothesis was tested on each of the eight sub-categories of the dependent variable (academic staff's teaching effectiveness). The results of the data analyses are presented in Tables 18, 19, and 20. The group means and standard deviations for the four groups on each of the eight sub-categories of the dependent variable are presented in Table 18, the results of ANOVA are presented in Table 19; while Fishers protected t-test analysis of differences among means is presented in Table 20.

TABLE 18

Group means and standard deviations of academic staff teaching effectiveness based on their teaching experience

Sub-variable	Group		N	Mean	SD
Knowledge of subject matter	1	(≤ 10 yrs)	84	24.07	2.70
	2	(11 – 20 yrs)	107	25.30	2.11
	3	(21 – 30 yrs)	121	26.04	3.02
	4	(≥ 31 yrs)	68	27.13	1.74
		Total	**380**	**25.59**	**2.70**
Communication skills	1	(≤ 10 yrs)	84	22.58	1.89
	2	(11 – 20 yrs)	107	23.93	1.74
	3	(21 – 30 yrs)	121	24.69	1.94
	4	(≥ 31 yrs)	68	25.74	2.21
		Total	**380**	**24.20**	**2.20**
Effective teaching method/ strategies	1	(≤ 10 yrs)	84	22.66	1.90
	2	(11 – 20 yrs)	107	23.88	1.83
	3	(21 – 30 yrs)	121	24.78	1.96
	4	(≥ 31 yrs)	68	26.08	1.89
		Total	**380**	**24.29**	**2.21**
Classroom management skills	1	(≤ 10 yrs)	84	20.34	1.61
	2	(11 – 20 yrs)	107	21.87	3.18
	3	(21 – 30 yrs)	121	21.75	1.99
	4	(≥ 31 yrs)	68	23.07	1.89
		Total	**380**	**21.71**	**2.46**
Ability to motivate students	1	(≤ 10 yrs)	84	22.47	1.48
	2	(11 – 20 yrs)	107	23.64	1.59
	3	(21 – 30 yrs)	121	24.14	1.90
	4	(≥ 31 yrs)	68	25.75	2.11
		Total	**380**	**23.92**	**2.06**
Evaluation of students Learning activities	1	(≤ 10 yrs)	84	22.33	1.76
	2	(11 – 20 yrs)	107	23.33	1,57
	3	(21 – 30 yrs)	121	24.12	1.81
	4	(≥ 31 yrs)	68	25.67	2.08
		Total	**380**	**23.78**	**2.09**
Relationship with students	1	(≤ 10 yrs)	84	21.35	2.27
	2	(11 – 20 yrs)	107	22.81	2.03
	3	(21 – 30 yrs)	121	23.02	2.04
	4	(≥ 31 yrs)	68	24.94	2.02
		Total	**380**	**22.94**	**2.37**
Overall teaching effectiveness	1	(≤ 10 yrs)	84	155.00	9.16
	2	(11 – 20 yrs)	107	164.21	8.81
	3	(21 – 30 yrs)	121	168.41	9.78
	4	(≥ 31 yrs)	68	178.47	10.03
		Total	**380**	**166.06**	**12.67**

TABLE 19

Results of analysis of variance of the influence of teaching experience on academic staff teaching effectiveness

Sub-variable	Source of variation	Sum of squares	df	Mean square	F_{cal}
Knowledge of subject matter	Between groups	390.464	3	130.155	20.621*
	Within groups	2373.268	376	6.312	
	Total	**2763.731**	**379**		
Communication skills	Between groups	417.889	3	139.296	36.942*
	Within groups	**1417.765**	**376**	3.771	
	Total	**1835.653**	**379**		
Effective teaching methods/ strategies	Between groups	486.722	3	162.241	44.920*
	Within groups	1358.011	376	3.612	
	Total	**1844.733**	**379**		
Classroom management skills	Between groups	287.770	3	95.923	18.006*
	Within groups	2003.031	376	5.327	
	Total	**2290.801**	**379**		
Ability to motivates students	Between groups	417.527	3	139.176	44.249*
	Within groups	1182.617	376	3.145	
	Total	**1600.144**	**379**		
Evaluation of students Learning activities	Between groups	456.116	3	152.039	47.501*
	Within groups	1203.476	376	3.201	
	Total	**1659.593**	**379**		
Relationship with students	Between groups	487.168	3	162.389	37.244*
	Within groups	1639.404	376	4.360	
	Total	**2126.571**	**379**		
Overall teaching effectiveness	Between groups	21784.873	3	7261.624	81.704*
	Within groups	33417.887	376	88.877	
	Total	**55202.760**	**379**		

F_{cri} at $df_{3,376}$ = 2.61, Decision: *Significant at .05 alpha level.

The result of the analysis of variance of the influence of teaching experience on academic staff's teaching effectiveness are shown in Table 19. These results show calculated F-values as follows:

Knowledge of subject matter	:	20.621*
Communication skills	:	36.942*
Effective teaching methods / strategies	:	44.920*
Classroom management skills	:	18.006*
Ability to motivate students	:	44.249*
Evaluation of students learning activities	:	47.501*
Relationship with students	:	37.244*
Overall teaching effectiveness	:	81.704*

From these results, the calculated F-values are each higher than the critical F-ratio of 2.62 at .05 alpha level with 3 and 376 degrees of freedom. The null hypothesis was therefore rejected and its alternative upheld for each of these sub-categories. This therefore means that academic staff's teaching effectiveness significantly depends on the teaching experience of the academic staff, with respect to these sub-categories of the dependent variable.

Given the significant F-value, a detailed multiple comparison analysis using Fisher's Least Square Difference (LSD) was done to determine exactly which of the group (≤ 10 yrs, 11 – 20 yrs, 21 – 30 yrs, or ≥ 31 yrs) differed significantly from each other in terms of teaching effectiveness. The result of these analysis is presented in Table 20.

TABLE 20

Results of Fisher's LSD multiple comparison analysis of influence of teaching experience on academic staff teaching effectiveness

Sub-categories of teaching effectiveness	Teaching experience	≤ 10 yrs (N = 84)	11 – 20 yrs (N = 107)	21 – 30 yrs (N = 121)	≥ 31 yrs (N = 68)
Knowledge of subject matter	≤ 10 yrs	24.07[a]	-1.23[b]	-1.97	-3.06
	11 – 20 yrs	-3.36[c*]	25.30	-0.74	-1.83
	21 – 30 yrs	-5.52*	-2.22*	26.04	-1.09
	≥ 31 yrs	-7.47*	-4.70*	-2.86*	27.13
		MSW = 6.312			
Communication skills	≤ 10 yrs	22.58[a]	-1.35[b]	-2.11	-3.16
	11 – 20 yrs	-4.78[c*]	23.93	-0.76	-1.81
	21 – 30 yrs	-7.65*	-2.95*	24.69	-1.05
	≥ 31 yrs	-9.98*	-5.72*	-3.57*	25.74
		MSW = 3.771			
Effective teaching method / strategies	≤ 10 yrs	22.66[a]	-1.22[b]	-2.12	-3.42
	11 – 20 yrs	-4.41[c*]	23.88	-0.90	-2.20
	21 – 30 yrs	-7.85*	-3.57*	24.78	-1.30
	≥ 31 yrs	-11.03*	-7.47*	-4.51*	26.08
		MSW = 3.612			
Classroom management skills	≤ 10 yrs	20.34[a]	-1.53[b]	-1.41	-2.73
	11 – 20 yrs	-4.55[c*]	21.81	-0.12	-1.20
	21 – 30 yrs	-4.30*	-0.39	21.75	-1.32
	≥ 31 yrs	-7.25*	-3.36*	-3.77*	23.07
		MSW = 5.327			
Ability to motivate students	≤ 10 yrs	22.47[a]	-1.17[b]	-1.67	-3.28
	11 – 20 yrs	-4.53[c*]	23.64	-0.50	-2.11
	21 – 30 yrs	-6.63*	-2.13*	24.14	-1.61
	≥ 31 yrs	-11.34*	-7.68*	-5.99*	25.75
		MSW = 3.145			
Evaluation of students Learning activities	≤ 10 yrs	22.33[a]	-1.00[b]	-1.79	-3.34
	11 – 20 yrs	-3.84[c*]	23.33	-0.79	-2.34
	21 – 30 yrs	-7.04*	-3.33*	24.12	-1.55
	≥ 31 yrs	-11.45*	-8.44*	-5.71*	25.67
		MSW = 3.201			
Relationship with students	≤ 10 yrs	21.35[a]	-1.46[b]	-1.67	-3.59
	11 – 20 yrs	-4.80[c*]	22.81	-0.21	-2.13
	21 – 30 yrs	-5.63*	-0.76*	23.02	-1.92
	≥ 31 yrs	-10.54*	-6.58*	-6.06*	24.94
		MSW = 4.360			
Overall teaching effectiveness	≤ 10 yrs	155.00[a]	-9.21[b]	-13.41	-23.47
	11 – 20 yrs	-6.71[c*]	164.21	-4.20	-14.26
	21 – 30 yrs	-10.01*	-3.34*	168.41	-10.06
	≥ 31 yrs	-15.26*	-9.76*	-7.04*	178.47
		MSW = 88.877			

a = Group means are placed along the major diagonals

b = Differences between group means are above the major diagonals

c = Fisher's t-values are below the major diagonals

*Significant at .05 alpha level (t_{cri} = 1.97).

(i) **Knowledge of subject matter**

The significant Fisher's t-values of –3.36, -5.52, and -7.47 indicate that academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff with teaching experience 11 – 20 yrs (mean = 25.30), 21 – 30 yrs (mean = 26.04), and ≥ 31 yrs (mean = 27.13) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of the subject matter for academic staff with ≤ 10 yrs (mean = 24.07) teaching experience.

Also, the significant Fisher's t-value of -2.22 and –4.70 indicate that academic staff teaching effectiveness with respect to knowledge of subject matter for academic staff with teaching experience 21 – 30 yrs (mean = 26.04) and ≥ 31 yrs (mean = 27.13) are significantly higher than academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff with 11 – 20 yrs (mean = 25.30) teaching experience.

Furthermore, the significant Fisher's t-value of –2.86 indicates that academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff with teaching experience ≥ 31 yrs (mean = 27.13) is significantly higher than academic staff's teaching effectiveness with respect to knowledge of subject matter for academic staff with 21 – 30 yrs (mean = 26.04) teaching experience.

(ii) **Classroom communication skills**

The significant Fisher's t-values of –4.78, -7.65 and -9.98 indicate that academic staff's teaching effectiveness with respect to classroom communication skills for academic staff with teaching experience 11 – 20 yrs (mean = 23.93), 21 – 30 yrs (mean = 24.69) and ≥ 31 yrs (mean = 25.74) are significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for academic staff with ≤ 10 yrs (mean = 22.58) teaching experience.

Also, the significant Fisher's t-value of –2.95 and –5.72 indicate that academic staff teaching effectiveness with respect to classroom communication skills for academic staff with teaching experience 21 – 30 yrs (mean = 24.69) and ≥ 31 yrs (mean = 25.74) are significantly higher than academic staff's teaching effectiveness with respect to classroom communication skills for academic staff with 11 – 20 yrs (mean = 23.93) teaching experience.

Furthermore, the significant Fisher's t-value of –3.57 indicates that academic staff's teaching effectiveness with respect to classroom communication skills for academic staff with teaching experience ≥ 31 yrs (mean = 25.74) is significantly higher than teaching effectiveness with respect to classroom communication skills for academic staff with 21 – 30 yrs (mean = 24.69) teaching experience.

(iii) **Effective teaching methods / strategies**

The significant Fisher's t-values of –4.41, -7.85, and -11.03 indicate that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff with teaching experience 11 – 20 yrs (mean = 23.88), 21 – 30 yrs (mean = 24.78) and ≥ 31 yrs (mean = 26.08) are significantly higher than academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff with ≤ 10 yrs (mean = 22.66) teaching experience.

Also, the significant Fisher's t-value of –3.57 and –7.47 indicate that academic staff teaching effectiveness with respect to effective teaching methods/strategies for academic staff with teaching experience 21 – 30 yrs (mean = 24.78) and ≥ 31 yrs (mean = 26.08) are significantly higher than academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff with 11 – 20 yrs (mean = 24.78) teaching experience.

Furthermore, the significant Fisher's t-value of –4.51 indicates that academic staff's teaching effectiveness with respect to effective teaching methods/strategies for academic staff with teaching experience ≥ 31 yrs (mean = 26.08) is significantly higher than teaching effectiveness with respect to effective teaching methods/strategies for academic staff with 21 – 30 yrs (mean = 24.78) teaching experience.

(iv) **Classroom management skills**

The significant Fisher's t-values of –4.55, -4.30, and –7.25 indicate that academic staff's teaching effectiveness with respect to classroom management skills for academic staff with teaching experience 11 – 20 yrs (mean = 21.87), 21 – 30 yrs (mean = 21.75) and ≥ 31 yrs (mean = 23.07) are significantly higher than academic staff's teaching effectiveness with respect to classroom management skills for academic staff with ≤ 10 yrs (mean = 20.34) teaching experience.

Also, the significant Fisher's t-value of –3.36 and –3.77 indicate that academic staff teaching effectiveness with respect to classroom management skills for academic staff with teaching experience ≥ 31 yrs (mean = 23.07) is significantly higher than academic staff's teaching effectiveness with respect to classroom management skills for academic staff with 11 – 20 yrs (mean = 21.87) and 21 – 30 yrs (mean = 21.75) teaching experience.

The non-significant Fisher's t-value of –0.39 indicates that academic staff's teaching effectiveness with respect to classroom management skills for academic staff with teaching experience 11 – 20 yrs (mean = 21.87) is not significantly different from academic staff's teaching effectiveness with respect to classroom management skills for academic staff with 21 – 30 yrs (mean = 21.75 teaching experience.

(v) **Ability to motivate students**

The significant Fisher's t-values of –4.53, -6.63, and -11.34 indicate that academic staff's teaching effectiveness with respect to ability to motivate students for academic staff with teaching experience 11 – 20 yrs (mean = 23.64), 21 – 30 yrs (mean = 24.14), and ≥ 31 yrs (mean = 25.75) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for academic staff with ≤ 10 yrs (mean = 22.47) teaching experience.

Also, the significant Fisher's t-value of –2.13 and –7.68 indicate that academic staff teaching effectiveness with respect to ability to motivate students for academic staff with teaching experience 21 – 30 yrs (mean = 24.14) and ≥ 31 yrs (mean = 25.75) are significantly higher than academic staff's teaching effectiveness with respect to ability to motivate students for academic staff with 11 – 20 yrs (mean = 23.64) teaching experience.

Furthermore, the significant Fisher's t-value of –5.99 indicates that academic staff's teaching effectiveness with respect to ability to motivate students for academic staff with teaching experience ≥ 31 yrs (mean = 25.75) is significantly higher than teaching effectiveness with respect to ability to motivate students for academic staff with 21 – 30 yrs (mean = 24.14) teaching experience.

(vi) **Evaluation of students learning activities**

The significant Fisher's t-values of –3.84, -7.04, and -11.45 indicate that academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff with teaching experience 11 – 20 yrs (mean = 23.33), 21 – 30 yrs (mean = 24.12) and ≥ 31 yrs (mean = 25.67) are significantly higher than academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff with ≤ 10 yrs (mean = 22.33) teaching experience.

Also, the significant Fisher's t-value of –3.33 and –8.44 indicate that academic staff teaching effectiveness with respect to evaluation of students learning activities for academic staff with teaching experience 21 – 30 yrs (mean = 24.12) and ≥ 31 yrs (mean = 25.67) are significantly higher than academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff with 11 – 20 yrs (mean = 23.33) teaching experience.

Furthermore, the significant Fisher's t-value of –5.71 indicates that academic staff's teaching effectiveness with respect to evaluation of students learning activities for academic staff with teaching experience ≥ 31 yrs (mean = 25.67) is significantly higher than teaching effectiveness with respect to evaluation of students learning activities for academic staff with 21 – 30 yrs (mean = 24.12) teaching experience.

(vii) **Relationship with students**

The significant Fisher's t-values of –4.80, -5.63, and -10.54 indicate that academic staff's teaching effectiveness with respect to relationship with students for academic staff with teaching experience 11 – 20 yrs (mean = 22.81), 21 – 30 yrs (mean = 23.02) and ≤ 10 yrs (mean = 21.35) teaching experience.

Also, the significant Fisher's t-value of –6.58 and –6.06 indicate that academic staff teaching effectiveness with respect to relationship with students for academic staff with teaching experience ≥ 31 yrs (mean = 24.94) is significantly higher than academic staff's teaching effectiveness with respect to relationship with students for academic staff with 11 -= 20 yrs (mean = 22.81) and 21 – 30 yrs (mean = 23.02) teaching experience.

The non-significant Fisher's t-value of –0.76 indicates that academic staff's teaching effectiveness with respect to relationship with students for 11 – 20 yrs (mean = 22.81) is not significantly different from academic staff's teaching effectiveness with respect to relationship with students for academic staff with 21 – 30 yrs (mean = 23.02).

(viii) **Overall teaching effectiveness**

This implies the interactive effects of the seven various sub-categories of the dependent variable (academic staff's teaching effectiveness).

The significant Fisher's t-values of –6.71, -10.01, and -15.26 indicate that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff with teaching experience 11 – 20 yrs (mean = 164.21), 21 – 30 yrs (mean = 168.41) and ≥ 31 yrs (mean = 178.47) are significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff with ≤ 10 yrs (mean = 155.00) teaching experience.

Also, the significant Fisher's t-value of –3.34 and –9.76 indicate that academic staff teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff with teaching experience 21 – 30 yrs (mean = 168.41) and ≥ 31 yrs (mean = 178.47) are significantly higher than academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff with 11 – 20 yrs (mean = 164.21) teaching experience.

Furthermore, the significant Fisher's t-value of -7.04 indicates that academic staff's teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff with teaching experience ≥ 31 yrs (mean = 178.47) is significantly higher than teaching effectiveness with respect to interactive effects of the various sub-categories for academic staff with 21 – 30 yrs (mean = 168.41) teaching experience.

4.2.8 Hypothesis 8

There is no significant interaction effects of gender, discipline, and rank on the academic staff's overall teaching effectiveness.

The independent variable in this hypothesis is overall teaching experience of the academic staff. The dependent variables are three. These are: gender, discipline, and rank of the academic staff. In these independent variables, gender is categorized into two levels or groups, discipline is categorized into three groups, and rank is categorized into four groups.

The statistical analysis technique used in testing this hypothesis was three-way analysis of variance (3-way ANOVA). Entries in Table 21 show different groups sizes, means, and standard deviations for the groups. Table 22 shows the actual 3-way ANOVA results of the interaction effects of gender, discipline, and rank on the overall teaching effectiveness of academic staff.

TABLE 21

Group means and standard deviations of academic staff overall teaching effectiveness based on their gender, discipline and rank

Sub-variable	Group	N	Mean	SD
Gender	1 (Male)	290	166.43	12.33
	2 (Female)	90	164.88	11.11
Discipline	1 (Science)	200	165.72	11.33
	2 (Humanities)	140	164.33	13.12
	3 (Education)	40	173.82	8.64
Rank	1 (Assistant Lecturer)	78	154.85	9.32
	2 (Lecturer II/I)	125	163.09	8.93
	3 (Senior Lect./Reader)	130	169.52	9.19
	4 (Professors)	47	183.00	12.09
	Total	**380**		

TABLE 22

Results of three-way ANOVA of the interaction effects of gender, discipline, and rank on academic staff's overall teaching effectiveness

Source	Type III Sum of squares	df	Mean square	F_{cal}	Sig.
Corrected model	29562.577(a)	21	1407.742	19.656	.000
Intercept	4325759.140	1	4325759.140	60398.234	.000
Gender	1.366	1	1.366	.019	.890
Discipline	1542.238	2	771.119	10.767	.000
Rank	9925.292	3	3308.431	46.194	.000
Gender by discipn	9.623	2	4.812	.067	.935
Gender by rank	463.432	3	154.477	2.157	.093
Discipline by rank	663.892	6	110.649	1.545	.163
Gender by discipn by rank	267.764	4	66.941	.935	.444
Error	25640.183	358	71.621		
Total	10534203.182	380			
Corrected total	55202.760	379			

a R Squared = .536 (Adjusted R Squared = 508)

Table 22 shows the results of the effect of gender, discipline and rank (individually and interactively) on the academic staff's overall teaching effectiveness. These results show that the F-ratio for gender (F = .019) is not statistically significant at .05 alpha level, while discipline (F = 10.767) and rank (F = 46.194) taken individually are statistically significant at .05 alpha level with 2 and 3 degrees of freedom. Following these results, the null hypothesis was retained for gender and rejected for discipline and rank considered individually. This result means that there is no significant effect of gender on academic staff's overall teaching effectiveness when, considered individually, but discipline and rank considered individually had significant influence on academic staff's teaching effectiveness.

For each of the three two-way interactions, that is, gender- by-discipline (F = .067), gender –by –rank (F = 2.157), and discipline – by – rank (F = 1.545), the F-ratio is not statistically significant at .05 alpha level with 2, 3, and 6 degrees of freedom respectively. The null hypothesis is therefore retained for the three two-ways interactive effects.

Also, for the one three-ways interaction, that is, gender – by – discipline – by – rank interaction, the F-ratio of .935 is less than the critical F-ratio of 2.39 at .05 alpha level with 4 degrees of freedom. This also means that the null hypothesis is retained for this three – way interaction.

The interpretation here is that there is no significant interaction effect of gender, discipline, and rank of the academic staff on the

academic staff's overall teaching effectiveness, whether the factors are taken in two or in threes. However, taken individually while gender did not have significant effect, discipline and rank were found to exert significant influence on the overall teaching effectiveness of academic staff in University of Calabar, Nigeria.

4.2.9 Hypothesis 9

The evaluation of academic staff's teaching effectiveness made by male students is not significantly different from the evaluation made by female students

The independent variable in this hypothesis is gender of students, while the dependent variable is academic staff teaching effectiveness. The responses from the respondents were categorized in two groups. These were the responses by the male students and responses by the female students. The dependent variable in the hypothesis had eight sub-categories namely:

KSM : Knowledge of subject matter

COMSK : Communication skills

ETM : Effective teaching methods/trategies

CLMSK : Classroom management skills

ABMS : Ability to motivate students

EVSLA : Evaluation of students learning activities

RWS : Relationship with students

OVTE : Overall teaching effectiveness

The statistical analysis technique used to test this hypothesis was the dependent t-test. The hypothesis was tested on each of the eight sub-categories of the dependent variable. The results of the data analyses are presented in Tables 23.

TABLE 23

Results of dependent t-test analysis of the evaluation of academic staff by male and female students

Teaching effectiveness	Evaluated by	N	Mean	SD	t-value
Knowledge of subject matter	Male	380	26.03	3.67	5.35*
	Female	380	25.15	2.49	
	Total	**380**			
Communication skills	Male	380	24.50	2.45	7.10*
	Female	380	23.89	2.26	
	Total	**380**			
Effective teaching methods / strategies	Male	380	24.49	2.68	3.76*
	Female	380	24.10	2.15	
	Total	**380**			
Classroom management skills	Male	380	21.49	2.25	2.24*
	Female	380	21.92	3.75	
	Total	**380**			
Ability to motivate	Male	380	24.01	2.51	1.73
	Female	380	23.83	2.06	
	Total	**380**			
Evaluation of students learning activities	Male	380	23.82	2.39	0.77
	Female	380	23.74	2.29	
	Total	**380**			
Relationship with students	Male	380	23.07	2.60	2.39*
	Female	380	22.80	2.59	
	Total	**380**			
Overall teaching effectiveness	Male	380	166.79	13.56	3.85*
	Female	380	165.33	11.61	
	Total	**380**			

Critical t = 1.97, df = 379, Decision: *Significant at .05 alpha level.

The result presented in Table 23 shows that the means, standard deviations and calculated t-values for the evaluation of academic staff by male students and female students on the eight sub-categories of academic staff's teaching effectiveness. The results show calculated t-values as follows:

Knowledge of subject matter	: 5.35*
Communication skills	: 7.10*
Effective teaching methods / strategies	: 3.76*
Classroom management skills	: 2.24*
Ability to motivate students	: 1.73
Evaluation of students learning activities	: 0.77
Relationship with students	: 2.39*
Overall teaching effectiveness	: 3.85*

From the above results, the calculated t-values of Ability to motivate students (1.73), and Evaluation of students learning activities (0.77) are each lower than the critical t-value of 1.97 at .05 alpha level with 376 degrees of freedom. The null hypothesis was therefore retained for each of these sub-categories. This therefore means that evaluation of academic staff's teaching effectiveness made by male students is not significantly different from the evaluation made by female students with respect to Ability to motivate students and Evaluation of students learning activities.

The calculated t-values for Knowledge of subject matter (5.35), Communication skills (7.10), Effective teaching methods/strategies (3.76), Classroom management skills (2.24), Relationship with students (2.39) and Overall teaching effectiveness (3.85) are each higher than the critical t-value of 1.97 at .05 level of significance

with 379 degrees of freedom. Following this result, the hypothesis was rejected for Knowledge of subject matter, Communication skills, Effective teaching methods/strategies, Classroom management skills, Relationship with students and Overall teaching effectiveness. This means that the evaluation of academic staff's teaching effectiveness made by male students is significantly different from the evaluation made by female students with regards to Knowledge of subject matter, Communication skills, Effective teaching methods/strategies, Classroom management skills, Relationship with students and Overall teaching effectiveness. This implies that male students evaluate their academic staff higher than the female counterparts in teaching effectiveness with regards to Knowledge of subject matter ($\overline{X}_m$ = 26.03; $\overline{X}_f$ = 25.15), Communication skills ($\overline{X}_m$ = 24.50; $\overline{X}_f$ = 23.89), Effective teaching methods/strategies ($\overline{X}_m$ = 24.49; $\overline{X}_f$ = 24.10), Evaluation of students learning activities ($\overline{X}_m$ = 23.82; $\overline{X}_f$ = 23.74), and Overall teaching effectiveness ($\overline{X}_m$ = 166.79; $\overline{X}_f$ = 165.33).

4.2.10 Research question

What is the mean ranking, faculty-by-faculty, of academic staff's teaching effectiveness, as evaluated by their students, in University of Calabar, Nigeria?

The intent of this question was to bring out the ranking, faculty-by-faculty, of the academic staff's teaching effectiveness as evaluated by their students. The teaching effectiveness in this study and in this research question had seven sub-categories or components and the overall teaching effectiveness. These components are:

KSM : Knowledge of subject matter

COMSK : Communication skills

ETM : Effective teaching methods / strategies

CLMSK : Classroom management skills

ABMS : Ability to motivate students

EVSLA : Evaluation of students learning activities

RWS : Relationship with students

OVTE : Overall teaching effectiveness

Each of these components or sub-categories of the academic staff's teaching effectiveness had six items on the questionnaire which elicited responses on the students' perceived teaching effectiveness in each of these components. For an academic staff to be considered effective in his/her teaching, the respondents' (students') score on each of the items measuring teaching effectiveness should be higher than 21.00 (which is the mid-point between "agree" and "disagree" which is 1+2+3+4+5+6 = 21/6 = 3.50 multiplied by 6, which is the number of items for each sub-categories. The reference mean score for each component is 21.00. Any academic staff with mean score higher than 21.00 was considered effective in each component of the teaching effectiveness. For the overall teaching effectiveness (OVTE), the reference mean score is 147.00 (calculated as 3.50 multiplied by 42 which is the total number of items on the questionnaire measuring the overall teaching effectiveness of the academic staff.

Data on Table 24 revealed that most academic staff's faculty-by-faculty, had a mean score of 21.00 and above. This implies that

the academic staff in all the faculties in the University of Calabar were assessed by their students to be effective in their teaching. This supports the result of hypothesis one. It is natural therefore to attempt, faculty-by-faculty ranking of the academic staff's teaching effectiveness, as evaluated by their students in University of Calabar – Nigeria.

To answer this question, the mean scores from student evaluation of their academic staff's teaching effectiveness, faculty-by-faculty, were computed for each of the seven sub-categories of the teaching effectiveness and for the overall teaching effectiveness of academic staff in University of Calabar, Nigeria. All the 10 faculties in the University, arranged in alphabetical order, were used in the study.

The entries in Table 24 show the sub-categories of teaching effectiveness, the faculties in the University, the mean scores of the teaching effectiveness of academic staff in the 10 faculties, and their ranking. The ranking emerged, component-by-component, and on overall teaching effectiveness of academic staff. The results are as shown on Table 24.

TABLE 24

Mean ranking, faculty-by-faculty, of the academic staff's teaching effectiveness, as evaluated by their students in University of Calabar, Nigeria.

Teaching effectiveness	Faculty	Mean score	Ranking	Teaching effectiveness	Faculty	Mean score	Ranking
Knowledge of subject matter	Agriculture	23.00	9th	Ability to motivate students	Agriculture	22.14	9th
	Arts	25.24	8th		Arts	23.68	7th
	Basic Medical Sciences	26.05	7th		Basic Medical Sciences	23.32	8th
	Clinical Sciences	26.48	4th		Clinical Sciences	24.16	6th
	Education	27.17	1st		Education	24.31	5th
	Laboratory & Allied Sciences	26.46	5th		Laboratory & Allied Sciences	24.97	4th
	Law	26.65	3rd		Law	25.06	3rd
	Management Sciences	22.07	10th		Management Sciences	21.28	10th
	Science	26.39	6th		Science	25.37	2nd
	Social Sciences	26.94	2nd		Social Sciences	25.50	1st
Communication skills	Agriculture	22.51	9th	Evaluation of students Learning activities	Agriculture	22.17	9th
	Arts	23.87	7th		Arts	23.53	7th
	Basic Medical Sciences	22.81	8th		Basic Medical Sciences	22.78	8th
	Clinical Sciences	24.50	6th		Clinical Sciences	24.03	6th
	Education	25.11	5th		Education	24.40	4th
	Laboratory & Allied Sciences	25.12	4th		Laboratory & Allied Sciences	24.23	5th
	Law	26.07	1st		Law	24.91	3rd
	Management Sciences	21.59	10th		Management Sciences	21.51	10th
	Science	25.68	2nd		Science	25.10	2nd
	Social Sciences	25.67	3rd		Social Sciences	25.72	1st
Effective teaching methods/ strategies	Agriculture	22.48	9th	Relationship with students	Agriculture	22.59	7th
	Arts	23.72	7th		Arts	23.39	5th
	Basic Medical Sciences	23.39	8th		Basic Medical Sciences	23.25	6th
	Clinical Sciences	24.69	6th		Clinical Sciences	24.03	4th
	Education	26.36	1st		Education	24.49	3rd
	Laboratory & Allied Sciences	24.71	5th		Laboratory & Allied Sciences	24.70	2nd
	Law	25.24	4th		Law	25.45	1st
	Management Sciences	21.68	10th		Management Sciences	21.36	9th
	Science	25.49	3rd		Science	19.78	10th
	Social Sciences	25.66	2nd		Social Sciences	21.46	8th
Classroom management skills	Agriculture	22.50	4th	Overall teaching effectiveness	Agriculture	157.24	8th
	Arts	23.07	2nd		Arts	166.51	7th
	Basic Medical Sciences	21.53	7th		Basic Medical Sciences	161.97	9th
	Clinical Sciences	22.81	3rd		Clinical Sciences	170.74	4th
	Education	22.01	5th		Education	173.82	2nd
	Laboratory & Allied Sciences	21.77	6th		Laboratory & Allied Sciences	170.83	3rd
	Law	24.42	1st		Law	177.99	1st
	Management Sciences	19.49	10th		Management Sciences	149.36	10th
	Science	20.73	8th		Science	167.77	6th
	Social Sciences	20.04	9th		Social Sciences	170.28	5th

(i) **Knowledge of subject matter**

With regards to knowledge of subject matter component of the academic staff's teaching effectiveness, as assessed by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained: Agriculture (23.00), Arts (25.24), Basic Medical Sciences (26.05), Clinical Sciences (26.48), Education (27.17), Laboratory and Allied Health Sciences (26.46), Law (26.65), Management Sciences (22.07), Science (26.39), and Social Sciences (26.94).

Based on these mean scores with respect to the perceived knowledge of the subject matter of academic staff's teaching effectiveness by their students, the following ranking emerged:

Education	27.17	1st
Social Sciences	26.94	2nd
Law	26.65	3rd
Clinical Sciences	26.48	4th
Laboratory & Allied Sciences	26.46	5th
Science	26.39	6th
Basic Medical Sciences	26.05	7th
Arts	25.24	8th
Agriculture	23.00	9th
Management Sciences	22.07	10th

(ii) **Classroom communication skills**

With regards to classroom communication skills component of the academic staff's teaching effectiveness, as

evaluated by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained: Agriculture (22.51), Arts (23.87), Basic Medical Sciences (22.81), Clinical Sciences (24.50), Education (25.11), Laboratory and Allied Health Sciences (25.12), Law (26.07), Management Sciences (21.58), Science (25.68), and Social Sciences (25.67).

Based on these mean scores with respect to the perceived effective classroom communication skills of the academic staff by their students, the following ranking emerged:

Law	26.07	1st
Science	25.68	2nd
Social Science	25.67	3rd
Laboratory & Allied Sciences	25.12	4th
Education	25.11	5th
Clinical Sciences	24.50	6th
Arts	23.87	7th
Basic Medical Sciences	22.81	8th
Agriculture	22.51	9th
Management Sciences	21.58	10th

(iii) **Effective teaching methods / strategies**

With regards to effective teaching methods/strategies component of the academic staff's teaching effectiveness, as evaluated by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained: Agriculture (22.48), Arts (23.72), Basic Medical Sciences (23.39), Clinical Sciences

(24.69), Education (26.36), Laboratory and Allied Health Sciences (24.71), Law (25.23), Management Sciences (21.68), Science (25.49), and Social Sciences (25.66).

Based on these mean scores with respect to the perceived effective teaching methods/strategies of academic staff's teaching effectiveness by their students, the following ranking emerged:

Education	26.36	1st
Social Sciences	25.66	2nd
Science	25.49	3rd
Law	25.24	4th
Laboratory & Allied Sciences	24.71	5th
Clinical Sciences	24.69	6th
Arts	23.72	7th
Basic Medical Sciences	23.39	8th
Agriculture	22.48	9th
Management Sciences	21.68	10th

(iv) **Classroom management skills**

With regards to effective classroom management skills component of the academic staff's teaching effectiveness, by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained thus: Agriculture (22.50), Arts (23.07), Basic Medical Sciences (21.53), Clinical Sciences (22.81), Education (22.01), Laboratory and Allied Health

Sciences (21.79), Law (24.42), Management Sciences (19.49), Science (20.73), and Social Sciences (20.04).

Based on these mean scores with respect to the perceived effective classroom management skills of the academic staff's teaching by their students, the following ranking emerged:

Law	24.42	1st
Arts	23.07	2nd
Clinical Sciences	22.81	3rd
Agriculture	22.50	4th
Education	22.01	5th
Laboratory & Allied Sciences	21.79	6th
Basic Medical Sciences	21.53	7th
Science	20.73	8th
Social Sciences	20.04	9th
Management Sciences	19.49	10th

(v) **Ability to motivate students**

With regards to ability to motivate students component of the academic staff's teaching effectiveness, by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained thus: Agriculture (22.13), Arts (23.68), Basic Medical Sciences (23.32), Clinical Sciences (24.16), Education (24.31), Laboratory and Allied Health Sciences (24.97), Law (25.06), Management Sciences (21.28), Science (25.37), and Social Sciences (25.50).

Based on these mean scores with respect to the perceived ability to motivate students of the academic staff's teaching by their students, the following ranking emerged:

Social Sciences	25.50	1st
Science	25.37	2nd
Law	25.06	3rd
Laboratory & Allied Sciences	24.97	4th
Education	24.31	5th
Clinical Sciences	24.16	6th
Arts	23.68	7th
Basic Medical Sciences	23.32	8th
Agriculture	22.14	9th
Management Sciences	21.28	10th

(vi) **Evaluation of students learning activities**

With regards to the evaluation of students learning activities component of the academic staff's teaching effectiveness by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained thus: Agriculture (22.17), Arts (23.53), Basic Medical Sciences (22.78), Clinical Sciences (24.03), Education (24.40), Laboratory and Allied Health Sciences (24.23), Law (24.91), Management Sciences (21.51), Science (25.10), and Social Sciences (25.72).

Based on these mean scores with respect to the perceived effective evaluation of students learning activities of the

academic staff's teaching effectiveness by their students, the following ranking emerged:

Social Sciences	25.72	1st
Science	25.10	2nd
Law	24.91	3rd
Education	24.40	4th
Laboratory & Allied Sciences	24.23	5th
Clinical Sciences	24.03	6th
Arts	23.52	7th
Basic Medical Sciences	22.78	8th
Agriculture	22.17	9th
Management Sciences	21.51	10th

(vii) **Relationship with students**

With regards to the cordial relationship with students component of the academic staff's teaching effectiveness, by their students, the following mean scores, faculty-by-faculty as in Table 24 were obtained as follows: Agriculture (22.59), Arts (23.34), Basic Medical Sciences (23.25), Clinical Sciences (24.03), Education (24.49), Laboratory and Allied Health Sciences (24.70), Law (25.45), Management Sciences (21.36), Science (19.78), and Social Sciences (21.48).

Based on these mean scores with respect to the perceived cordial relationship with students of the academic staff's by their students, the following ranking emerged:

Law	25.45	1st

Laboratory & Allied Sciences	24.70	2nd
Education	24.49	3rd
Clinical Sciences	24.03	4th
Arts	23.37	5th
Basic Medical Sciences	23.25	6th
Agriculture	22.59	7th
Social Sciences	21.48	8th
Management Sciences	21.36	9th
Science	19.78	10th

(viii) **Overall teaching effectiveness**

This implies the interactive effects of the seven sub-categories of the academic staff's teaching effectiveness of academic staff by their students, the following mean scores, faculty-by-faculty, as in Table 24 were obtained: Agriculture (157.24), Arts (166.51), Basic Medical Sciences (161.97), Clinical Sciences (170.74), Education (173.82), Laboratory and Allied Health Sciences (170.83), Law (177.99), Management Sciences (149.36), Science (167.77), and Social Sciences (170.23).

Based on these mean scores with respect to the evaluation of the overall teaching effectiveness of the academic staff's in the University of Calabar by their students, the following ranking emerged:

Law	177.99	1st

Education	173.82	2nd
Laboratory & Allied Sciences	170.83	3rd
Clinical Sciences	170.74	4th
Social Sciences	170.28	5th
Science	167.77	6th
Arts	166.51	7th
Basic Medical Science	161.97	8th
Agriculture	157.24	9th
Management Sciences	149.36	10th

4.3 Summary of findings

From the results of analyses, the findings on hypothesis – by – hypothesis are reported as follows:

1. The teaching effectiveness of academic staffs as evaluated by their students, is significantly high in each of the seven sub-categories and in the total effect.

2. (i) There is no significant difference between male and female academic staff in their teaching effectiveness, with respect to knowledge of subject matter, communication skills, effective teaching methods/strategies, classroom management skills, ability to motivate students, relationship with students, and overall teaching effectiveness.

   (ii) There is a significant difference between male and female academic staff in their teaching effectiveness, with

respect to evaluation of students learning activities. The direction of the significance is in favour of male academics.

3. The teaching effectiveness of academic staff, as evaluated by their students, is significantly influenced by the age of the academic staff in each of the seven sub-categories and in the total effect.

4. (i) The teaching effectiveness of academic staff, as evaluated by their students, is significantly influenced by the discipline of the academic staff, with respect to knowledge of subject matter, communication skills, effective teaching methods/strategies, relationship with students, and overall teaching effectiveness.

(ii) The teaching effectiveness of academic staff, as evaluated by their students, is not significantly influenced by the discipline of the academic staff, with respect to classroom management skills, ability to motivate student, and evaluation of student learning activities.

5. There is a significant influence of academic staff's qualification on their teaching effectiveness, with respect to each of the seven sub-categories and in total effect.

6. The teaching effectiveness of academic staff, as evaluated by their students, is significantly influenced by their rank in each of the seven sub-categories and in the total effect.

7. The teaching effectiveness of academic staff, is significantly influenced by the number of years in

teaching (teaching experience) in each of the seven sub-categories and in the total effect.

8.(i) There is no significant interaction effect of gender, discipline, and rank of the academic staff on the academic staff's on the academic staff's overall teaching effectiveness, whether the factors are taken in twos or in threes.

(ii) Taken individually, while gender has no significant effect, discipline and rank have significant influence on the overall teaching effectiveness of academic staff.

9.(i) The evaluation of academic staff's teaching effectiveness made by male students is significantly different from the evaluation made by female students, with respect to knowledge of subject matter, communication skills, effective teaching methods / strategies, relationship with students, and overall teaching effectiveness.

(ii) The evaluation of academic staff's teaching effectiveness made by female students is not significantly different from the evaluation made by female students, with respect to ability to motivate students and evaluation of students learning activities.

10. From the student evaluation of the overall teaching effectiveness of academic staff in University of Calabar, faculty-by-faculty, the following ranking emerged:

Law 1st

Education	2nd
Lab. & Allied Health Sciences	3rd
Clinical Sciences	4th
Social Sciences	5th
Science	6th
Arts	7th
Basic Medical Sciences	8th
Agriculture	9th
Management Sciences	10th

4.4 Discussion of findings

The discussion of the research findings are presented in this section based on each of the nine hypotheses formulated and a research question posed for the study, thus:

(i) The extent of teaching effectiveness of academic staff as evaluated by their students.

(ii) Academic staff's gender and teaching effectiveness

(iii) Academic staff's age and teaching effectiveness

(iv) Academic staff's discipline and teaching effectiveness

(v) Academic staff's qualification and teaching effectiveness

(vi) Academic staff's rank and teaching effectiveness

(vii) Academic staff's teaching experience and teaching effectiveness

(viii) Interaction effects of academic staff's gender, discipline, and rank on teaching effectiveness

(ix) Students' gender and their evaluation of teaching effectiveness

(x) Ranking, faculty-by-faculty, of the teaching effectiveness of academic staff.

4.4.1 Academic staff's teaching effectiveness as evaluated by their students

The finding of this study showed that the teaching effectiveness of academic staff in all the Faculties in the University of Calabar, as evaluated by their students, is significantly high in each of the seven sub-categories and also in the total overall teaching effectiveness that is, knowledge of subject matter, classroom communication skills, effective teaching methods/strategies, classroom management skills, ability to motivate students, evaluation of students learning activities, relationship with students, and overall dimensions of teaching effectiveness.

The above average ratings of the academic staff by their students on the possession of knowledge of subject matter of the courses they teach (mean = 25.59) seems a welcome development, but there is room for improvement. The findings of this study disagree somewhat with Osibodu (1986) who in a study of undergraduate students' perception of University teachers knowledge of the subject matter reveals that as large as 29% of the students felt their teachers were limited in knowledge of the subject matter. In that study (Osibodu, 1986), 6% of the students felt their teachers were seriously deficient, and that a whooping 56% of their teachers were resistant to

alternative ideas and perhaps change. This situation was not healthy nor was it consistent with the dynamic nature of knowledge. The finding of this study, in this respect, is therefore a source of hope that academic staff, in the view of their students, have the grasp of the knowledge of the subject matter of the course taught to students.

However, the findings of this study agree with Adeyemo (1994) who opines that teachers understanding of the subject matter are basic to effective teaching. If education is to help students make sense of their environment and prepare them for the challenges of a technologically driven and internationally competitive world, then it must be based on current knowledge. Academic staff must possess that knowledge and transmit it to their students. As evaluated by their students, academic staff in University of Calabar possess significant knowledge in the courses they teach.

This study proposed effective classroom communication skills as one of the attributes for effective teaching. The study finding shows that the academic staff in the University of Calabar are significantly effective in their classroom communication skills. This agrees with Light (1996) who opines that the teacher must first know what and to whom he wants to communicate, and decides on the best means of doing it. It is no exaggeration that because of the lack of proper understanding of the communication process, many a good lecture may not have travelled beyond the mind of the lecturer/ teacher. Therefore, the teaching–learning process being a human relations process demands a ready flow of information between the

parties involved. The resultant effect of this process is an atmosphere of trust and mutual respect which is a foundation of good team work, effective teaching and learning. This, the students in their evaluation agree exists between them and their lecturers in the University.

It is one thing to master the subject matter, yet another to have the required competence to organize and impart it effectively to the learner. Inadequate presentation strategies can be a very serious limiting factor for both the teacher and the students. An effective teacher must not only master but more importantly be able to apply the basic principles of human behavour, growth and development. Undergraduate students in the University of Calabar, Nigeria evaluate their academic staff as being effective in the use of appropriate teaching methods/strategies. This finding agrees with Baid (1993) who revealed that students assessment of their teachers, with respect to the use of appropriate teaching approach was significantly positive.

The finding of this study does not seem to agree with Hoystein and Harvey (1992), Kersh (1995) and Dubin and Tavegia (1998) who all feel that the approach/method used in teaching his/he students does not have a significant influence on the way the students rate his/her teaching effectiveness. On whether student ratings of teaching effectiveness depended on the teaching methods used by lecturers, they concluded that the data demonstrated clearly and unequivocally that there is no difference among truly distinctive methods of college instructions when evaluated by students performance on final examination.

An organization may have put down a wonderful plan of action, have good quality men, sufficient money in form of capital, acquire the right materials and equipment but if it is not blessed with good managers, the business will collapse. This situation may be true of a university or a class where the instructor has a good curriculum and all the materials needed, but cannot manage his/her class effectively. The result will be chaotic and a total ineffectiveness of the teaching – learning activity. In the students' opinion, the teachers in the University are significantly effective in classroom management. This finding is in agreement with Norton (1996) who considers teaching effectiveness as a direct function of effective classroom management .

This seems borne out of the effective practitioner who is caring, committed, highly creative, a proficient reflective thinker with a strong internal locus of control. What makes the class is its environment and the environment is constituted of those elements that influence it within and without. University of Calabar teachers would have so positively influenced the classroom environment for them to be considered effective by their students. The findings of the study agree with Melzger (2000), Olivia and Pawless (2002). Teachers should demonstrate effective classroom management always and constantly monitor the behaviour of their students and redirect inappropriate behaviour. In students' view this does not seem lacking in the University of Calabar, Nigeria.

When the subject matter or method of teaching does not meet the interest and need of the student they may resort to unwholesome

behaviours, sometimes this may degenerate into misdemeanor. To avoid such ugly situations in the class, an effective teacher will device means of motivating and sustaining the children's interest in the subject. This seems done in the University of Calabar as students assessed their lecturers as effective in motivating them (students) to study well and learn. This agrees with Njoku (2001), Ntino (2004), Ogden (1994), and Feldman (1994).

When students are motivated, there is positive attitude towards learning; and learning becomes interesting and easy; students' performance improve. A motivated person will engage in an activity more vigorously and more efficiently than one who is not motivated. For example, what makes Nukak spend so much time in practicing problems in mathematics? What is responsible for Attih's long hours of practice on computer? The answer may be that both students are motivated. This may be the result of something their teacher did or said or that there is a goal–seeking ambition to be achieved or a need-satisfying desire to be met. These needs energize and spur students toward extra work. Teachers have this responsibility on their students. At any time the ingenuity of the teacher should be put to play. He should study and adopt a mix of motivational techniques, which after examination and experimentation, he may find suitable for his class. The motivation technique that could be adopted by a teacher will depend on the felt–need, desire, and goal of the teacher and the learner. As perceived by the students, academic staff in University of Calabar, Nigeria are effective in their motivational techniques.

Developing a good student-teacher relationship is a great asset for effective teaching. Studies have shown that when teachers build a bridge in communication and interaction with students, they get their co-operation, interest and willingness to learn what the teacher is saying. There is need for student–teacher interaction both within and outside the classroom. The interest that the teacher displays in the student will determine to a great extent the interest the student exhibits in the course. The finding of this study reveals that academic staff's teaching effectiveness, with respect to their relationship with students is significantly effective. This agrees with several other studies (Brophy and Everston, 1996; Everston, Anderson and Brophy, 1990) which identified classroom behaivour including interaction between teachers and students, which appear to be effective in promoting student achievement and the way they perceive their teachers.

The findings are linked to or agree with Okpala (1999) evaluation model, that antecedent conditions on the teacher, student and learning environment are necessary for effective teaching. Also teaching methods, learning experience, learning outcome, and evaluation of the instruction are very necessary. It further showed that if the teacher does not take time to prepare the lessons to make for the substantial delivery of lesson, the instruction will not be effective. Academic staff should be able to think of various ways he/she can communicate in the lesson especially through demonstrations to the students.

4.4.2 Academic staff's gender and teaching effectiveness

The findings of this study show that there is no significant difference between male and female academic staff in their teaching effectiveness, as evaluated by their students with respect to knowledge of subject matter, classroom communication skills, effective teaching methods, classroom management skills; ability to motivate students, relationship with students, and in the overall teaching effectiveness. But that there is a significant difference between male and female academic staff in their teaching effectiveness, as evaluated by their students with regards to evaluation of students learning activities. That is, male academic staff's teaching effectiveness with respect to evaluation of students learning activities (mean = 23.90) is significantly higher than female academic staff's teaching effectiveness with respect to evaluation of students learning activities (mean = 23.39).

Since the evaluation of all students learning activities involved calculation, these findings support Tyler (1986) which emphasize that male teachers tend to be higher in mathematical reasoning, spatial judgement and science than female teachers, at all levels.

The findings of no significant difference between male and female teachers in their teaching effectiveness are in consonance with many studies. For example in a review of laboratory and experimental research on college students preconceptions of male and female college teachers showed that, in the majority of studies, students' global evaluation of male and female college teachers as professionals

were not different; in a minority of studies, however, male teachers received higher overall evaluations than did female teachers. For the most part, the perceptions and ratings of the two genders in most other areas either showed no differences or inconsistent difference across studies. Moreover, most studies found that male teachers and female teachers were not perceived differently by male and female students.

The finding of the study is also supported by Seldin (1993) that the average rating of all male instructors does not differ significantly from the average of all female instructors at most colleges. The findings also fall in line with Basow (1994) who confirmed that the effect of gender variables on students' evaluations. The study of student ratings of all professors in all classes over four years reveals that male academics were evaluated similarly by their female and male students on virtually all questions, but female academics were evaluated differently by their male and female students, especially female academics in the humanities and social sciences, and particularly on certain questions.

It is instructive to note that inspite of no significant difference between male and female in their teaching effectiveness, a closer look at the averages (means) of student evaluations in all the dimensions of the teaching effectiveness shown in Table 7, male academics were rated slightly higher by the students. Except for, EVSLA, that the differences are large enough to be significant.

4.4.3 Academic staff's age and teaching effectiveness

This study proposed age of the academic staff as one of the attributes for teaching effectiveness. The findings of this study had revealed a significant influence of age of the academic staff on his/her teaching effectiveness with respect to all the dimensions of teaching effectiveness – Knowledge of subject matter, Communication skill, Effective teaching methods/strategies, Classroom management skill, Ability to motivate students, Evaluation of students learning activities, Relationship with students, and Overall teaching effectiveness. This finding has added to the scanty literature in the area.

This finding is not surprising as everything in life seems to improve with age, at least to a certain point in life. But that "certain point" in academic staff's teaching effectiveness is yet to be determined. This is a challenge to researchers, but within the age range of the academic studied (20 – 56 years), age was found to have significant role to play in their teaching effectiveness. This finding seems to agree with Cohen Macrae, and Jamieson (1996) who after 10 evaluations per academic staff (surgeon) for a period of nine years gave an intraclass correlation of .65. Even with this moderately high correlation between age of the academics and their teaching effectiveness, the mean teaching effectiveness scores did not show any significant change over the 9 years. The majority of the good and average surgeons maintained their teaching effectiveness scores (TES) ratings, and most of the poor group improved their TES.

Several other studies revealed conflicting results. On whether academic staff teaching effectiveness decline with age, Sheehan, Dobson and Smith (1998) reveal that the age variables loss significance in all models except that for the physical and biological sciences. This loss in significance, they reason, is not surprising given that the influence of age on teaching effectiveness at later ages was shown to be of very small size. They concluded that although effectiveness appears to improve with age, the teachers rated as most effective seem to retire early so that the remaining pool of professors will be of lower average effectiveness rating.

It is instructive to note that many of the variables that reflect teacher quality (teaching effectiveness) are highly correlated with one another–for example teachers education levels are typically correlated with age, experience, and general academic ability, and certification status is often correlated with content background as well as education, training and experience.

4.4.4 Academic staff's discipline and teaching effectiveness

The grouping of the 10 faculties in the University of Calabar into three, namely: Science (comprising Agriculture, Basic Medical Sciences, Clinical Sciences, laboratory and Allied Health Sciences, and Sciences); Humanities (comprising Arts, Law, Management Sciences, and Social Science), and Education, by the researcher was arbitrary and for convenience.

The findings of this study show that while the academic staff's teaching effectiveness does not significantly depend on the discipline

of the academic staff with respect to classroom management, ability to motivate students, and evaluation of students learning activities, it was found to significantly depend on discipline of the academic staff with respect to the knowledge of subject matter, classroom communication skills, effective teaching methods, relationship with students, and overall teaching effectiveness.

Specifically, and with respect to the overall teaching effectiveness, academic staff's teaching effectiveness in Education discipline (mean = 173.82) was significantly higher than the overall teaching effectiveness for staff in science discipline (mean = 165.72) and Humanities discipline (mean = 164.33). While the overall teaching effectiveness of the academic staff in the science discipline (mean = 165.72) is not significantly different from the OVTE for academic staff in the Humanities discipline (mean = 164.33).

These findings do not seem to be consistent with Feldman (1998) who revealed that compared to other instructors, those teaching humanities, fine arts, languages tend to receive somewhat higher ratings from students. The possible reason for these relationship are many and complex. A precise understanding of the contributor of course characteristics to the ratings of teachers (and the courses themselves) is hampared by two circumstances. Studies in which relevant variables are controlled are far fewer in number than are the studies in which only the zero –order relationship between course characteristics and ratings are considered. More importantly,

existing multivariate studies tend to underplay or ignore the exact place of course characteristics in a causal network of variables.

The findings of this study agree with the findings of Feldman (1998) who revealed that statistically significant difference was found when teachers were analyzed according to discipline. And that teachers in mathematics were significantly different from all the other subject areas in students control ideology and effectiveness. Mathematics teachers tended to express more disinviting attitudes and as a group were rated less effective by their students. No other significant difference were found among disciplines.

Again, Cashin (1992) agree in part with the findings of this study when he opined that instructors teaching certain disciplines tend to receive higher student ratings than instructors in other discipline, and revealed that the highest ratings are given to courses in the Arts and Humanities, followed in descending order by biological and social sciences, business and computer sciences, and mathematics, engineering, and physical sciences.

The lower ratings for mathematics / science discipline may be due to the fact that students find these courses more difficult and fast – paced. Cashin (1990) argued that students quantitative skills are less well developed than their verbal skills, hence quantitative – based courses are more difficult for students and more difficult to academic staff to teach. The sciences have also experienced such rapid growth of knowledge that academic staff may feel pressured to

cover increasing amounts of materials in each course, and thus students feel rushed and confused.

However, that academic staff's overall teaching effectiveness (OVTE) in Education was rated higher than those in the other two broad disciplines of Humanities and Sciences was not surprising, as it tends to appeal to common sense. Of course, having gone through education courses such as educational psychology, curriculum development, tests, measurement and evaluation, methods of teaching, educational administration, and philosophy / sociology of education academic staff from the faculty of education should be at a vantage point of being more skillful in their professional callings than their counterparts from other disciplines. In the same vein, they should be more tolerable of evaluation practices and approaches than academic staff from pure/applied sciences and humanities, with little or no training in professional teaching or education courses.

This expectation has been justified by the findings of this study, perhaps, their training and learning experiences undergone by academic of the Faculty of Education have impacted significantly on the attitude to job performance. In other words, it is likely that staff from the Faculty of Education would display favourable disposition to issues of evaluation in general and student ratings in particular.

4.4.5 Academic qualification and teaching effectiveness

The findings of this study show that there is a significant difference between holders of masters and holders of doctorate degrees in their teaching effectiveness as evaluated by students, with

respect to all the sub-categories of the dependent variables. This implies that teaching effectiveness of academic staff with doctorate degrees is significantly higher than teaching effectiveness of academic staff with masters degrees with regard to these sub-categories.

This findings is consistent with Kayel (2003) who conducted study on the level of teachers' qualifications and pupils' academic performance and found that the level of teachers' qualification yielded a positive correlation with students' academic performance. The findings is also consistent with Sanders, Skonie-Hardn, Phelps and Minnie (1994) who revealed that students of teachers with higher qualification were less likely to drop out of school than those students who had teachers with lower level of education. The findings is in line with Lacczko-Kerr and Berliner (2002) that students of certified teachers performed significantly better than students of teachers who were under-certified. And also in line with Darling-Hammond (2000) revealed that several aspects of teachers' qualifications have been found to bear some relationship to the achievement and indeed teaching effectiveness of the teacher. The findings of the study is in consonance with Knoblock (1996) who reported that instructors with postgraduate qualification (masters and doctorate) were adjudged to be significantly effective than those with bachelor degrees or below. This conclusion was derived from measures of student results on the adjustment test and by responses on evaluation measures.

The findings of this study supports Joshua and Bassey (2004) who showed that the teachers' professional status was significantly on teachers' perception of students' evaluation of instruction in schools.

However, the findings of this study is inconsistent with Archibong (2005) who showed that there is no significant influence of science teachers academic qualification on their instructional effectiveness, with regards to nine dimensions of instructional effectiveness.

The reason for the result of no significance in Archibong (2005) could be that the study was conducted at the secondary level of education where high technical/professional expertise is not needed as in universities. Or it could be because majority of the teachers who give instructions in secondary schools have first degree.

At the university level where expertise in a chosen area is common place, academic qualification should be a factor in teaching effectiveness of the academics, hence the result of this study. In life, as in academic, one cannot give what he/she does not have. At doctorate level one is exposed to a lot more rigorous training in academic and research than at masters level. This is seen to reflect in the teaching effectiveness of academic staff in University of Calabar, Nigeria.

It is instructive to note that many of the variables that reflect teacher quality or teaching effectiveness are highly correlated with one another, for example, teachers' education levels are typically correlated with age, experience, and general academic ability, and

certification status is often correlated with content background as well as education training and experience.

The effect reflected by any given variable in a particular study depend on whether other variables that may also measure aspects of competence are represented in the estimates. The effect size also depends on other context factors, such as the range of variability in the measure used, which can change in different locations and time periods. For example, in some eras and in some locations virtually all teachers held content degrees or were fully certified, so these variables do not strongly predict variations in outcomes. When much more variability is present, these variables are strongly predictive of outcomes. Thus, several studies have found strong measured influences of certification status on student achievement in states like California and Texas during the 1990s when they were wide differences in teachers qualifications. For all these reasons, it is critical for any review of research to represent a range of studies that can shed light on the different relationships of interest using a variety measures (Goldhaber and Brewer, 2000; Darling-Hammond and Young, 2002).

4.4.6 Academic staff's rank and teaching effectiveness

The findings indicated that academic staff's rank had a significant effect on their teaching effectiveness, with respect to all the dimensions of teaching effectiveness investigated. The academics with high professional status (rank) were evaluated by their students to be more effective in teaching than the academics with low

professional status or rank. Professors (mean = 27.71) were seen in the eyes of their students, to be more effective in their teaching, especially with respect to the knowledge of subject matter than senior lecturers (mean = 26.08). Lecturers II/I (mean = 25.22), and Assistant Lecturers (mean = 24.10).

Perhaps, the reason for this may not be unconnected with the fact that most of the academic staff under high professional status have already attained/reached the pinnacle of their career, have already received commendations and awards of honour and recognition.

The findings of this study seems inconsistent with Liaw and Gor (2003) who revealed that student ratings of teaching are not affected by instructors characteristics (instructional experience, rank, and gender) or other course characteristics (type and level of subject, and time and day course is taught).

The findings of this study is however, consistent with Feldman (1982) who showed that the teachers academic rank is positively associated with the overall evaluation of the teacher/teaching effectiveness.

Literature on the influence of academic staff's rank of on teaching effectiveness is not robust. Findings of this study has added to knowledge bank in this area. It is instructive, however, to note that many of the variables that reflect teacher quality (teaching effectiveness) are highly correlated with one another, for example, teachers' education levels are typically correlated with age,

experience, and general academic ability, and certification status is often correlated with content background as well as education, training and experience.

Just as teachers' age and extent of instructional experience generally have been either not related or inversely related to the global evaluations of teachers, so they have been for specific evaluations, the relationships tend to be positive for only certain rating dimensions while being inverse for others. This being so, it is puzzling that the associations that have been found between academic rank and global evaluations have generally been positive (Feldman, 1982). The evaluations of academic staff by students in University of Calabar, Nigeria fall into this global trend.

4.4.7 Teaching experience and teaching effectiveness

In many conditions for employment, experience or the number of years a person had worked in similarly position plays a significant role in his employment. That experience has been seen to contribute significantly to teaching effectiveness of academic staff vis-à-vis the findings of this study is not surprising. The findings revealed that undergraduate students in University of Calabar, Nigeria rated their more experienced lecturers higher in teaching effectiveness in all the dimensions of teaching effectiveness investigated. In other words, more experienced lecturers were seen by their students to be more effective in teaching than the less experienced lecturers with respect to knowledge of subject matter, communication skill, effective teaching methods/strategies, classroom management skills, ability to

motivate students, evaluation of students learning activities, relationship with students, and overall teaching effectiveness. Experience is the best teacher, they say. But from the views of the undergraduate students in University of Calabar, Nigeria, experience makes the best teacher.

The findings of this study support Adu (2004) who in carrying out a study in the effect of teachers' preparation and professional development on students achievement found out that students taught by low experience teachers scored less than students taught by high experience teachers. The findings of this study is also consistent with the work of Rice (2002) who found a positive effect of experience on teacher effectiveness. The findings of the study has also been found to be consistent with March and Simon (1998), Ajayi (1995), and Salami (1999) who are all of the view that experienced teachers at all levels who have put in 6 – 10 years, 11 – 15 years of services are more stable in their job (teaching). Feldman (1982) found indicators of the teachers' seniority and instructional experience to be related to the overall evaluations of teachers, and with a consistent pattern.

The findings of this study, however, is at variance with Eduno (2002) who used regression analysis to show that teaching experience is statistically not significant with teaching effectiveness. The findings of this study do not agree with Archibong (2006) who showed that teaching experience has no significant influence on science teachers' instructional effectiveness with regards to knowledge of subject matter, classroom communication, classroom management,

motivation and reinforcement, teaching method variety, instructional material usage, teacher – student relationship, students evaluation techniques, and overall dimensions of instructional effectiveness. The findings of this study are not in line with Joshua and Joshua (2003) who used analysis of variance to show that expressed attitude of Nigerian teachers to student evaluation of teaching was not significantly influenced by teaching experience among other things, like gender, and academic qualifications.

It is difficult to underestimate the effect of experience in any human endeavour, as the findings of this study show. But the speculative explanation for the no difference in the teaching effectiveness of experienced and low experienced Nigerian teachers might be that, although we cannot down play the role of experience in teaching, more often, it is not a matter of how long one has been in the system but the ability to deliver the goods to effectively to the students.

4.4.8 Interaction effects of academic staff's gender, discipline, and rank on teaching effectiveness

The findings of this study show that there is no significant interactive effect of academic staff's gender, discipline and rank on their overall teaching effectiveness. Also, no significant influence of gender was observed on the teaching effectiveness of academic staff. However, academic staff's discipline and rank taken individually were found to have significant influence on their teaching effectiveness.

Although interaction effects on evaluations have been found between gender of teacher and other factors (academic rank of the teacher, academic area, class level of the course, difficulty of the teacher or course, and the teachers pedagogical orientation or personality characteristics, they are inconsistent across studies.

Studies that investigated the exact interaction effects of gender, discipline and rank of academic staff on their overall teaching effectiveness were hard to find in literature. However, similar studies of the effect of interaction of three factors on teaching effectiveness abound in literature.

The findings of this study agree with Feldman (1992) who revealed that interaction effects found in a particular study between the teachers gender and other factors (teachers' expressiveness, physical effectiveness, mode of teaching, academic field and the like) usually were not confirmed by findings in other studies. More studies found indications of students' perception of female teachers (compared to those of male teachers) being more heavily influenced by these other factors.

The findings of this study also agrees with Liaw and Gor (2003) who showed that teaching ratings by students are not affected by instructors characteristics (instructional experience, rank and gender or other courses characteristics (type and level of subject, and time and day course is taught).

This study findings is also consistent with Archibong (2006) that there is no significant interaction effect for the three, two-way

interaction of gender, academic qualification, and teaching experience on science teachers' instructional effectiveness. The same effect occurred for the one, three-way interaction effects.

Edunoh (2002) is also in support of the findings of this study, when she found that there was no significant interaction effect of gender, academic qualification and experience on science teachers' instruction effectiveness.

It is again instructive to note that many of the variables that reflect teachers teaching effectiveness are highly correlated with one another. For example, teachers' education levels are typically correlated with age, experience, and generally academic ability, and certification status is often correlated with content background as well as education, training, and experience. Their interactions, from literature, almost always show no significant effects.

4.4.9 Students' gender and their evaluation of teaching effectiveness

The findings of this study show that the evaluation of academic staff's teaching effectiveness made by male students is not significantly different from the evaluation made by the female students, with respect to ability to motivate student and evaluation of student learning activities. While the evaluation of academic staff's teaching effectiveness made by male students is significantly different from the evaluation made by female students with respect to knowledge of subject matter, communication skill, effective teaching method / strategies, classroom management skill, relationship with

student, and overall teaching effectiveness. In other words, male students evaluated their academic staff higher than their female counterparts in teaching effectiveness with regards to these sub-categories of teaching effectiveness.

The findings of this study is somewhat consistent with Archibong (2006) who revealed that male students assessed their science teachers higher than female students in instructional effectiveness with regards to teacher-student relation. She also showed that there was no significant difference between assessment of the science teachers' instructional effectiveness made by male students or female students with regards to knowledge of subject matter, classroom communication, classroom management, motivation and reinforcement teaching methods, effective use of instructional materials students evaluation techniques, and the interactive effects of the various sub-categories.

The findings of this study is not consistent in part with Leuck, Endres, and Caplan (1993) who found that female students tended to rate male instructors higher, while female students rated female instructors higher than the male instructors. But overall, there was no significant difference in the ratings given by male and female students. Also Feldman (1993) in 28 studies, revealed the correlation between gender and overall evaluations of the teacher was as low as .02. Analysis of classroom studies indicates no practical difference in the overall ratings of male and female instructors.

4.4.10 Ranking, faculty-by-faculty, of academic staff's teaching effectiveness

The discussion on this was done on each of the seven sub-categories and on the overall teaching effectiveness of academic in University of Calabar, Nigeria. Some results were expected, a lot more were most surprising.

With regards to knowledge of subject matter (KSM) component of the academic staff's teaching effectiveness, as evaluated by their students, academic staff in the Faculty of Education emerged topmost. This was expected because academic staff in education are vested in curriculum theory, content and development; psychology of development and learning, etc which could have helped them in ordering and re-ordering course contents in the course outlines which enabled them to teach to the admiration of their students. It is generally known that for the teacher to convincingly earn the respect of his colleagues and students alike, he must demonstrate sound and/or high degree of knowledge of his discipline. This view presupposes that such a teacher has got a sound academic training in the subject, has under gone a professional course in teaching and maintained a continuous academic growth. This would have made academic staff in education to emerge first in the ranking.

It appears the academic staff in Education, Social Sciences, and Law faculties, who in addition to sound knowledge in their subject matter areas, have some knowledge of the psychology of human development, naturally come top in the ranking. It is surprising that

academic staff in the Faculties of Arts and Management Sciences that should have been top found themselves at the bottom of the ranking.

The lower ratings for science courses may be due to the fact that students find these courses more difficult and fast – paced. And it could be that students' quantitative skills a less well developed than their verbal skills, hence quantitative – based courses are more difficult for students and more difficult to academic staff to teach (Cashin, 1990). Again sciences have experienced such a rapid growth of knowledge that academic staff may feel pressured to cover increasing amount of materials in each course, and thus students feel rushed and confused.

With regards to classroom communication skills, it was not surprising that academic staff in the Faculty of Law emerged first. This may be so because lawyers are noted for oratory and effective communication. This trait would have influenced their students to rate them high in this area of teaching effectiveness. But it was surprising that academic staff in the Faculty of Science came next to those in Law in classroom communication skills. It was also surprising that academic in the Faculty of Arts emerged seventh out of ten in the ranking with respect to classroom communication skills. One would have expected the academic staff the Arts in the ranking with respect to classroom management skills to be on top of those in Law or immediately after them (those in Law). It could be that effective communication in the classroom is more than mere oratory and semantics. It has to do more with the ability to elicit desirable

response that will enhance teaching – learning experience. It involves deliberate arrangement of learning interactions and ability to change, modify and assess the behaviour of the learner. Academics in the Faculty of Science would have done this effectively for them to merit this high ratings by their students.

With regards to effective teaching methods / strategies it was not surprising at all that academics in the Faculty of Education were rated topmost by their students. The methods, techniques and devices employed by the teacher reflect on his effectiveness and competence. It stands to reason that the more expertly he uses those strategies, the higher learning outcomes obtained hence the more effective a teacher he is. A solid background in a subject content plus some familiarization with effective pedagogical techniques need to be part of a teacher's academic training, which aimed at making him competent. Education faculties had this in their training, hence the perceived competence/teaching effectiveness.

Not much surprise was observed in the ranking of academics, faculty-by-faculty, in the University of Calabar, except for academics in Management Sciences, who should naturally go along side academics in Social Sciences with similar training and exposure.

In terms of classroom management, academics in Faculty of Law emerged first. What makes the class is its environment and the environment is constituted of those elements that influence it within and without. In the University, Law students seem to have specific places, only used by them, for their lectures, tutorials, and mock court

sessions. This same situation seems to be the case for students in Clinical Sciences. Again, the number of students in these programmes, including Faculty of Arts are not too many for effective management and control in the class. A teacher may have a good classroom management skills, but if the class is too large, it becomes a problem. This could have been a factor in the rating of academics with respect of classroom management skill component of teaching effectiveness in the Faculty of Law.

With regards to ability to motivate students, it is not surprising that academics in Social Sciences, Law and Education emerged on top. It was surprising, though, that academics in the Faculties of Science and Laboratory and Allied Health Sciences came up second and fourth in ranking with respect to ABMS. Motivation is an internal state that arouses us to action and pushes us in particular directions and keep us engaged in certain activities. This internal state can be built either from internal stimuli (intrinsic motivation) or from external stimuli (extrinsic motivation). Extrinsic motivation within the classroom setting is built around what the teacher says or does to elicit desirable students behaviour. What the teacher does to sustain and internalize desirable behaviours in their students is of no less importance. The knowledge of the principles of reinforcement, either through classical or operant conditioning, will be an advantage to the academics. Teachers of Education, Social Sciences and Law are exposed to these theories, principles and practice of motivation than others, hence this ranking.

On evaluation of students learning activities (EVSLA) it was surprising that lecturers in Education did not top the list. They emerged fourth on the ranking. Effective teachers use assessment of students activities to motivate students. Little wonder that students' evaluations of their teachers for ability to motivate students and evaluation of students learning activities are so similar. But one would have expected academics in Education to top the list because they have in the course of their training, been exposed to the rudiment of tests, measurement and evaluation. Could it be that they do not practice it as much as they preach or teach it? An evaluation of students is in effect an evaluation of the teacher. To hold him accountable for some or all of the outcome of instructional or educative process. The teacher can use evaluation of students learning activities to improve his skills, competencies and job performance. It can also be used to detect certain defects that result in poor performance by learners early enough and corrected for overall better result (Joshua, 1997). All academics in all disciplines should use evaluation of students learning activities for the improvement of themselves, the students, the school system, and the society at large.

With regards to relationship with students, academics in the Faculties of Law, Laboratory and Allied Health Sciences, Education, and Clinical Sciences, in that order, were rated highly by their students with respect to RWS component of teaching effectiveness. They are professionals with some training in human relations. They

were seen to inadvertently extend this to their students to merit these high ratings. Studies have shown that when teachers build the bridge in communication and interaction with students, they get their co-operation, interest and willingness to learn what the teacher is saying (Domike, 2002, Ogden, 1994; Seldin, 1999). The interest that the teacher displays in the student will determine to a great extent the interest the students exhibits in the course. There is need, therefore, for cordial student – teacher interaction both within and outside the classroom for effective teaching and learning to take place. In the overall teaching effectiveness, academics in the Faculties of Law and Education were rated very high to merit first and second position respectively. This was not surprising, because in all facets of effective teaching, as evaluated by their students, they were seen to do well. They were rated high in their possession of knowledge of subject matter, classroom communication skills, effective teaching methods/strategies, relationship with students, and in the overall teaching effectiveness.

Academics in the Faculties of Laboratory and Allied Health Sciences, Clinical Sciences, and Social Sciences had almost the same overall ratings to merit third, fourth and fifth positions respectively. Academics in the Faculties of Science and Arts emerged sixth and seventh respectively. It was surprising that academics in the Science were rated higher than those in the Arts by students. This is not consistent with Feldman (1998) who revealed that compared to other instructors, those teaching humanities, fine arts, and language tend to

receive somewhat higher ratings. Yet some research show that students see demanding academic staff as being better (more effective) than easy academic staff (Jacobs, 1994). It could be that academics in the Faculty of Science are more demanding, in the view of the students, than their counterparts in the Faculty of Arts to merit this high rating.

It was most surprising that academics in the Faculty of Agriculture and Management Science were almost always rated least by their students in each of the sub-categories and in the overall teaching effectiveness. Those two faculties are not twin bedfellows, except in these ratings. It was difficult to discern why this should be so. Is it because of class size (teacher – student) ratio? No doubt student population in those faculties especially Management Sciences is too large. Or could it be correctly speculated that academics in these Faculties go for something else from the students/system other than effective teaching? The findings of this study is instructive.

It should, however, be noted that though academics in the Faculties of Agriculture and Management Sciences, as evaluated by their students, trailed the ranking in most sub-categories of teaching effectiveness, on the overall teaching effectiveness, they were rated above average (Average overall teaching effectiveness = 147.00; Agriculture (mean = 157.24); Management Sciences (mean = 149.36). There are rooms for improvement, not only for academics in these two Faculties, but in all Faculties in the University.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study was concerned with students' evaluation of teaching effectiveness of academic staff in University of Calabar, Nigeria. This final chapter presents the summary of the study, conclusion and recommendations for the study. Suggestions for further studies were also made.

5.1 Summary of the study

There were five major purposes of this study *first*, to determine whether academic staff in the University of Calabar, as evaluated by their students, are effective in their teaching. *Secondly*, to determine whether academic staff's gender, age, discipline, qualification, rank, and teaching experience individually have significant influence on their teaching effectiveness. *Thirdly*, to determine whether there is significant interaction effect of academic staff's gender, discipline, and rank on their overall teaching effectiveness. *Fourthly*, to determine whether the evaluation of academic staff's teaching effectiveness made by male students is different from the evaluation made by female students. Finally, to determine the mean ranking, faculty-by-faculty, of the teaching effectiveness of academic staff in University of Calabar, Nigeria.

To achieve the purposes, five research questions were posed. From the first four research questions, nine null hypotheses were

formulated and tested in the study. The fifth research question was retained. These hypotheses / research question were as follows:

1. The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly high, with respect to the seven sub-categories and in the total effect.
2. There is no significant difference between male and female academic staff in their teaching effectiveness in each of the seven sub-categories and in the total effect.
3. The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly influenced by the age of the academic staff in each of the seven sub-categories and in the total effect.
4. The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly influenced by the discipline of the academic staff in each of the seven sub-categories and in the total effect.
5. There is no significant influence of academic staff's qualification on their teaching effectiveness in each of the seven sub-categories and in the total effect.
6. The teaching effectiveness of academic in University of Calabar, as evaluated by their students, is not significantly influenced by their rank (professional status) in each of the seven sub-categories and in the total effect.

7. The teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, is not significantly influenced by their teaching experience in each of the seven sub-categories and in the total effect.
8. There is no significant interaction effects of gender, discipline, and rank on the academic staff's overall teaching effectiveness.
9. The evaluation of academic staff teaching effectiveness made by male students is not significantly different from the evaluation made by female students.
10. What is the mean ranking, faculty-by-faculty, of the teaching effectiveness of academic staff in University of Calabar, as evaluated by their students, in each of the seven sub-categories and in the total effect?

Under academic staff's characteristics, six variables were considered. These were gender, age, discipline, academic qualification, rank, and teaching experience. The students characteristic was gender. These formed the independent variables of the study. Academic staff's teaching effectiveness was the dependent variable. It had seven sub-categories and the total effect.

The research design adopted for this study was ex post facto. The research area was the University of Calabar, Nigeria. The population of the study comprised all 646 academic staff and about 10,000 undergraduate students of all the 10 faculties in the University. The sampling techniques employed were stratified random

sampling and simple random sampling. 3800 students, 1900 males and 1900 females were used to evaluate academic staff's teaching effectiveness, 10 students – five males and five females for each academic staff. The sample size, therefore, was 380 academic staff. The instruments used for collecting data were academic staff questionnaire (ASQ) measuring academic staff's personal / demographic variables, and University students' evaluation of teaching effectiveness questionnaire (USETEQ) for evaluation of teaching effectiveness.

All the 380 questionnaires for the academic staff and 3800 questionnaires for the students were administered personally by the researcher with the help of some research assistants. All the questionnaires given out were retrieved. The data collected were collated and analyzed using population t-test, independent t-test, dependent t-test, one-way ANOVA, three-way ANOVA, and Fisher's (LSD) multiple comparison analysis, all using SPSS statistical package. Each of the hypotheses was tested at .05 level of significance.

The findings of the study were as follows:

1. The teaching effectiveness of academic staffs as evaluated by their students, is significantly high in each of the seven sub-categories and in the total effect.

2. (i) There is no significant difference between male and female academic staff in their teaching effectiveness, with respect to knowledge of subject matter, communication

skills, effective teaching methods/strategies, classroom management skill, ability to motivate students, relationship with students, and overall teaching effectiveness.

(ii) There is a significant difference between male and female academic staff in their teaching effectiveness, with respect to evaluation of students learning activities in favour of male academics.

3. The teaching effectiveness of academic staff, as evaluated by their students, is significantly influenced by the age of the academic staff in each of the seven sub-categories and in the total effect.

4. (i) The teaching effectiveness of academic staff, as evaluated by their students, is significantly influenced by the discipline of the academic staff, with respect to knowledge of subject matter, communication skills, effective teaching methods / strategies, relationship with students, and overall teaching effectiveness.

(ii)The teaching effectiveness of academic staff, as evaluated by their students, is not significantly influenced by the discipline of the academic staff, with respect to classroom management skills, ability to motivate students, and evaluation of students learning activities.

5. There is a significant influence of academic staff's qualification on their teaching effectiveness, with respect to each of the seven sub-categories and in total effect.

6. The teaching effectiveness of academic staff, as evaluated by their students, is significantly influenced by their rank in each of the seven sub-categories and in the total effect.

7. The teaching effectiveness of academic staff, is significantly influenced by the number of years in teaching (teaching experience) in each of the seven sub-categories and in the total effect.

8. (i) There is no significant interaction effect of gender, discipline, and rank of the academic staff on the academic staff's on the academic staff's overall teaching effectiveness, whether the factors are taken in twos or in threes.

(ii) Taken individually, while gender has no significant effect, discipline and rank have significant influence on the overall teaching effectiveness of academic staff.

9.(i) The evaluation of academic staff's teaching effectiveness made by male students is significantly different from the evaluation made by female students, with respect to knowledge of subject matter, communication skills, effective teaching methods/strategies, classroom management skills, relationship with students, and overall teaching effectiveness.

(ii) The evaluation of academic staff's teaching effectiveness made by female students is not significantly different from the evaluation male by female students, with respect to ability to motivate students and evaluation of students learning activities.

10. From the student evaluation of the overall teaching effectiveness of academic staff in University of Calabar, faculty-by-faculty, the following ranking emerged:

Law	1st
Education	2nd
Lab. & Allied Health Sciences	3rd
Clinical Sciences	4th
Social Sciences	5th
Science	6th
Arts	7th
Basic Medical Sciences	8th
Agriculture	9th
Management Sciences	10th

5.2 Conclusion

On the basis of these findings, it was concluded that academic staff in the University of Calabar, Nigeria are effective in their teaching, with respect to all the sub-categories of teaching effectiveness. Academic staff in the Faculty of Law were rated by students as the most effective in their teaching. They were closely

followed by academic staff in Faculty of Education. Academic staff in Faculties of Laboratory and Allied Health Sciences, Clinical Sciences, and Social Sciences ranked third, fourth and fifth respectively. Faculties of Science, Arts, Basic Medical Sciences, Agriculture, and Management Sciences, took the last five ranking in that order. But when the 10 Faculties in the University were collapsed into three disciplines – sciences, humanities, and education, academic staff in education, for being most effective in their teaching, emerged first in the ranking.

Gender of the academic staff do not make them more effective in their teaching, however, male academic staff were assessed by their students to be more effective in the evaluation of students learning activities. Age, discipline academic qualification, rank, and teaching experience of the academic staff were found to significantly influence teaching effectiveness. Except that there was no significant influence of academic staff's discipline on their classroom management skills, ability to motivate students, and evaluation of students learning activities. Gender, discipline and rank taken in twos or threes did not have significant influence on the teaching effectiveness of academic staff. Except for ability to motivate students and evaluation of students learning activities, male and female students did not differ in their evaluation of academic staff's teaching effectiveness.

In the view of the researcher, the students' evaluation of their lecturers in the University of Calabar is favourable. With this favourable assessment of the lecturers' teaching effectiveness by their

students, if the quality/standard of learning among students/graduates of the University is rated below average, then something other than effective teaching may be responsible for such low learning/ education.

5.3 Recommendations

Based on the findings of this study, the following recommendations were made:

(i) Students' evaluation of faculty members' teaching effectiveness should be regularly used, and feed backs used to improve the school system.

(ii) As a way of saving our educational system at tertiary level, schools should be encouraged to officially introduce mandatory evaluation of their lecturers. And the lecturers should be ready to submit themselves to such evaluations.

(iii) Federal Government, National University Commission NUC and indeed individual universities should fund studies in faculty evaluation using students, particularly in the area of coming up with the needed instrument for the implementation of students' evaluation of faculty programmes.

(iv) Academic staff should begin at individual classroom level to periodically evaluate their work and themselves using students, without waiting for formal government mandatory evaluation requirement since

they and their students can benefit from such evaluation.

(v) Graduate students in education, especially those with interest in tests, measurement and evaluation should focus on developing and validating instruments for objective student evaluation of teacher/teaching programmes at various level of our educational system.

(vi) Workshops, seminars, conferences should be organized by governments, lecturers, unions, and other professional associations to enlighten the lecturers in particular and the public in general on the invaluable importance of students evaluation of instruction/ instructor in the educational system. For instructional improvement, student evaluation of instruction serves as a diagnostic tool.

5.4 Suggestions for further studies

The following areas for further research have been suggested:

(i) The replication of this study with either the same population or different population is suggested to ascertain the validity of the present findings and conclusion.

(ii) A larger sample should be used to broaden the scope of this work. Such sample may look at Federal / State / private universities, since the composition of the three samples may be dissimilar.

(iii) A similar study should be carried out but with students from graduate schools for the purpose of comparison.

(iv) A similar study should be replicated in other Federal Universities in Nigeria to determine the authenticity or variance of the findings.

(v) A study in which academic staff are actually evaluated by different assessors (self, peer; external agency) using the same instrument would be necessary for determining the differential areas of focus, and levels among teacher evaluators.

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APPENDIX A

UNIVERSITY OF CALABAR
CALABAR - NIGERIA.

ACADEMIC STAFF QUESTIONNAIRE (ASQ)

Dear Sir/Madam,

Please, provide answers to the items below by making a mark [√] against each item as it applies to you. Your responses will be kept in strict confidence and will be used for research purposes only.

B. A. Bassey

PERSONAL/DEMOGRAPHIC DATA OF ACADEMIC STAFF IN UNICAL

1. **Name:**(please, write your name):.....
2. **Sex:** Male[ ] Female [ ]
3. **Age (in years):** 20-30yrs [ ]; 31-40 yrs [ ]; 41-50 yrs [ ]; 51 yrs and above [ ].
4. **Highest academic qualification:** Masters [ ]; doctorate [ ]
5. **Faculty (subject matter area):** Agriculture [ ]; Arts [ ]; Basic Medical Sciences [ ]; Clinical Sciences [ ]; Education [ ]; Lab & Allied Health Sciences [ ]; Law [ ]; Management Science [ ]; Science [ ]; Social Sciences [ ].
6. **Rank (Professional status):** Assistant Lecturer [ ]; Lecturer II/I [ ]; Senior Lecturer/Reader [ ]; Professor [ ]
7. **Teaching experience (in years):** below 10 yrs [ ]; 11-20 yrs [ ]; 21- 30 yrs [ ]; 31 yrs and above [ ].

APPENDIX B

UNIVERSITY OF CALABAR
FACULTY OF EDUCATION

DEPARTMENT OF EDUCATIONAL FOUNDATIONS, GUIDANCE AND COUNSELLING

UNIVERSITY STUDENTS' EVALUATION OF TEACHING EFFECTIVENESS QUESTIONNAIRE (USETEQ)

Dear Student,

One hereby requests you to respond, as honestly as you can to all the statements below. Feel free to say your mind as your responses will be kept in strict confidence. Please, do not write your name on the questionnaire.

Thank you.

Signed
B. A. Bassey

SECTION A – STUDENTS' PERSONAL DATA

Please, make a mark [✓] against each item as it applies to you.

1. **Sex:** (a) Male [ ] (b) Female [ ]

SECTION B

STUDENTS' EVALUATION OF TEACHING EFFECTIVENESS OF ACADEMIC STAFF

Please, read carefully each of the statements below and tick [✓] to indicate your agreement or disagreement to each item. Each item has to do with how you evaluate teaching effectiveness of a particular lecturer who has taught you a course as an undergraduate in the University of Calabar. The headings for your responses are: Very Strongly Agree (VSA); Strongly Agree (SD); Agree (A); Disagree (D); Strongly Disagree (SD); Very Strongly Disagree (VSD).

S/No	The Lecturer	VSA	SA	A	D	SD	VSD
	PART 1: Knowledge of subject matter (KSM)						
2.	Sets clear objectives, content and other expectations in the course.						
3.	Has deep interest / enthusiasm for subject matter.						
4.	Appears not to have mastered the subject matter well.						
5.	Does not give adequate background of ideas / concepts in the course.						
6.	Gives different point of view of material discussed in the course.						
7.	Does not discuss current developments in the course						
	PART 2: Communication skills (COMSK)						
8.	Communicates clearly and understandably.						
9.	Does not encourage students' participation in class.						
10.	Explains subject matter until students understood the lesson.						
11.	Does not answer students' questions in the class satisfactorily.						
12.	Does no speak English clearly and with good pronunciation.						
13.	Increases students' appreciation for the course.						
	PART 3: Effective teaching methods (ETM)						
14.	Presents clear lesson / course outline / objective at the beginning of the course.						
15.	Gives well- organized and orderly lesson						
16.	Materials presented do not meet students' interests and needs.						
17.	Has ability to present difficult material in an easy, clear and simple way that lead to understanding by all students.						
18.	Does not present material in good pace to allow for note –taking.						
19.	Uses varied and alternative approaches including teaching aids to present materials.						
	PART 4: Classroom management skills (CLMSK)						
20.	Makes sure that students take active part during every lesson.						
21.	Does not make the classroom always conducive for learning.						
22.	Does not allow students to act freely in class.						
23.	Captures the attention of the entire class while teaching.						

24.	Ensures that no student prevents / disturbs another student from listening during classes.						
25.	Ensures that students are well behaved during classes.						
	PART 5: Ability to motivate students (ABMS)						
26.	Inspires students to like/want to learn his/her course.						
27.	Does not praises students' contributions/opinions in the class.						
28.	Gives students opportunity to learn at their own rate.						
29.	When students do well in the course he/she gives them some gift to encourage / motivate them.						
30.	Does not motivate students to do their best work.						
31.	Does not give personal help to students having difficulty in his/her course.						
	PART 6: Evaluation of students learning activities (EVSLA)						
32.	Does not keep students informed on how well they are doing on tests and assignments.						
33.	Does not give tests and assignments that were of high quality and led to more understanding and learning of course material.						
34.	Does not base students' final evaluation on sufficient number of appropriate assignments and tests.						
35.	Appears fair and objectives in his grading.						
36.	Is prompt in returning test and assignment scripts.						
37.	Explains clearly how marks will be awarded.						
	PART 7: Relationship with students (RWS)						
38.	Does not maintain cordial relationship with students.						
39.	Shows no concern about whether students have learned the material he/she had presented.						
40.	Is not friendly and approachable in and out of class.						
41.	Accepts students' criticisms/opinions and suggestions freely.						
42.	Listens to students at all time to address their problems.						
43.	Encourages students to learn in the course of his / her lesson						

APPENDIX C

Person – variable matrix

S/N	ACADEMIC STAFF						MALE STUDENTS								FEMALE STUDENTS							
	GEND	AGE	QUAL	SUBJ	RANK	EXP	KSM	COMSK	ETM	CLMSK	ABMS	EVSLA	RWS	OVTE	KSM	COMSK	ETM	CLMSK	ABMS	EVSLA	RWS	OVTE
1	1	4	2	1	4	4	26.8	29	26.2	27.6	24.8	24.8	24.6	183.8	22.8	24.3	23	23.8	23	19.8	21.8	155.2
2	1	1	2	1	1	1	21.8	27	19	23.6	19.6	19.8	22.8	152.6	21.8	28.6	25.2	25.2	21.8	19.6	21.8	160
3	1	1	1	1	1	1	22.3	21.6	20.8	19.8	21.6	20.8	21.8	148.7	19.6	21.8	22.6	23.8	23.6	20.8	20.6	152.8
4	1	4	2	1	3	4	25.2	20.8	21.3	20.6	21.8	24.3	24.8	158.8	22.8	19.8	23.2	19.6	24.2	21.6	21.8	153
5	2	2	1	1	1	2	20.8	19.3	20.6	19.9	23.8	20.1	22.8	147.3	24.2	20.6	21.6	21.8	19.8	18.9	20.2	147.1
6	1	1	1	1	1	1	23.6	21.6	21.8	20.6	20.8	22.3	21.6	152.3	22.6	19.8	19.6	20.6	19.8	20.6	20.8	143.8
7	1	1	1	1	1	1	20.8	19.8	22.3	20.8	23.2	22.6	20.8	150.3	21.8	20.6	21.8	22.6	20.6	23.2	19.8	150.4
8	1	4	2	1	3	3	26.8	24.8	25.7	26.6	20.8	22.8	27.3	174.8	24.6	25.6	23.8	24.8	22.6	26.3	21.8	169.5
9	1	4	2	1	3	3	26.8	24.8	25,7	26.6	20.8	22.8	27.3	174.8	24.6	25.6	23.8	24.8	22.6	26.3	21.8	169.5
10	1	2	1	1	1	1	20.8	21.3	20.6	22.3	21.8	19.7	22.8	149.3	22.1	22.3	23.8	19.8	19.8	20.6	21.8	150.2
11	2	1	1	1	1	1	21.6	19.8	19.9	20.3	21.6	21.8	20.6	145.6	19.7	20.8	19.8	21.3	20.3	18.9	20.6	141.4
12	1	3	1	1	2	2	20.4	22.6	24.6	19.8	22.8	20.6	22.6	153.4	20.6	19.8	18.8	21.6	21.2	19.8	19.6	141.4
13	2	3	2	1	3	4	22.8	21.6	23.6	24.3	20.1	23.6	24.6	160.8	21.3	20.8	21.6	19.8	19.8	20.8	21.8	145.9
14	1	2	2	1	2	2	23.3	22.8	21.8	20.8	23.3	22.8	21.8	153.6	20.8	21.6	22.2	22.8	21.6	19.6	21.3	149.9
15	1	4	2	1	4	4	27.6	24.8	26.6	23.8	24.4	26.2	25.7	179.1	21.6	22.8	24.8	23.6	22.6	26.8	25.2	167.4
16	1	1	1	1	1	1	21.6	22.1	20.8	19.8	19.6	20.3	21.3	145.5	19.6	20.6	21.2	20.8	21.3	20.3	22.8	146.6
17	1	2	1	1	2	2	23.3	20.8	21.8	22.3	20.8	22.6	21.8	152.4	22.8	21.3	19.8	22.6	20.8	20.8	21.6	149.7
18	2	3	2	1	2	2	20.8	21.6	24.6	20.6	23.6	21.6	24.1	156.9	23.6	21.8	20.3	19.8	21.6	21.8	22.3	151.2
19	1	2	2	1	2	2	23.7	22.2	21.8	24.3	21.3	22.8	23.6	156.7	21.3	20.2	21.3	20.8	21.6	22.3	21.8	149.3
20	1	2	2	1	2	2	24.8	23.6	20.8	23.8	22.8	20.2	19.8	155.8	22.6	22.8	21.8	19.6	22.8	23.6	22.6	155.8
21	1	3	2	1	3	4	25.3	21.6	20.8	24.3	24.6	21.6	22.3	160.5	23.6	21.6	23.4	20.6	21.6	21	21.8	153.6
22	2	3	2	1	2	3	21.6	22.8	21.6	22.3	19.8	22.9	23.6	154.6	21.3	23.6	22.6	22.2	24.3	19	21.6	154.6
23	1	2	1	1	2	2	23.3	21.3	23.3	21.6	20.6	21.8	24.1	156	23.4	21.4	22.8	23.6	20.8	21.8	23.2	159
24	1	3	2	1	2	2	20.8	21.6	23.6	20.8	24.2	22.6	20.6	154.2	22.8	21.6	23.6	22.8	21.6	20.8	21.8	155
25	1	3	2	1	2	2	22.6	22.8	20.9	22.3	21.6	22.8	23.6	156.6	24.6	20.2	19.6	21.8	22.6	19.8	21.7	150.3
26	1	4	2	1	3	4	24.8	23.2	24.3	23.8	22.8	21.8	24.3	165	23.8	21.8	20.8	24.3	23.2	20.8	24.8	159.5

27	1	3	2	1	3	2	22.8	23.6	23.3	22.6	21.8	24.3	22.4	160.8	21.6	24.3	21.2	22.8	22.6	20.6	23.6	156.7
28	1	2	2	1	2	3	21.6	22.9	21.8	24.2	21.6	23.3	21.8	157.2	23.4	22.8	22.6	21.2	23.6	21.8	22.8	158.2
29	1	3	2	1	3	3	22.6	23.8	22.6	23.8	22.8	23.6	20.8	160	23.6	23.8	20.6	20.8	21.8	23.6	21.1	155.4
30	1	3	2	1	3	3	26.8	24.3	25.4	24.6	23.3	24.8	22.6	171.8	24.6	25.2	23.3	23.6	23.3	22.8	21.8	164.6
31	1	2	2	1	2	3	24.6	23.8	23.2	22.8	22.8	19.6	22.8	159.6	21.3	22.8	21.3	23.1	22.8	21.8	22.4	155.5
32	1	3	2	1	3	3	23.3	23.8	24.3	23.3	21.6	22.8	21.4	160.5	22.8	22.6	22.8	24.3	21.8	21.4	23.6	159.3
33	1	2	2	1	2	2	24.4	21.6	22.8	19.8	22.8	24.3	23.8	159.5	23.4	21.2	22.4	19.9	22.8	22.6	24.3	156.6
34	1	3	2	1	3	4	22.1	22.7	23.3	24.2	20.8	21.8	24.2	159.1	21.8	22.8	21.8	22.8	21.6	24.1	23.6	158.5
35	1	4	2	1	3	3	23.8	22.9	24.6	21.8	21.6	23.6	22.8	161.1	23.2	21.3	22.6	23.3	24.2	21.8	22.4	158.8
36	1	3	2	1	3	3	24.6	21.8	22.6	22.8	23.8	22.6	21.6	159.8	23.8	22.6	24.1	21.8	22.8	20.8	21.8	157.7
37	1	2	2	1	2	2	21.8	24.1	24.6	21.6	22.2	21.6	22.6	158.5	24.6	21.8	23.8	22.6	22.6	23.2	20.8	159.4
38	1	4	2	1	4	3	27.6	25.6	26.8	27.2	24.8	24.6	26.2	182.4	25.2	24.2	25.6	26.6	23.8	24.8	25.5	175.7
39	1	2	1	1	2	2	21.2	20.8	23.3	22.8	22.6	22.6	23.4	156.7	22.8	21.3	22.2	23.6	21.8	21.8	23.3	156.8
40	1	2	1	1	2	2	23.8	21.9	20.9	22.3	22.8	23.4	21.6	156.7	22.6	23.8	22.8	21.8	21.8	28.3	24.6	160.7
41	1	2	1	2	1	1	23.8	20.6	22.6	22.4	21.8	21.6	21.6	154.4	24.2	23.6	23.8	21.6	22.4	21.8	22.3	159.7
42	1	2	1	2	1	1	22.6	21.2	23.8	21.8	21.6	21.4	22.3	157.7	25.2	22.8	21.2	22.4	23.3	23.6	21.8	160.3
43	2	1	1	2	1	1	21.6	23.8	21.7	22.3	22.6	23.8	20.6	156.4	22.8	21.6	23.8	21.6	24.1	23.6	22.4	159.9
44	1	2	1	2	1	1	24.8	21.8	22.2	19.8	23.4	22.8	24.2	159	22.2	22.8	24.7	23.1	22.6	23.2	21.2	159.8
45	2	1	1	2	1	1	21.3	22.3	19.9	20.8	21.8	21.6	20.4	148.1	19.8	21.6	20.8	20.6	24.4	24.6	20.6	152.4
46	1	4	2	2	4	4	28.3	26.2	25.8	28.4	20.6	26.3	27.6	183.2	26.2	22.8	24.8	26.6	23.9	26.2	23.3	173.8
47	1	2	1	2	2	2	27.3	21.8	24.3	20.8	26.6	22.8	21.3	164.9	27.7	22.2	21.8	20.8	21.8	24.8	22.6	161.7
48	2	1	2	2	2	1	23.6	21.3	22.8	23.8	25.7	21.6	20	158.8	23.4	22.8	22.8	19.6	19.8	22.3	21.2	154.9
49	1	1	1	2	1	1	22.2	22.8	21.8	22.6	20.6	21.3	22.4	153.7	23.3	21.6	25.6	20.7	22.2	20.8	23.6	157.8
50	1	2	1	2	2	2	25.8	26.7	20.6	23.3	23.8	21.6	23.3	165.1	25.7	24.7	22.6	22.3	23.6	21.6	26.3	166.8
51	2	3	2	2	3	4	27.6	25.6	23.4	21.8	25.5	23.3	24.6	171.8	26.7	24.2	23.6	24.4	20.9	24.2	23.6	167.6
52	1	3	2	2	3	3	24.6	22.5	25.6	23.6	23.8	24.6	25.1	169.8	24.6	23.3	24.1	21.8	23.3	23.2	20.8	161.1
53	1	4	2	2	4	4	28.4	24.7	26.7	24.6	25.6	24.2	26.2	180.4	26.8	25.2	26.8	24.7	22.8	25.7	27.3	179.3

54	1	3	2	2	3	3	21.2	23.3	25.8	25.2	26.2	24.8	23.5	170	23.8	24.3	27.7	23.8	24.1	22.8	25.1	171.6
55	2	3	2	2	3	3	22.3	27.8	21.2	23.2	25.8	23.6	22.4	166.3	23.8	26.2	23.6	24.2	25.3	24.2	21.8	169.1
56	2	2	1	2	2	2	26.2	24.8	22.6	24.8	21.6	22.4	22.6	165	24.8	22.8	21.8	24.8	23.6	23.2	22.1	163.1
57	1	4	2	2	3	4	27.3	22.9	26.3	23.3	26.2	23.3	22.8	172.1	23.3	23.2	20.9	25.1	22.8	23.8	24.3	163.4
58	1	4	2	2	4	4	26.6	24.3	25.8	24.8	23.8	25.6	24.2	175.1	24.1	22.3	21.8	23.2	24.6	22.2	26.8	165
59	1	4	2	2	3	3	26.2	24.6	23.3	25.2	27.3	24.3	23.2	174.1	23.3	24.3	22.2	24.3	20.5	24.3	21.6	160.5
60	2	2	2	2	3	3	24.6	23.2	23.8	24.6	24.3	21.8	24.3	166.6	25.6	26.2	24.3	21.3	22.6	23.3	23.8	167.1
61	1	3	2	2	3	3	26.4	23.6	24.8	21.4	23.4	23.4	24.3	167.3	26.2	24.3	23.8	23.4	23.6	24.3	24.3	169.9
62	2	3	1	2	2	2	23.4	23.4	24.1	23.3	23.8	22.7	22.9	163.6	26.8	23.3	24.2	22.3	21.7	22.8	21.7	162.8
63	2	2	1	2	1	2	25.1	20.7	21.8	22.4	24.6	22.8	23.4	160.3	23.3	24.8	21.8	25.2	23.8	23.9	22.8	166.6
64	1	2	1	2	2	2	26.2	24.3	21.3	24.8	23.3	21.8	24.6	166.3	26.4	23.6	23.2	24.3	26.8	24.8	24.2	173.3
65	1	2	1	2	2	2	27.1	22.6	23.8	23.8	24.6	23.2	21.2	166.3	25.4	24.3	23.4	22.8	24.2	23.6	23.4	167.4
66	1	2	1	2	2	2	22.2	23.7	22.8	24.7	22.7	24.3	23.6	164	24.1	22.4	21.8	23.4	22.8	24.7	22.8	162
67	1	4	2	2	3	4	24.6	24.8	27.1	24.6	23.6	22.2	24.8	171.7	23.6	24.3	25.8	24.5	23.8	23.8	21.6	167.4
68	1	3	2	2	3	2	26.8	25.3	24.2	23.8	22.4	23.8	22.8	169.1	26.1	23.8	24.3	25.9	22.3	24.4	23.3	170
69	2	2	1	2	2	2	25.6	23.6	24.8	20.9	25.1	23.8	21.9	165.7	22.7	23.8	23.5	20.1	26.7	25.1	22.6	164.5
70	2	2	2	2	3	3	24.6	27.3	25.1	23.3	20.8	25.1	23.2	169.4	27.3	25.3	24.8	26.7	23.4	23.8	24.2	175.5
71	1	4	2	2	4	4	28.3	26.7	23.8	24.3	24.3	24.7	23.8	175.9	27.4	25.8	23.3	24.1	23.1	21.6	23.6	168.9
72	1	2	2	2	2	2	25.8	24.7	20.7	24.6	22.6	24.4	22.9	165.7	26.3	24.3	23.8	25.3	24.8	23.6	22.9	171
73	1	3	1	2	2	3	22.3	21.3	23.9	23.4	24.8	23.6	25.2	164.5	26.9	25.6	24.3	26.2	21.9	23.3	24.6	172.8
74	1	4	2	2	4	4	29.2	24.4	26.4	24.6	26.7	24.3	25.6	181.2	27.7	26.3	25.1	25.3	21.8	26.3	22.8	175.3
75	1	4	2	2	3	2	27.3	23.4	25.6	21.8	25.3	22.8	24.8	171	28.3	22.2	24.6	24.5	22.8	25.2	23.7	171.3
76	2	2	1	2	2	3	25.2	21.3	24.4	21.3	24.3	25.3	22.1	163.9	27.8	24.3	21.8	21.8	24.2	24.8	25.1	169.3
77	1	2	2	2	2		26.3	22.7	25.1	20.8	23.8	23.8	23.8	166.3	26.7	24.8	23.3	20.3	25.3	21.3	21.3	163
78	1	3	2	2	3	3	27.3	25.3	24.2	19.7	25.3	21.8	24.3	167.9	25.2	23.3	24.2	20.1	27.3	24.3	24.3	168.7
79	2	3	2	2	3	3	25.8	24.4	22.3	21.3	25.8	26.3	21.8	167.7	26.8	25.9	23.9	19.8	25.1	23.6	25.8	170.9
80	1	3	2	2	3	3	24.9	29.2	26.7	19.2	23.1	24.1	26.1	170.3	25.9	23.8	25.1	21.2	21.8	20.6	26.3	164.7
81	2	2	2	3	2	2	25.3	24.8	21.7	21.8	26.1	20.1	22.8	162.6	26.2	22.7	23.8	25.1	26.2	25.5	24.1	173.6
82	1	2	1	3	2	2	23.2	21.3	22.8	18.9	22.8	20.1	21.6	150.7	21.9	23.2	22.1	21.3	21.1	20.3	21.9	157.8
83	1	3	2	3	3	4	26.1	24.3	27.1	20.1	25.2	23.2	27.9	173.9	23.9	24.1	25.1	21.3	26.1	21.1	22.1	163.7
84	2	1	1	3	1	1	24.3	21.8	22.1	18.1	21.1	20.3	21.3	149	24	20.1	21.8	20.9	21.1	20.2	21.3	149.8

85	1	3	2	3	2	1	26.2	22.1	23.2	21.3	23.4	26.2	23.1	165.5	23.4	23.1	22.6	21	23.2	22.3	25.1	160.7
86	1	4	2	3	3	4	28.3	23.3	24.9	26.8	23.5	21.3	24.1	172.2	27.1	25.1	22.7	22.1	24.3	21.2	21.8	164.3
87	1		1	3	2	2	26.3	24.3	25.3	22.2	21.6	19.4	26.1	165.2	28.1	24.1	23.8	21.9	22.8	24.4	23.7	168.8
88	2	3	2	3	3	3	28.7	24.1	24.8	26.2	22.8	21.3	23.8	171.7	27.8	24.8	23.5	21.8	23.3	21.2	23.8	166.2
89	1		1	3	2	2	25.3	23.9	25.1	23.3	21.6	24.8	24.8	149.8	21.9	20.9	22.5	20.3	21.1	20.2	21.3	148.2
90	1	1	1	3	1	1	27.9	21.8	26.1	21.3	21.7	21.3	25.1	146.2	23.1	21.8	21.1	19.9	21.8	20.3	20.8	148.8
91	1	3	2	3	3	4	26.2	27.1	22.2	21.3	29.2	27.1	26.7	171.8	25.9	23.9	23.2	18.8	23.2	21.6	25.3	161.9
92	1	2	2	3	2	3	72.1	21.1	27.1	20.6	23.3	22.3	25.1	166.6	27.2	24.1	22.2	20.1	24.1	24.3	24.4	166.4
93	1	2	2	3	2	2	24.8	24.3	23.2	22.1	22.9	23.9	21.1	162.3	28.1	25.7	23.3	22.1	23.4	24.8	21.9	169.3
94	1	2	1	3	2	1	21.1	23.9	21.3	20.3	22.2	19.2	22.3	150.3	22.1	21.9	20.1	23.1	22.8	21.6	19.3	150.9
95	1	1	1	3	1	1	23.8	22.1	20.9	21.4	21.1	18.7	21.1	149.1	22.1	20.9	21.8	19.2	22.6	21.3	19.8	147.7
96	2	2	2	3	3	3	28.4	23.2	23.4	21.9	22.8	21.9	25.8	167.4	24.3	21.7	25.3	23.3	22.2	21.8	23.2	161.8
97	1	2	2	3	2	2	27.8	24.1	24.2	22.1	21.9	23.8	21.9	165.8	25.8	23.1	23.5	21.1	21.9	23.9	26.1	165.4
98	1	2	2	3	2	2	26.9	23.9	22.2	24.3	21.7	23.1	23.8	165.9	27.3	24.3	21.8	23.2	23.9	21.9	21.2	163.6
99	2	2	1	3	2	1	21.8	21.4	23.1	20.9	23.1	21.3	19.1	150.7	21.3	20.3	22.3	21.5	20.5	25.3	19.3	150.5
100	1	3	2	3	3	3	25.1	21.1	20.9	21.3	25.6	24.1	28.1	166.2	28.9	25.1	24.1	19.3	21.3	24.3	25.1	168.1
101	1	2	2	3	2	2	26.2	22.2	21.2	23.1	26.3	23.8	23.1	165.5	26.6	23.1	25.2	22.2	21.3	27.1	22.1	167.6
102	1	3	2	3	3	3	26.9	22.3	27.3	20.8	21.2	23.7	25.1	167.3	24.6	23.8	26.1	21.1	22.8	21.8	23.8	164
103	1	2	2	3	2	2	28.9	25.2	22.9	20.7	21.8	21.7	21.8	163	28.9	23.9	21.9	18.9	24.1	23.3	21.1	162.2
104	1	4	2	3	4	4	29.1	26.6	25.3	26.1	26.9	27.8	26.8	188.6	29.2	22.1	26.2	23.2	26.1	27.4	26.8	181
105	1	4	2	3	4	4	28.2	20.2	26.1	19.8	24.2	25.8	24.1	174.4	27.8	23.3	25.1	19.7	24.8	21.2	21.8	163.7
106	2	2	2	3	3	4	27.9	24.1	24.2	21.2	23.3	23.1	26.2	170	28.1	21.8	26.8	21.2	24.3	23.3	23.2	168.7
107	1	2	1	3	2	1	21.2	20.7	21.8	21.2	29.8	22.8	21.3	149.3	21.8	20.2	19.8	18.8	20.6	21.6	20.3	143.1
108	1	4	2	3	3	4	28.2	25.3	25.2	20.8	24.8	24.1	23.1	171.5	25.9	19.2	24.4	23.1	21.8	21.6	24.8	160.8
109	1	2	2	3	2	2	23.4	25.6	26.7	21.3	21.9	21.8	23.8	164.5	28.2	21.8	25.4	24.1	23.3	25.4	25.6	173.8
110	1	3	2	3	3	3	25.2	24.1	25.1	19.2	25.9	27.6	27.2	169.3	28.5	23.2	23.8	23.2	26.1	19.2	24.6	168.6
111	1	3	2	3	3	3	26.8	23.2	24.4	20.1	25.5	23.4	26.1	169.5	27.3	19.8	23.2	21.8	23.7	23.2	21.2	160.2
112	1	3	2	3	3	3	27.1	23.8	24.8	22.3	26.6	21.1	24.1	170.4	27.8	23.1	22.4	21.3	24.8	27.8	23.6	170.8
113	2	2	1	3	2	1	21.8	22.1	22.9	20.4	21.2	21.8	20.1	150.3	21.9	20.2	21.8	20.8	21.3	20.2	23.2	149.4
114	1	3	2	3	3	3	29.2	22.8	21.8	21.2	23.4	25.6	23.2	167.2	23.8	21.6	23.7	24.1	25.1	23.3	23.2	164.8

115	1	1	1	3	1	1	22.1	21.6	20.2	19.2	21.2	23.7	20.1	148.1	22.8	19.5	21.8	19.3	21.8	22.2	21.6	149
116	1	1	1	3	1	1	23.8	20.5	21.2	18.2	21.2	19.2	21.1	145.5	21.9	19.8	22.6	21.3	20.9	21.8	20.1	148.4
117	1	3	2	3	3	3	29.2	27.3	21.2	23.1	23.8	21.8	23.1	169.5	24.8	23.2	24.5	23.2	23.3	21.8	23.3	164.1
118	2	1	1	3	1	1	21.3	20.2	21.3	21.2	20.2	21.9	22.2	148.3	21.2	18.8	20.3	20.9	21.8	23.3	22.8	149.1
119	1	2	1	3	2	1	22.8	21.8	20.4	19.3	24.2	18.9	22.9	150.3	21.6	23.2	22.8	22.2	21	21.8	20.2	152.8
120	1	4	2	3	4	4	25.6	26.1	25.1	23.4	26.8	27.9	26.3	181.2	26.2	22.8	25.7	25.8	26.1	26.8	27.8	181.2
121	1	4	2	4	4	4	28.3	26.8	27.6	23.7	28.6	27.2	26.8	189	28.8	27.2	26.2	24.1	28.1	28.2	25.8	188.4
122	1	2	1	4	2	2	26.7	24.7	25.3	21.3	22.6	23.2	24.8	168.6	27.2	25.8	23.7	25.8	24.1	26.8	24.9	178.4
123	2	2	1	4	1	1	27.3	23.6	26.7	20.8	22.2	21	23.3	143.9	26.5	25.1	25.2	25.2	25.2	26.3	25.2	178.7
124	1	3	2	4	3	4	27.7	22.1	25.2	21.5	24.3	25.2	24.7	170.7	28.2	21.2	24.1	23.8	24.3	22.7	23.9	168.2
125	1	4	2	4	4	4	28.4	24.1	28.2	24.3	27.2	26.6	27.3	186.1	28.8	24.8	26.6	25.9	26.1	24.1	25.3	181.6
126	1	3	2	4	3	2	28.8	25.6	27.4	23.4	24.2	24.7	27.4	181.5	27.6	25.3	27.2	21.3	24.2	22.2	23.2	171
127	1	4	1	4	2	3	25.7	22.4	24.5	21.8	21.6	22.2	23.3	161.5	26.8	24.2	25.2	22.4	21.2	23.8	22.7	166.3
128	2	2	2	4	3	3	26.7	24.6	23.6	22.2	24.2	23.8	24.5	169.6	27.3	22.3	23.9	21	22.8	21.9	21.7	160.9
129	1	1	1	4	1	1	22.1	25.2	24.2	23.4	21.2	20.6	21.8	158.5	26.7	25.4	23.8	23.2	24.1	24.2	22.8	170.2
130	1	2	1	4	1	1	24.2	21.2	20.8	24.6	23.4	21.3	22.3	157.8	25.2	24.2	22.2	24.2	22.1	21.2	23.3	162.4
131	2	1	1	4	1	1	25.6	22.6	23.2	23.2	21.2	20.7	21.3	157.8	21.3	22.3	24.1	19.9	23.2	23.8	24.7	159.3
132	1	2	2	4	2	1	27.7	23.3	24.7	21.8	22.3	24.3	24.3	168.4	26.3	21.2	22.3	23.8	21.7	24.2	23.3	162.8
133	1	1	1	4	1	1	26.8	22.1	21.6	20.3	22.8	21.3	21.8	156.7	20.8	21.3	21.8	20.7	22.3	23.8	21.4	152.1
134	1	1	1	4	1	1	25.9	21.8	11.1	22.3	21.9	22.4	23.4	159.8	25.2	24.1	24.3	22.5	23.2	21.9	22.8	164
135	2	1	1	4	2	2	26.7	23.2	23.8	21.3	23.3	23.9	24.2	165.4	24.3	22.2	23.8	22.2	23.8	21.3	21.9	159.5
136	1	4	2	4	3	3	29.2	22.8	26.7	22.8	23.1	24.8	21.2	170.6	27.3	24.8	26.1	21.2	21.3	23.8	22.6	167.1
137	1	2	2	4	2	2	26.6	21.6	23.3	20.2	21.3	23.2	24.2	160.4	24.8	23.2	22.8	21.2	23.2	24.2	23.6	163
138	1	3	2	4	3	3	27.8	23.4	25.8	21.3	24.2	23.8	21.3	167.6	25.2	22.5	24.2	24.2	22.8	21.8	21.3	162
139	1	2	1	4	1	2	23.8	21.2	20.2	22.6	21.2	21.2	20.8	151	23.3	22.7	22.2	21.3	23.7	24.1	22.3	159.6
140	1	2	1	4	1	1	24.1	23.4	21.3	19.8	23.4	23.4	21.3	156.7	23.8	21.8	21.8	19.8	21.3	21.8	23.1	153.4
141	1	4	2	4	3	3	26.8	25.2	24.6	21.2	23.2	25.7	24.8	171.5	24.7	23.2	22.3	23.1	22.1	23.2	21.3	159.9
142	1	3	2	4	3	4	28.7	27.2	28.3	20.2	24.2	26.6	26.2	181.4	27.2	26.6	25.8	24.2	25.2	26.5	23.8	179.3

143	2	3	2	4	3	3	27.9	26.3	25.8	21.1	25.2	27.2	25.8	181.3	26.9	25.7	26.2	26.3	24.8	24.6	25.7	180.2
144	1	4	2	4	4	4	26.8	25.2	25.6	24.3	26.2	27.7	26.8	182.6	28.3	24.8	26.8	27.8	25.2	26.6	24.5	184
145	1	4	2	4	4	4	27.5	26.2	26.8	24.2	26.8	26.7	27.4	185.6	27.8	26.8	27.1	24.3	26.6	28.1	26.8	187.5
146	1	3	2	4	3	3	26.2	25.4	24.3	25.3	26.2	25.8	24.8	178	26.6	15.9	26.8	25.2	24.2	23.3	24.5	176.5
147	1	2	2	4	3	3	28.3	26.3	28.7	23.2	28.2	27.3	24.2	186.2	27.9	26.8	27.8	22.8	28.3	27.9	27.7	189.2
148	1	4	2	4	4	4	27.2	26.6	26.2	25.7	26.5	24.4	25.3	181.9	26.9	23.8	24.3	23.9	25.7	26.6	26.8	178
149	1	3	2	4	3	3	26.8	27.2	25.3	22.1	24.2	23.8	24.2	173.6	23.8	23.6	24.8	25.7	21	21.8	23.9	164.6
150	2	4	2	4	3	3	25.1	26.3	24.3	23.7	22.8	21.9	23.9	168	24.1	25.2	23.6	24.7	23	22.7	24.1	167.4
151	1	4	2	4	3	3	26.2	25.1	26.8	21	23.9	22.3	24.3	169.6	26.6	26.1	23.8	21.6	23.4	23.7	25.3	170.5
152	1	2	2	4	2	2	26.6	24.2	25.3	19.8	24.3	23.8	23.9	167.9	27.2	24.2	25.3	22.1	24.9	20.8	24.7	169.2
153	1	3	2	4	2	3	27.2	26.3	24.3	18.3	21.3	22.9	24.3	165	26.3	25.2	26.6	25.1	26.7	25.3	23.9	179.1
154	2	3	2	4	3	3	26.8	25.1	22.7	23.3	23.7	24.1	22.6	168.3	25.9	23.5	25.1	23.4	24.5	20.7	24.1	167.2
155	1	3	2	4	3	3	27.2	24.4	25.6	21.6	24.3	23.2	24.1	170.8	26.4	26.5	21.8	27.3	26.1	25.3	20.6	174
156	1	2	2	4	2	2	26.7	24.5	23.8	19.3	22.5	21.6	24.8	163.2	24.9	21.6	22.1	23.1	24.3	22.4	23.5	162.3
157	1	4	2	4	3	3	27.9	26.6	27.2	20.1	26.7	25.9	26.9	181.3	26.3	22.8	21.1	24.2	23.8	21.5	24.2	163.9
158	1	4	2	4	4	4	28.1	29.3	27.8	22.3	26.8	28.9	27.7	190.9	27.3	28.6	26.8	27.3	28.3	27.9	26.8	193
159	1	3	2	4	3	3	26.8	27.3	24.1	21.3	23.3	24.1	25.6	172.5	26.8	24.3	24.9	25.3	27.1	23.5	24.3	176.6
160	2	2	2	4	2	2	26.7	25.4	24.3	21.8	20.3	22.8	23.2	164.5	25.9	26.8	25.3	24.8	25.6	21.8	26.6	176.8
161	1	4	2	5	4	4	28.8	27.3	28.1	24.1	27.3	26.1	26.2	187.9	28.7	26.3	27.3	21.8	26.7	26.8	29.1	186.7
162	2	4	2	5	4	4	27.3	26.8	27.3	22.1	25.3	25.8	27.1	181.7	29.7	27.1	28.2	20.1	24.1	25.6	25.9	180.7
163	2	2	2	5	2	3	28.5	22.3	24.3	21.2	25.8	23.1	26.3	171.9	27.3	26.3	27.1	21.9	23.2	24.2	21.8	171.8
164	1	4	2	5	4	4	29.7	27.9	28.7	25.6	28.6	27.3	25.9	193.7	28.3	27.6	28.9	25.6	27.7	28.9	29.3	196.3
165	2	4	2	5	3	3	27.9	24.9	28.6	21.3	26.3	25.1	24.6	178.7	26.8	25.4	26.1	21.7	24.3	24.6	21.8	170.7
166	1	4	2	5	4	4	28.3	25.7	27.9	21.8	24.1	24.3	23.8	183.1	28.6	24.1	29.9	20.8	25.1	28.1	25.3	181.9
167	1	2	1	5	2	2	26.6	23.5	26.5	20.9	24.5	22.8	25.1	169.9	26.4	23.3	26.8	22.1	22.8	24.9	23.8	170.1
168	2	3	2	5	2	3	27.3	24.3	28.7	22.1	25.6	21.9	26.3	176.2	28.1	26.1	28.7	23.4	21.6	22.3	24.1	174.3
169	1	2	2	5	2	2	26.3	23.5	29.7	21.4	24.7	22.1	23.5	171.2	25.3	21.8	26.7	24.1	23.3	21.7	24.8	167.7
170	2	2	1	5	2	2	26.9	23.6	26.9	22.6	22.8	25.2	21.8	169.8	24.6	23.2	25.6	25.4	23.8	22.3	21.6	166.5
171	1	4	2	5	4	4	29.3	28.8	27.3	24.1	27.7	28.7	26.6	192.5	27.7	26.9	28.3	27.6	25.6	28.8	27.3	192.2

172	2	1	1	5	1	1	24.1	21.7	26.9	21.7	23.1	22.1	22.2	161.8	24.3	23.1	26.1	23.6	23.6	26.1	24.4	171.2
173	1	2	2	5	2	2	23.9	24.1	28.3	19.8	25.3	23.8	25.1	170.3	24.1	23.8	25.2	23.2	23.4	25.1	23.1	167.9
174	1	3	2	5	3	3	28.7	26.8	28.5	21.1	22.7	21.9	24.2	173.9	27.9	25.1	26.7	22.8	26.7	24.8	21.4	175.4
175	2	4	2	5	4	4	28.2	26.7	29.1	22.1	28.3	27.7	28.8	190.9	28.1	26.3	27.3	24.2	28.2	23.8	24.3	182.2
176	1	2	1	5	2	2	26.9	23.6	24.3	21.9	25.6	24.2	23.1	169.6	25.3	23.4	24.6	21.8	25.1	25.8	21.7	167.7
177	1	4	2	5	3	3	27.7	23.7	28.3	20.3	24.7	26.6	26.8	178.6	26.1	22.1	24.3	22.1	23.2	24.3	23.6	165.7
178	2	3	2	5	3	2	27.3	26.8	26.2	19.6	23.8	25.4	26.3	175.4	26.5	22.8	25.1	23.6	26.3	21.7	22.3	168.5
179	1	4	2	5	4	3	28.6	24.1	26.8	20.7	28.3	27.5	27.9	183.9	28.1	27.9	28.6	25.9	28.1	23.9	21.7	184.1
180	2	2	1	5	2	2	26.5	23.7	24.6	21.3	22.6	24.7	25.2	168.6	25.3	24.6	26.6	24.1	21.4	22.8	23.8	168.6
181	1	2	1	5	1	1	26.3	22.6	23.1	19.8	24.1	23.7	22.8	162.4	25.6	23.1	27.3	22.4	21.6	22.6	21.3	163.9
182	2	2	2	5	2	2	27.2	25.7	26.7	20.5	23.8	24.1	23.7	172.1	26.6	24.7	25.7	23.1	24.1	26.3	24.5	175.4
183	1	3	2	5	3	2	28.1	27.8	26.3	18.9	24.3	21.9	25.6	172.9	27.1	24.8	26.3	23.4	22.8	21.7	23.6	169.7
184	1	2	1	5	1	1	26.9	23.4	25.4	20.3	21.8	22.8	23.7	164.3	25.7	23.1	25.6	22.6	21.9	22.6	23.8	165.3
185	1	4	2	5	4	4	29.3	28.3	26.8	26.3	27.3	26.9	27.3	192.2	26.8	28.7	25.9	21.9	26.7	29.9	26.9	186.8
186	2	1	1	5	1	1	28.6	24.3	20.6	18.3	21.7	23.1	26.1	162.7	28.1	25.1	24.4	19.8	23.2	23.8	25.3	169.6
187	1	3	2	5	3	3	27.4	26.6	28.2	19.8	24.3	25.2	24.3	175.8	26.6	25.2	24.8	21	23.8	22.9	26.7	171
188	1	2	2	5	3	3	28.1	26.9	27.9	21.3	23.7	23.2	22.6	173.7	27.2	24.3	23.1	22.1	24.1	23.1	25.2	169.1
189	1	1	1	5	1	1	26.7	24.1	27.3	22.1	21.2	24.4	21.9	167.6	26.3	26.5	25.1	20.8	25.2	24.3	25.8	174
190	2	4	2	5	4	3	28.1	27.2	27.3	23.2	24.7	27.8	26.1	184.4	28.3	26.8	26.3	27.7	26.2	26.4	24.6	181.3
191	1	2	1	5	1	2	27.3	25.8	27.4	20.1	22.8	23.3	21.6	168.3	26.2	24.1	22.5	20.3	21.3	23.5	25.1	163
192	2	1	1	5	1	1	26.8	23.2	26.9	19.3	23.1	21.8	22.9	164	26.8	22.8	21.8	22.1	22.4	23.6	24.7	164.2
193	1	1	1	5	1	1	27.6	24.1	25.9	18.9	20.8	22.8	21.6	163.7	25.3	24.3	22.1	23.1	22.6	21.8	25.8	165
194	1	3	2	5	3	3	28.2	26.7	28.8	20.4	28.9	23.4	24.7	176.1	26.7	25.3	22.3	20.8	22.7	22.4	21.9	162.1
195	2	2	2	5	2	2	27.8	25.1	26.9	20.8	22.4	24.9	23.3	171.2	26.2	24.8	22.6	21.3	23.1	21.8	23.1	164.9
196	1	2	2	5	2	2	27.7	25.9	28.8	21.5	22.8	22.7	22.4	171.8	26.9	25.1	23.2	21.5	22.3	22.3	23.7	165
197	2	3	2	5	3	3	28.4	26.6	28.4	20.6	24.1	23.9	23.5	171.5	27.3	26.3	23.6	19.3	21.8	24.5	24.8	167.6
198	2	1	1	5	1	1	26.7	24.1	27.6	21.8	21.7	22.6	21.9	166.4	26.1	25.8	24.1	21.4	23.2	23.7	22.9	167.2

199	1	1	1	5	1	1	26.8	23.8	25.9	19.4	23.4	22.9	24.1	166.3	27.3	24.7	23.8	21.8	23.4	25.6	24.4	171
200	1	4	2	5	4	3	28.8	27.4	29.3	22.7	25.8	26.8	28.3	189.1	27.8	26.9	27.3	26.5	28.3	27.8	28.4	193
201	1	4	1	7	3	3	26.7	29.6	26.3	24.4	25.6	24.5	25.1	182.2	26.1	25.3	25.5	22.4	24.3	25.1	21.8	170.9
202	1	4	2	7	3	4	28.3	28.3	28.9	26.3	28.7	27.9	26.8	195.7	27.6	26.9	27.3	24.8	28.9	25.9	27.5	188.9
203	2	3	2	7	3	3	28.9	26.8	25.3	25.4	24.3	23.9	24.1	185.9	26.3	25.2	25.6	26.1	24.1	24.6	25.6	177.5
204	1	3	1	7	3	3	26.4	27.3	27.3	24.9	26.6	26.7	27.3	186.5	26.9	25.8	24.9	26.3	25.6	25.7	26.7	181.9
205	1	2	1	7	1	1	27.3	25.4	21.1	21.8	23.3	24.1	23.2	166.2	26.7	24.1	21.3	20.8	21.3	22.7	25.8	162.7
206	1	3	1	7	3	3	27.1	28.8	26.6	22.4	25.6	25.3	24.9	180.7	27.1	25.7	24.8	25.3	24.1	25.3	26.3	178.6
207	1	2	1	7	2	2	26.2	27.9	25.2	24.1	23.3	26.4	25.1	178.2	27.5	26.3	25.4	23.4	21.3	22.8	24.4	171.1
208	2	3	1	7	3	3	26.8	28.1	26.1	25.3	24.5	25.3	26.2	182.3	26.3	25.8	24.3	24.7	25.4	26.7	26.8	180
209	1	3	1	7	2	2	27.3	26.6	24.3	24.5	26.3	26.1	26.8	181.9	26.6	25.1	25.4	24.8	25.8	26.3	26.4	180.4
210	1	4	1	7	3	3	25.8	28.9	26.2	25.7	26.7	25.4	24.6	183.3	23.3	24.2	25.1	23.2	24.3	25.1	25.7	170.9
211	1	3	1	7	2	2	26.1	27.1	25.5	26.3	25.4	23.7	25.3	179.4	24.3	25.4	24.6	23.8	25.2	24.6	24.9	172.8
212	2	1	1	7	2	3	27.7	26.4	26.1	26.4	24.3	24.4	26.4	181.7	26.9	24.7	23.9	22.7	23.8	22.9	25.5	170.4
213	2	1	1	7	2	2	25.6	26.9	24.8	25.6	25.3	23.7	25.1	177	25.8	23.6	22.7	23.5	23.7	21.8	24.8	165.9
214	1	3	1	7	2	2	28.1	25.5	26.6	24.8	24.7	25.3	24.3	179.3	24.2	24.7	23.8	22.6	24.1	23.2	23.4	166
215	1	4	2	7	4	4	28.8	27.9	27.8	25.7	29.1	28.7	29.3	197.3	27.8	27.3	28.1	27.3	28.3	28.7	25.8	193.3
216	2	1	1	7	2	2	27.3	26.6	25.3	24.9	25.2	24.8	27.1	181.2	26.2	24.3	23.9	24.7	23.1	24.6	24.2	171
217	1	2	1	7	1	1	26.8	24.3	23.9	23.3	24.9	23.4	26.3	172.9	24.7	23.7	22.8	22.9	24.2	23.6	23.8	165.7
218	1	2	1	7	1	2	26.4	25.1	24.7	22.9	23.5	23.8	25.7	172.1	25.3	22.5	24.1	22.6	23.4	24.5	21.7	164.1
219	1	2	1	7	1	1	27.3	26.3	25.6	24.1	24.3	21.6	24.2	173.4	25.4	23.6	23.8	23.1	24.1	22.9	24.6	167.5
220	1	4	2	7	3	4	28.5	27.8	26.7	28.2	27.8	26.7	27.7	193.4	27.5	26.9	27.8	24.7	28.1	27.6	26.8	189.4
221	1	2	1	8	2	2	23.5	20.3	21.3	18	20.3	21.3	18.3	143	22.8	21.1	20.8	18.4	20.2	21.3	22.6	147.2
222	1	2	1	8	2	1	22.3	21.4	19.3	18.9	23.1	18.3	19.4	142.7	21.3	20.4	21.3	18.1	21.3	22.8	19.9	145.1
223	1	2	1	8	2	2	21.7	22.8	18.2	21.3	16.3	19.5	21.3	141.1	11.1	21.5	20.4	19.3	22.2	23.3	20.3	149.1
224	1	2	1	8	1	1	22.9	18.3	19.3	18.1	17.8	20.1	19.1	135.6	21.8	21.6	20.9	20.1	23.3	18.9	19.6	146.2
225	2	1	1	8	1	1	20.8	18.9	16.4	17.3	18.7	19.2	20.1	131.4	20.5	20.9	21.3	21.8	21.7	19.6	20.4	145.7
226	1	1	1	8	1	1	19.3	21.3	20.8	21.3	19.6	18.3	18.6	139.2	19.8	21.4	20.1	19.4	20.3	21.7	23.6	146.3

227	1	1	1	8	1	1	21.3	20.2	21	18	18.2	18.5	17.3	136.7	22.5	20.4	19.8	18.5	21.2	22.3	21.4	146.1
228	1	4	2	8	3	4	26.3	22.8	23.7	20.3	23.2	23.8	24.3	164.4	25.6	22.6	24.6	20.2	23.8	21.9	23.9	162.6
229	1	1	1	8	1	1	20.1	20.3	20.8	17.3	20.4	18.3	19.3	136.5	22.3	18.7	19 8	20.8	23.3	22.6	22.8	150.3
230	2	2	1	8	1	1	18.6	19.8	17.3	16.8	17.9	18.9	18.6	127.9	19.7	18.5	20.1	18.6	21.6	21.3	20.3	140.1
231	1	1	1	8	1	1	19.8	20.1	20	18.7	18.6	21.1	17.8	136.1	20.3	20.1	21.5	17.7	20.3	20.6	18.6	139.1
232	1	1	1	8	1	1	20.9	19.7	18.9	17.9	18.7	20.8	18.1	135	21	18.9	20.4	18.4	21.2	20.5	21.5	141.9
233	1	1	1	8	1	1	21.3	20.1	20.8	18.3	19.2	17.3	18.3	135.2	22.6	20.4	21.7	18.3	22.8	18.6	20.4	144.8
234	1	4	1	8	3	3	23.3	21.6	22.6	18.3	21.2	27.3	18.6	148	22.8	19.5	22.6	19.6	21.7	20.8	21.3	148.3
235	1	3	1	8	3	3	24.1	22.7	21.8	20	18.6	20.8	19.7	147.7	23.9	20.6	23.7	21.4	20.8	22.1	19.8	152.3
236	2	2	1	8	1	1	21.8	20.6	21.1	16.8	20.7	20	18.3	139.3	21.1	19.9	22.8	19.2	21.6	18.6	18.2	141.9
237	1	3	1	8	3	3	22.3	21.3	21.3	21.4	22.5	18.5	20.5	147.9	23.7	21.3	22.7	20.7	19.9	21.7	20.8	150.3
238	1	2	1	8	2	2	21.8	18.8	21.3	20.2	21.8	19.3	19.8	143	22.2	20.5	21.8	19.6	22.3	18.8	21.4	146.6
239	1	2	1	8	2	2	22.6	21.5	20.8	18.6	20.5	21.6	20.3	145.9	23.1	21.2	22.3	18.1	21.8	19.6	22.9	149
240	1	3	1	8	3	3	21.9	21.7	18.9	21.9	22.3	21.8	19.4	147.9	22.4	21.3	22.6	18.9	20.3	18.4	21.5	145.4
241	1	2	1	8	2	2	19.9	20.6	20.3	20.7	21.5	20.6	18.9	142.5	20.6	22.8	20.3	18.7	21.4	21.6	19.8	145.2
242	1	3	1	8	3	3	23.3	21.5	21.2	19.2	20.8	21.3	21.2	148.5	23.8	21.9	21.6	18.2	22.7	22.9	18.9	151
243	1	4	2	8	4	4	27.6	25.7	28.2	24.6	28.7	26.8	28.2	189.8	28.1	26.3	27.3	21.8	26.6	25.8	24.8	180.7
244	1	4	2	8	3	4	22.1	23.6	24.2	21.8	26.2	24.3	25.8	168	23.9	22.4	24	18.4	19.9	21.6	23.7	154.6
245	1	3	1	8	3	3	21.3	21.8	20.8	18.7	22.2	21.4	20.9	147.1	22.1	21.3	21.4	18.6	21.6	22.7	21.9	149.6
246	1	3	1	8	2	3	20.8	19.3	18.8	19.6	21.8	22.6	20.6	143.5	19.3	20.3	21.6	17.9	21.8	23.1	22.4	146.4
247	1	3	1	8	2	3	21.7	21.8	19	18.2	20.3	21.3	21.8	144.1	21.7	21.2	18.8	18.4	21.4	22.9	23.8	156.3
248	1	3	1	8	2	3	20.8	20.6	22.2	16.6	20.2	22.3	18.2	140.9	21.6	21.6	20.3	17.6	20.1	21.8	22.5	145.5
249	1	4	2	8	4	4	27.3	26.8	27.3	26.5	23.5	26.9	27.8	191.1	26.7	28.2	27.6	19.4	20.8	22.7	25.6	171
250	1	4	2	8	3	4	26.3	24.3	26.8	24.1	23.8	27.7	26.5	179.5	25.8	25.3	23.9	21.6	23.3	24.6	26.7	171.2
251	1	3	1	8	2	3	21.4	22.1	24.7	20	18.2	19.7	18.9	145	23.3	18.9	21.2	18.6	21.4	19.7	21.8	144.9
252	1	3	1	8	3	3	22.5	21.6	22.4	18.2	21.8	22.7	20.2	149.4	22.8	21.3	22.3	19.8	22.7	21.6	22.9	153.4

253	1	3	2	8	3	3	23.8	22.7	21.7	21	18.9	23.6	21.8	151.3	11.2	21.8	24.6	18.5	23.8	22.1	21.6	154.6
254	1	3	1	8	3	3	22.4	23.6	22.4	17.6	20.3	21	22.2	149.5	23.6	22.3	21.4	20.8	22.3	23.6	22.8	156.8
255	1	3	2	8	3	3	23.5	23.8	23.2	18.9	20.4	23.2	21.5	154.5	22.1	20.8	22.7	21.3	21.9	22.1	23.7	154.6
256	1	4	2	8	3	3	21.8	24.3	22.6	19.6	21.6	24.2	23.8	157.9	22.9	21.3	21.6	20.4	21.8	23.7	20.6	152.3
257	1	4	1	8	3	3	21.5	22.4	23.1	18.2	20.2	23.2	24.7	153.3	22.4	22.1	21.8	18.1	20.6	22.5	21.8	149.3
258	1	3	1	8	2	2	20.3	21.7	22	20.3	20.8	19.2	21.6	145.5	20.8	22.9	22.4	20	21.7	21.9	22.1	151.8
259	2	2	1	8	1	1	19.8	20.2	18.3	18.1	19.2	18.8	23.6	138	21.5	21.7	20.6	21.9	21.6	22.7	21.5	151.5
260	1	3	2	8	3	3	22.3	24.7	20.4	19.9	20.8	21.3	22.8	152.2	23.6	23.8	22.7	20.8	22.6	18.9	20.9	153.3
261	1	4	2	6	4	4	28.6	29.6	28.8	24.7	26.7	27.8	26.8	193	28.3	28.1	27.3	28.5	27.9	26.8	26.9	193.8
262	1	4	2	6	3	4	27.7	26.6	26.8	23.6	28.2	26.2	25.7	184.8	26.7	25.3	26.2	25.2	25.5	26.2	24.8	189.9
263	2	3	2	6	3	3	27.8	25.8	25.1	22.8	23.3	27.7	24.6	177.1	26.1	24.8	24.6	23.2	26.6	27.1	25.8	178.2
264	1	4	2	6	3	4	28.1	27.3	27.4	21.6	28.7	26.6	25.9	185.6	28.3	25.3	23.6	22.8	27.3	26.8	26.1	180.2
265	1	4	2	6	4	4	29.7	28.8	28.2	22.4	28.7	28.7	24.3	190.8	28.8	26.3	25.3	23.1	26.3	24.9	25.8	180.5
266	1	3	1	6	2	3	26.3	24.3	23.2	20.8	24.2	22.5	23.9	165.2	25.2	24.4	26.3	21.8	27.8	22.8	27.3	175.6
267	2	2	2	6	2	2	28.7	26.6	24.3	21.1	25.6	23.6	24.7	173.9	27.6	26.2	27.1	22.3	24.7	23.3	24.3	174.9
268	2	2	1	6	2	2	26.7	25.3	22.7	20.5	24.7	24.8	22.9	167.6	24.3	27.7	22.9	24.8	25.2	22.8	25.7	173.4
269	1	2	2	6	2	2	27.6	26.1	24.6	20.8	25.7	23.6	23.8	172.2	26.7	25.3	25.8	21.3	25.8	24.9	23.9	173.7
270	1	2	1	6	2	2	27.1	25.6	25.1	21.3	22.9	24.2	25.6	171.8	25.5	24.1	24.6	22.4	26.1	27.8	25.6	176.1
271	2	4	2	6	3	3	28.8	27.4	26.6	23.1	24.3	21.6	24.6	176.4	26.5	25.3	25.9	21.9	26.2	26.3	24.1	176.2
272	1	2	1	6	2	2	27.9	24.8	25.4	21.9	22.2	23.1	25.9	171.2	26.1	25.7	24.1	22.7	25.3	25.1	24.9	173.9
273	2	3	2	6	3	3	28.4	27.3	26.1	20.8	23.4	24.2	24.8	175	27.3	26.6	25.4	21.6	26.4	26.8	25.4	179.5

274	1	2	1	6	2	2	26.9	24.1	25.6	21.3	24.8	21.2	22.6	166.5	24.2	25.2	24.9	21.3	27.5	25.5	23.8	172.4
275	2	2	1	6	2	2	28.1	26.3	24.4	18.9	23.9	21.1	24.5	167.2	27.3	26.1	25.8	25.1	26.4	24.3	25.5	180.5
276	1	3	2	6	3	2	28.5	27.5	27.3	20.8	24.1	22.8	25.3	176.3	26.6	26.8	26.1	21.8	26.8	26.9	24.2	179.2
277	2	4	2	6	3	3	27.7	26.4	26.8	21.7	23.3	23.9	24.6	174.4	25.9	23.3	24.2	22.6	24.5	23.4	24.6	168.5
278	2	2	1	6	2	2	25.9	23.1	24.1	22.8	22.7	24.8	25.2	168.5	23.2	22.9	23.7	21.2	25.3	23.5	25.1	164.9
279	1	2	1	6	2	2	26.8	25.4	23.2	21.1	23.6	22.2	24.7	167	24.3	23.1	22.8	21.8	23.8	24.6	24.3	142.7
280	1	1	1	6	1	1	26.6	23.3	24.9	18.8	21.7	23.4	22.6	111.3	24.9	22.8	23.6	22.1	24.6	23.1	22.9	164
281	2	1	1	6	1	1	25.6	21.8	22.9	22.1	22.6	24.1	21.5	160.6	23.8	22.1	23.4	21.9	23.9	22.3	23.8	161.2
282	1	4	2	6	3	4	28.2	27.6	25.8	23.3	28.6	27.9	26.6	188	27.1	26.8	25.6	22.7	22.8	26.1	24.1	175.2
283	1	4	2	6	3	4	27.3	26.1	26.2	22.4	27.9	26.1	27.4	183.4	25.2	24.1	22.9	21.6	25.1	22.9	23.7	165.5
284	2	2	1	6	2	2	26.4	24.7	23.7	21.2	26.5	24.3	24.5	171.3	24.6	22.9	23.1	21.9	25.8	23.1	24.7	166.1
285	1	2	2	6	2	2	27.8	26.6	24.2	21.8	25.2	21.1	25.3	172	25.3	24.7	22.2	20.8	24.7	24.2	21.8	163.7
286	1	4	2	6	4	4	28.6	27.3	28.8	22.4	28.7	27.7	26.8	190.3	26.7	28.7	24.9	22.1	26.2	25.9	24.6	179.1
287	1	2	1	6	1	1	27.3	24.1	25.3	21	22.6	21.7	22.5	164.5	25.6	23.3	22.6	18.9	23.7	24.3	22.7	161.1
288	2	1	1	6	1	1	26.6	22.6	23.9	19.8	21.9	20.1	22	156.9	24.9	24.1	21.8	19.2	23.8	22.9	23.4	160.1
289	1	1	1	6	1	1	25.7	23.1	21.8	20.9	20.8	22.3	24.6	159.2	23.6	22.5	22.9	20.1	22.9	21.4	24.5	157.7
290	2	1	1	6	2	2	26.5	24.7	22.2	21.3	26.2	23.6	22.8	166.8	24.7	23.6	24.2	21.2	23.1	22.5	23.9	163.2
291	1	2	1	6	2	2	27.2	26.6	25.8	19.6	24.2	22.2	26.1	171.7	25.8	24.1	23.5	21.4	24.3	23.6	24.2	166.9
292	2	1	1	6	1	1	24.2	22.1	21.2	21.8	22.6	23.1	24.2	159.2	23.1	21.9	22.6	19.6	23.5	22.7	23.9	157.3
293	1	2	1	6	1	1	26.8	24.1	22.3	19.5	21.8	24.3	23.3	162.1	24.9	23.3	23.7	18.3	22.6	21.9	24.3	159
294	1	2	2	6	2	2	27.7	25.6	24.2	22.2	26.1	21.7	24.6	172.1	25.6	24.7	22.9	20.6	23.2	22.3	25.1	164.4

295	1	3	1	6	2	3	26.2	24.3	23.8	23.8	24.2	22.8	23.1	168.2	24.1	22.1	23.8	18.9	21.7	23.4	23.6	157.3
296	1	4	2	6	4	4	28	27.3	28.9	24.7	28.8	27.6	28.9	194.2	26.3	25.7	28.3	22.3	25.7	28.7	27.7	185.2
297	2	2	1	6	2	2	29.3	28.8	27.8	24.9	29.7	28.1	28.6	170.2	28.8	27.9	28.6	23.9	28.8	26.3	29.1	193.4
298	1	2	1	6	2	2	23.1	21.6	22.6	20.3	22.3	21.4	21.8	153.1	23.5	22.1	23	21.6	22.7	21.2	20.8	154.9
299	1	3	2	6	3	4	26.5	27.7	25.1	21.8	27.6	26.2	26.4	181.3	25.6	24.3	22.1	21.1	23.5	24.7	26.6	167.9
300	2	2	1	6	2	2	25.8	23.4	24.1	20.9	24.2	22.2	24.7	165.3	24.9	23.5	23.6	20.8	24.1	22.5	23.5	162.9
301	1	4	2	9	4	4	28.7	27.3	26.6	22.6	27.8	27.9	22.6	183.5	29.4	26.2	28.9	21.3	27.1	28.3	21.1	182.3
302	1	3	2	9	3	3	27.9	26.2	27.3	21.7	26.1	26.7	21.9	177.8	26.5	25.2	24.8	20.7	24.3	24.9	20.7	167.1
303	1	3	2	9	4	4	28.3	27.8	28.1	20.8	29.3	25.6	21.7	181.8	28.1	29.3	26.8	20.1	28.5	29.2	20.3	182.3
304	1	3	1	9	3	3	27.6	26.1	28.2	19.7	26.5	26.7	22.1	176.5	26.3	25.3	24.1	19.3	24.2	25.5	21.7	166.4
305	1	3	2	9	3	2	29.5	28	29.1	22.6	26.1	25.7	20.3	189.7	29.5	28.9	28.2	20.1	24.2	26.8	21.3	179.9
306	1	3	2	9	3	3	28.4	28.7	26.7	21.6	25.3	24.3	20.8	175.8	27.6	26.1	26.7	20.3	26.3	25.9	18.5	171.4
307	1	2	1	9	2	1	26.2	27.5	24.1	18.9	24.3	25.1	21.3	167.4	25.9	24.2	23.9	18.8	24.1	25.1	22.7	164.7
308	1	3	1	9	2	1	27.1	26.1	24.4	20.6	23.7	24.8	20.8	167.5	26.3	25.7	24.2	16.7	24.9	25.6	21.2	164.6
309	1	4	2	9	4	4	29.6	28.3	28.2	21.3	26.6	27.4	21.3	182.7	29.5	28.6	27.3	21.2	28.3	26.1	21.8	182.9
310	2	3	2	9	3	3	26.4	27.5	27.2	18.6	27	26.7	18.2	172.4	26.1	25.3	24.9	20.3	25.5	25.9	20.1	168.1
311	2	1	1	9	1	1	23.3	22.7	25.1	18.2	22.3	21.3	18.9	147.8	23.7	21.2	22.9	16.8	21	22.2	18.3	146.1
312	1	2	1	9	1	1	24.7	23.2	24.6	18.9	28.8	25.1	19.3	159.6	25.9	24	23.2	18.7	24.6	25.1	19.9	161.4
313	1	2	1	9	1	1	23.8	21.8	20.9	21.3	20.1	21.7	21.1	150.7	25.7	24.3	24.1	18.7	23.3	24.8	20.1	161
314	1	3	2	9	3	2	27.3	28.3	27.1	22.6	28.2	27.9	17.9	177.3	26.9	25.1	25	20.1	24.9	23.8	18.7	164.5
315	1	4	2	9	4	4	29.4	28.8	28.7	19.3	28.9	27.8	20.1	183	20.7	27.9	29.6	21.3	28.2	28.9	19.2	184.8

316	2	2	2	9	2	1	26.7	25.9	25.6	18.7	25.6	26	19.3	167.8	25.7	24.2	24.1	19.8	25.1	22.2	18.3	159.4
317	1	2	1	9	1	1	28.9	28.1	27.8	20.3	27.7	27.9	18.1	160.8	27.3	26.3	26.2	16.3	24.3	23.5	18.2	162.1
318	1	2	2	9	2	1	25.6	24.3	23.2	21.9	24.7	25.5	20.3	165.5	24.5	23.1	23.8	18.7	23.6	23.8	19.8	157.3
319	1	3	2	9	2	2	27.3	26.3	25.1	18.3	25.2	25.8	21.1	169.1	26.3	25.2	25.2	20.1	24.9	25.1	20.3	167.1
320	1	4	2	4	4	4	28.8	29.9	29.2	21.2	27.2	26.7	18.8	181.8	28.1	29.7	28.5	21.1	29.4	26.3	21.7	184.9
321	1	2	1	9	2	2	26.3	25.7	24.8	18.1	25.1	25.9	16.4	162.3	25.6	24.3	25.8	18.3	24.7	24.6	17.3	160.6
322	1	3	2	9	3	3	27.4	26.2	25.6	19.5	24.3	26.8	18.1	167.9	27.2	26.8	26.1	18.5	26.2	25.2	17.8	167.8
323	1	3	2	9	3	3	26.7	25.2	24.1	21.7	24.9	25.6	20.1	168.3	26.2	25.1	25.2	20.6	24.2	24.9	19.5	165.7
324	1	2	1	9	2	2	25.8	24.3	23.9	21.5	23.9	25.1	20.3	164.8	24.3	23.5	23.6	18.1	23.3	24.1	20.5	157.4
325	1	2	1	9	2	2	26.2	25.1	24.6	18.9	25.3	24.8	19.3	164.2	25.7	24.6	26.2	19.3	24.3	24.8	18.2	163.1
326	2	2	2	9	3	3	27.4	26.9	26.2	21.3	26.3	23.9	20.3	172.3	26.3	25.2	25.2	18.7	25.6	24.2	19.2	164.4
327	1	3	2	9	4	3	28.1	27.3	27.3	22.1	25.2	24.7	21.4	177	20.6	26.8	26.4	19.5	26.3	26.1	19.8	172.5
328	1	1	1	9	1	1	25.5	26.2	23.1	18.2	24.8	23.6	19.3	169.7	24.3	23.2	23.8	18.7	22.7	22.8	18.3	153.8
329	2	2	2	9	2	2	26.4	25.2	24.3	19.5	25.1	23.5	21.5	165.5	26.1	25.1	25.7	21.7	25	24.9	20.4	168.9
330	2	2	2	9	2	2	27.6	26.7	24.7	19.8	29.7	23.9	18.3	165.7	26.9	25.3	25.2	22.1	25.3	25.5	18.8	169.1
331	1	4	2	9	4	3	28.6	29.8	28.1	21.7	27.3	26.2	19.7	181.4	23.3	29.2	28.5	21.2	26.9	27.1	21.3	182.5
331	1	1	1	9	1	1	24.3	23.3	22.5	16.7	22.6	23.1	20.1	152.6	25.7	24.1	24.7	22.7	24.2	23.8	21.2	166.4
333	2	2	1	9	1	2	23.6	21.9	20.6	17.4	21.3	21.9	18.3	145	23.1	22.2	21.3	16.5	22.2	20.5	18.6	144.4
334	1	3	2	9	4	3	28.5	29.7	29.9	20.8	28.1	27.1	18.5	181.7	28.9	27.8	28.2	22.7	28.2	27.6	17.9	181.3
335	2	2	1	9	1	1	22.5	21.1	22.2	18.2	23.9	21.2	16.2	145.3	26.2	21.3	22.7	17.1	22.1	20	18.2	141.6
336	1	1	1	9	1	1	23.8	21.8	23.2	18.6	22.2	21	18.7	149.3	24.3	21.1	23.8	17.5	22.7	21.9	16.3	147.6

337	1	4	2	9	4	4	28.7	28.1	27.9	21.7	28.8	27.2	21.1	183.5	29.3	28.9	27.8	20.8	28.6	28.8	20.6	184.8
338	2	3	2	9	3	3	27.9	26.8	27.1	21.3	26.2	26.9	20.1	176.2	28.1	27.3	27.1	23.1	27.2	27	18.2	178
339	2	2	1	9	1	2	22.8	23.3	21.6	18.8	23.8	21.7	19.7	151.7	21.3	20.8	21.3	79.8	22.5	22.1	20.1	147.9
340	1	4	2	9	4	4	29.9	28.9	28.6	22.5	28.6	27.9	22.3	188.7	28.7	27.7	27.5	24.7	27.6	27.3	21.8	185.3
341	2	3	2	10	2	3	27.7	26.3	26.8	20.1	24.9	25.7	22.3	173.8	26.9	25.7	25.3	21.3	25.2	26.6	23.8	174.8
342	1	2	2	10	2	2	26.2	25.9	24.7	18.2	24.7	26.8	21.8	168.3	26.8	25.6	25.8	19.1	24.9	25.8	22.1	170.1
343	1	4	2	10	3	3	28.7	27.3	27.5	21.3	25.3	28.1	21.5	179.6	27.4	26.1	26.7	20.8	25.3	26.5	20.3	173
344	1	1	1	10	1	1	28.6	27.1	27.4	20.1	24.8	28.3	22.1	156.3	27.5	26.3	25.9	19.3	24.8	27.1	22.4	174.3
345	1	3	2	10	3	3	27.2	26.8	26.2	18.2	26.7	26.1	22.3	173.5	27.1	26.5	26.4	18.8	27.4	26.8	21.9	174.9
346	1	2	1	10	2	3	26.8	25.3	25.7	17.9	25.8	25.4	21.1	168	25.8	24.1	24.7	18	23.8	24.6	20.8	161.8
347	2	2	1	10	2	2	26.9	25.1	24.8	18	25.3	24.5	18.8	163.4	26.3	25.2	25.5	20.3	24.3	25.9	18.9	166.4
348	1	4	2	10	3	3	28.3	27.2	27.3	21	27.8	26.3	22.1	180	27.1	26.6	27.3	20.8	26.2	26.1	21.7	175.8
349	1	4	2	10	3	4	28.7	27.4	27.6	21.3	26.4	26.2	25.5	183.1	27.3	26.4	27.1	21.5	27	27.4	24.9	181.6
350	1	2	2	10	3	3	27.2	26.1	26.2	20.1	25.9	26.8	22.8	175.1	26.2	25.3	25.5	21.3	25.6	25.1	22.6	171.6
351	1	3	2	10	3	3	27.6	26.5	26.7	20.2	25.2	26.1	23	176.3	26.8	25.7	26.3	20.8	25.1	25.9	22.9	173.5
352	1	3	2	10	2	3	27.3	26.4	25.9	20.1	26.1	25.3	24.3	175.4	26.8	25.1	26.2	21	25.9	27.2	24.5	176.7
353	1	4	2	10	3	4	28.8	27.8	27.3	21.6	27.2	26.9	22.3	181.9	27.3	26.9	25.7	21.1	26.2	26.8	22.6	176.6
354	1	4	2	10	4	4	24.3	28.9	28.5	21.9	28.3	27.8	28.1	192.8	28.5	27.1	28	21.3	27.3	27.3	27.3	160.4
355	1	4	2	10	4	4	28.6	27.6	27.4	21.8	28.2	27.1	22.5	183.2	27.4	26.9	27.1	22	27	26.6	22.1	179.1
356	1	3	2	10	3	3	27.3	26.5	26.3	20.5	25.9	26	21.8	174.3	26.2	25.6	25.2	21.3	25.1	26.3	22.3	172
357	1	2	1	10	2	2	26.8	25.7	25.4	18.2	25.1	25.8	20.1	167.1	25.7	24.3	24.6	19.2	24.2	25.2	21.5	164.7
358	2	3	2	10	3	4	28.2	27.3	21.1	21.7	27.5	26.9	23.5	182.1	27.5	26.4	26.7	20.8	25	27.8	23.8	178
359	1	2	1	10	2	2	26.3	25.1	26.8	20.6	24.3	24.8	18.6	166.5	25.2	24.8	25.6	21.3	24.2	24.6	18.8	164.5
360	2	2	1	10	2	2	25.9	24.9	24.3	20.8	24.6	25.1	18.5	164.1	24.9	23.7	23.5	21.5	23.2	24.1	18.1	159
361	1	2	1	10	2	2	26.3	25.5	25	18.3	25.6	24.7	21.6	167	25.8	24.6	24.2	19.5	24.2	24.5	21	163.8

362	1	3	2	10	3	3	28.3	27.1	27.8	18.6	26.9	27.3	22.3	178.3	27.6	26.3	26.5	18.8	26.8	25.9	22.5	174.4
363	1	1	1	10	1	1	24.7	23.9	23.6	18.1	24.1	23.4	20.2	158	24.3	23.1	23.6	20.1	22.6	23.4	0.5	158.6
364	1	1	1	10	1	1	51.1	24.3	24.1	17.8	25.3	24.2	18.8	159.6	24.9	23.2	24.1	18.9	23.7	23.6	19.3	157.7
365	1	1	1	10	1	1	26.5	25.8	25.5	18.8	25.4	25	18.6	165.6	25.7	24.6	23.5	18.5	24.2	25.1	18.9	160.5
366	1	3	2	10	3	3	27.6	26.2	26.9	18.7	25.8	26.4	20.1	171.7	26.5	25.4	24.6	18.8	25.1	24.8	21.3	166.5
367	1	1	1	10	1	1	24.2	23.9	23.3	18.2	24.2	23.1	19.7	156.6	23.6	22.3	23.8	21	23.4	23.5	20.1	157.7
368	2	2	2	10	2	2	25.2	24.1	24.6	18.4	25.1	24.3	22.1	163.8	25.1	24.1	24.6	20.5	25.3	24.7	21.6	165.9
369	1	3	2	10	3	3	27.8	26.7	25.5	21.5	25.9	25.8	23.1	176.3	26.3	26.5	25.1	20.1	26.4	25.6	22.1	173.6
370	1	2	2	10	3	3	27.1	26.3	26.1	20.5	25.2	26.9	25.2	177.3	26.8	25.4	25.8	21.5	25.1	24.1	24.9	173.6
371	1	4	2	10	4	4	28.5	27.1	27.3	21.8	26.2	26.5	26.2	183.6	27.1	26.3	26.5	21.2	26.8	25.7	25.6	179.2
372	1	3	2	10	3	3	28.1	26.9	27	22.6	27.2	27.6	21.2	180.6	27.4	26.5	27.3	21.8	26.7	26.4	22.1	178.2
373	1	1	1	10	1	1	24.1	23.8	23.3	18.2	24.1	24.7	20.8	159	23.4	22.6	23.1	18.3	22.8	23.8	21.5	155.5
374	1	2	1	10	1	1	25.8	24.6	24.1	18.3	25	24.9	18.2	160.9	24.5	23.7	22.9	18.5	23.2	23.6	19.2	155.6
375	1	3	2	10	3	3	28.4	27.3	27.8	22.1	26.2	26.6	18.9	177.2	27.3	26.6	27.5	21.6	26.1	27.1	18.6	156.2
376	1	2	2	10	2	2	26.6	25.5	24.9	18.1	25.7	26.1	22.7	169.6	25.4	24.7	24.8	18.5	24.2	23.8	21.3	162.7
377	2	2	1	10	2	2	24.7	23.3	23.8	18.4	24.9	24.3	23.8	163.2	23.8	21.6	22.2	18.1	23.9	22.6	22.6	154.8
378	1	3	2	10	3	3	28.7	27.9	27.2	20.8	26.8	27.7	19.2	178.3	27.3	26.3	26.5	20.1	27.3	26.4	18.8	172.7
379	1	3	2	10	3	3	27.2	26.8	27.1	20.5	27.3	27.5	20.3	176.7	26.8	27.1	26.3	21	25.5	25.8	21.4	173.9
380	1	3	2	10	3	3	26.9	25.6	26.8	20.3	27	26.3	22.8	175.7	25.6	24.6	25.1	21.1	24.9	24.3	23.3	168.9