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Perceived effects of examination special centres on teaching and learning of English language and quality of education in Nsukka local government area, Enugu state, Nigeria

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Abstract

This study examined the perceived effects of examination special centres on teaching and learning of English language and the quality of education in Nsukka Local Government Area, Enugu State, Nigeria. The study employed a descriptive survey design. All the 123 English language teachers (PPMB Statistics, 2020) from 31 secondary schools, five secondary school principals, three religious priests and three traditional leaders in Nsukka Local Government Area of Enugu State, Nigeria were sampled for the study. The researchers developed a 15-item-structured questionnaire for data collection from the 31 teachers; while 3 structured interview questions were used to elicit responses from the principals, religious priests and traditional leaders. Mean and standard deviation were used to analyse the data collected with questionnaire; while the oral interview was analysed qualitatively through thematic analysis. The study revealed that examination special centres have detrimental effect on the teaching and learning of English language in secondary schools and the quality of education in Nsukka Local Government Area, Enugu State, Nigeria. It was recommended among others that private and public secondary schools, and tutorial centres that have been turned into examination special centres should be closed down by Enugu State Ministry of Education.

Keywords: English language, Examination, Examination malpractice, Quality education, Examination special centres, Perceived effect

Introduction

Education is an illumination process into the minds of humans. When the mind is exposed to knowledge, the resultant effect is holistic behavioural and personality changes. This is why education is referred to as an agent of change. The human ability to think, invent and innovate are further sharpened and strengthened through education. Ama-juoyi et al. (2013) assert that the main goal of education is to effect positive changes in



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human behaviours. This change manifests in man's ability to concretize the intangible ideas or knowledge. At this point, education is made to be functional by bringing development to society. Ololube et al. (2012) describe education as a catalyst for national unity; human capital development; cultural diversity and human rights awareness; as well as means of empowering individuals. The significance of education has been emphasized by the United Nations General Assembly gazette in 1948 which state thus: Education shall be directed to the full development of human personality and the strengthening of respect for human rights and fundamental freedoms. Nigeria's philosophy of education as stated by the Federal Republic of Nigeria in National Policy on Education (2013, p. 1) is based on some beliefs among which are:

1. education is an instrument for national development and social change.
2. education maximizes the creative potentials and skills of the individual for self-fulfilment and general development of the society.

Having the above, the Federal Government of Nigeria further enshrined in its objective statement, in National Policy on Education (2013), p. 1–2), that the goals of education in Nigeria are:

1. development of the individual into a morally sound, patriotic and effective citizen.
2. development of appropriate skills, mental, physical and social abilities and competencies to empower the individual to live in and contribute positively to the society

Based on these beliefs and objectives, one can deduce that education is given a top priority in the affairs of the country. However, this priority is met with several challenges. Education is marked as one of the top-five most corrupt sectors in Nigeria (Sahara Reporters 2019). An ugly situation status attributed to compromised practices in examination processes, and demand for bribes for service delivery in the sector. In 2012, Nigeria ranked first in the Global Examination Malpractice Index (Information Nigeria 2012). Although, there is no available literature pointing out Nigeria's current status on malpractice global ranking, available data indicate little or no improvement maintaining malpractice-free examination processes (Agwu et al. 2020).

Examination and malpractice

In education, one of the assessment tools to ascertain if the individuals who have acquired formal education have been equipped with the necessary skills that will bring about national development and social changes is examination. Examination is an integral part of education; it is a pivotal force for placement, promotion, certification without which the learning process is incomplete. According to Rind and Mari (2019), examination has an important vital role in the development of students. It is a compulsory criterion to determine whether or not a student is qualified to move up to the next class (Borghouts et al. 2017). Examination gives quantitative data of the extent of learning or skill acquired over a period of time. Examination creates a platform for assessing if educational objectives and goals have been met by all the stakeholders. Adegoke

(2010) opined that an examination is an assessment tool used in measuring how much learning that has taken place over a period of time and to what extent the educational objectives and goals have been achieved. However, primary aim of education has been undermined by different forms of examination malpractices thereby questioning the reliability of students' scores after examinations. Even the predictive validity of examination which is an indication of students' future achievement is equally undermined. Diverse forms of examination malpractices are questioning the integrity of the education system thereby making a mockery of the entire teaching and learning process.

Literature (Atueyi 2019; Edeh et al. 2019; Nnam and Otu 2015; Odo 2015; Omoniyi 2019; Raji and Okunlola 2017) have established diverse instances of examination malpractices in Nigeria. In Nigeria, examination malpractice is a criminal offence. *Examination Malpractice Act 33* of the FRN (1999), as amended, defined examination malpractice as acquiring unfair advantage before, during or after an examination. The Act also describes it as an attempt to enrich oneself by compromising merit in the examination process. Examination malpractice can be defined as any act by examinee(s), the examiner(s) or stakeholder that violates the rules and regulations of an examination. It can also be termed as an act that permits an examinee to gain an unfair advantage over other examinees before, during or after an examination. Shonekan (1996) (cited in Olabode 2019) referred to examination malpractice as any act either by omission or commission which violates examination ethics consequently compromising the validity, reliability and integrity of the assessment or evaluation system. Ifeakor and Anekwe (2010) defined examination malpractice as any form of improper or dishonest act in an examination which is geared towards securing unmerited advantage hence resulting to a colossal and unprecedented disregard of rules and regulation affecting external and internal examination process; starting from the setting of examination questions, through the sitting of the examination, marking and grading, to the publishing of the results and issuance of certificates.

Examination malpractice in its complexities and intricacies is all-encompassing. It is an embodiment of corrupt practices. The engagement of secondary school students in different forms of examination malpractices especially during public examinations is alarming. There are constant innovations on different modes of examination malpractice to the bewilderment of the examiners and stakeholders. The different forms of examination malpractice include registration of students in "rogue" online website for examination paper leakages, impersonation, swapping of papers, copying, smuggling of foreign or extraneous materials, bribery or inducement of examination officials and so on. Adegoke (2010) opines that examination malpractice at various levels of the education system poses the greatest threat to the validity and reliability of the examination outcome and consequently to the authenticity and recognition of certificates issued.

Students' involvement in examination malpractice in public examinations such as Senior Secondary School Examination (SSCE) conducted by the West African Examination Council (WAEC) and the National Examination Council (NECO) is worrisome. These examination bodies have been in existence for over 66 and 19 years respectively (<https://www.refworld.org>). These examination bodies have always been known for the validity and reliability of their results over the years. However, concerns have also been expressed on the credibility of students' results obtained through these examination bodies. According to Afu and Ukofia (2017), studies have indicated that candidates with

exceptionally credible results in SSCE and NECO struggle with making good cut-off scores in Unified Tertiary Matriculation Examination (UTME) conducted by Joint Admissions and Matriculations Board (JAMB) and post-UTME by organised by tertiary institutions. Joshua et al. (2010) corroborated to this assertion by remarking that in public examinations, some students who get high scores can hardly defend these scores by performing or exhibiting academic behaviours that are in tandem with the scores. Obviously, some school leavers can hardly defend the certificates they possess. This is better understood using Classical Test Theory (Spearman, 1904). The theory is stated thus: $X = T + E$, where X represents Observed score (the score assigned by an examiner in a particular examination which reflects a student's ability). T represents True score (the actual or true ability of a student devoid of all mistakes or errors). E represents Error score (scores that are purposely or unintentionally assigned into the measurement process to increase or decrease a student's score in a given examination). A well-assessed examination paper will have less of E to make X a true reflection of T. But when E is large due to examination malpractice, it directly diminishes the T which is the true ability of a student and brings the X which is the observed score closer to E which is the error score. This simply means that examination malpractice truncates the reflection of the true abilities of students in public examinations due to the error scores (Joshua et al., 2010). With this analysis, one will begin to wonder the fate of the educational system as it relates to the socio-economic development of the country if a great number of the students are brandishing "Error Certificates". Bandele and Adewale (2013) confirmed that the Nigerian educational sector is been wrecked by the craze for obtaining certificates which are at the detriment of acquisition of knowledge hence, putting a question mark on the reliability and validity of certificates obtained by secondary school students. What could be the cause of these societal abnormalities?

Researches (Animasahun and Ogunniran 2014; Ejiogu 2001; Fayombo 2004; Kamal and Bener 2009) have revealed that desperation to obtain credit passes in English language and other core subjects in these public examinations is one of the causes of examination malpractice. The Federal Republic of Nigeria in the National Policy on Education (2013) stipulates that "English language shall be the language of instruction at all levels of education and also a core subject in the school curriculum". English language is a prerequisite for gaining admission into tertiary institutions. Succinctly put, one's proficiency in the English language determines the academic and professional success. Due to this enviable position occupied by the English language, efforts are being made by all stakeholders to ensure that students obtain credit passes in English language in public examinations. English language teachers' development programmes, twenty-first-century pedagogical approaches, exchange programmes, use of technology in teaching the English language just to mention a few, as some of the efforts made to enhance the teaching and learning of English language at the secondary school level. The subject receives prominent attention in every school time table. Students are exposed to the four language skills (listening, speaking, writing and reading) from primary to secondary school level with relevant materials that will improve their language skills. Extra-mural lessons are frequently organized by some schools as an intervention measure. Studies (Atanda, 2011; Fasasi and Amadi, 2015; Yusuf et al., 2021) have established poor performance and mass failures recorded in English language examination at senior secondary school level. Consequently, in a quest to reduce the number of failures in

English language, some concerned citizens establish tutorial centres where students receive remedial or extra-mural lessons in English language and other core subjects. Unfortunately, over the years, these centres have evolved with “special” and “miraculous” functions.

Examination special Centres

Examination special centres (henceforth, ESCs) as known as special centres, miracle centres or miracle examination centres (MECs) are modern day organisers of “remedial” classes, tutorials or lessons that claim to prepare candidates for external examinations. ESCs are operated outside the school environment by private individuals who are trained and, in most times, untrained teachers. Their specialty or miraculous expertise is in preparing students to sit and excel in external examinations using every dishonest means. Although these ESCs are not conventional schools, most private secondary schools in Nigeria have been found to have the same goal and function (i.e., ensuring that their students pass exams all available and underhand means) as the ESCs. Agwu et al. (2020) posit that miracle examination centres are linked to private secondary schools. Studies (Anzene 2014; Aworinde 2015; Jokthan 2013) found that private secondary schools represent a hub of MECs in Nigeria. These secondary schools, with autonomy as licensed schools, provide platforms for students to do their Senior School Certificate Examinations (SSCE) and pass with excellent results through undeserved and corrupt means.

ESCs employ subject experts who claim to demystify the difficulties students face in these subjects including English language. These centres are known for giving intensive lessons on these core subjects. Ideally, the ESCs engage students academically during holidays or after day school; therefore, making students spend less or no much time on televisions, loitering the streets or getting involved in any kind of delinquent acts. Some students who patronise these centres also record successes during their external examinations, thereby making such centres to be household names. The centres receive massive support from parents, education bodies and other stakeholders. However, the centres have evolved to be designated “special or miracle” centres. This designation for these centres makes one to question their activities. Most students who enroll into these ESCs for normal tutorials also go ahead to register for external examinations with the ESCs instead of their schools because they are promised of unmerited A grades. These ESCs, which are neither licensed schools nor accredited centres for external examinations take the students to private secondary schools where there is weak or compromised monitoring by government authorities during exam period.

Amake (2019) declared that these ESCs also popularly referred to as special centres, miracle centres or miracle examination centres based on their “sure” success records in any examination are found to be involved in various forms of examination malpractices. They advertise themselves on streets using posters bearing either: “*your sure way to success; pass your English Language and Mathematics in one attempt; make A1's in one step; a trial will convince; or score 300 and above in your JAMB examination*”. Even the names of the ESCs such as “*Exam Heroes Lesson Centre, A1 Tutorial centre*” are not only luring but suggestive to the questionable activities these centres may be carrying out. Igwe et al. (2018) supported this view by adding that ESCs are better called

business centres as they flourish in malpractices due to the high level of patronage accorded to them by students who are being financed by parents, guardians, and facilitated by teachers, school management, law enforcement officials and communities where these centres are located. There are suggestions that these tutorial centres are going contrary to educational ethics to the extent that custodians of law and ethics are involved. Can the national objectives of education be met going by the current trends of events with these ESCs? The study is focused in finding out what perceived effect the activities of ESCs are capable of having on the teaching and learning of English language in particular and the quality of education in general.

Quality of education

Quality of education here refers to the expected standards or principles education should have, maintained and improved on. Its usage in the context of this study is interchangeable with quality education. There are many theorisations on quality of education or quality education, however, there is no over-all consensus on what it is. Nevertheless, quality as regards to education is an essential variable for cost-effective educational outputs (Commonwealth 2017). Commonwealth (2017) defined quality education as a “system or product that has passed a certain set of criteria or principles” (p. 2). According to Slade (2016), quality education is determined by the provision of quality human and capital resources (both tangible and intangible) and implementation of policies that ensure children are supported to learn through the guidance of qualified, motivated, creative teachers. UNICEF (2000) viewed quality of education from five dimensions, namely, quality learners, quality learning environments, quality content, quality processes, and quality outcomes. These dimensions are disaggregated into elements such as regular school attendance, family support, class size, teachers’ behaviour, literacy, assessment to mention only these, that entrench or affect good quality of education. At the dimensions of quality learners and quality outcomes which interest this study, students, for example, who are infrequent with school attendance due to health or socio-economic issues; possess poor linguistic skills; or receive negative support from family in form of imposition of career choice or inordinate expectation of high grades, may hardly perform very well in their various subjects’ choices, especially during external examinations. These might warrant patronising ESCs. Instances also abound in secondary schools in Nsukka where students leave schools they attended for five years, after their penultimate class due to the schools’ zero tolerance to examination malpractice, for “special centred” secondary schools that are always ready to welcome them.

Examination malpractice mars the quality of education. Good quality of education entails self-reliant education. Students who engage in examination malpractice lack self-reliance. Going by the discourse, how will the end product of the current Nigerian education system participate globally and bring the desired changes in the society if assessment which is one of the elements of dimension of quality is being destroyed by malpractices? Enabling environment, content of the curricula, qualified teachers, teaching and learning process are sustainable variable of quality education; therefore, they should be given deserved attention for the end product (learners) to be creative, innovative and productive. If one variable is faulty, it makes a mess of the entire process.

This could be the reason Eze (2009) declared that whatever methods, techniques and pedagogical strategies teachers adopt during curriculum delivery, quality outcome is definitely the end product that will determine if the processes are appropriate or needed to be improved upon. Hence, the quality of a country's education determines the quality of manpower and development of that country. In all, examination malpractices remain one of the greatest threats to the quality of education in Nigeria.

Theoretical framework

This study is anchored on social learning theory by Bandura (1977). Social learning theory is an observational learning theory. The theory posits that behaviour is learnt from the environment through observation. In this theory, the human behaviour is conceptualised from the perspective of continuous reciprocal interaction between the cognitive, behavioural and environmental influences. Observational learning is composed of four processes: attention, retention, reproduction and motivation. Learning occurs when someone pays attention to something in the environment, and goes ahead to retain the information by structuring it using easy-to-remember format like mnemonics. Thereafter, the observer will have to reproduce the behaviour he has paid attention to. To reproduce the desired behaviour, the observer needs to be motivated. The motivation may be intrinsic or from external reinforcements such as reward and punishment.

From the foregoing, it would be understood that the theory lays emphasis on the role of observing and modelling actions, attitudes, and psychological responses of others. Learning mostly and easily occur through observational modelling of others' behaviour. Observation enables one to construct idea of how new behaviour are portrayed. This becomes an encoded information which the observer will later perform. The society has arrays of models of influences, ranging from parents, siblings, peer group, teachers, church to old and new media. Behaviours exhibited by these models are imitated by toddlers, young and old adolescents regardless of moral threats. Whatever children see or hear they do. Students observe how models of influences bribe their way of out situations, jump queues, and lie. They learn these underhand behaviours and could re-act them in their academic lives by paying for access to exam questions before the exam period, cheating during the exam, or having impersonators do their exams for them.

Finally, this theory demonstrates the relationship between examination malpractice and the social environment. The examination malpractice is an offshoot of larger societal vices. What students and ESCs do are what they have observed and retained from the society. These behaviours can be unlearned if the models of influences act responsibly and speak against these vices. More so, external reinforcement like punishment should be meted out to culprits and abettors of examination malpractice.

Objectives of the study

This study investigated the perceived effects of ESCs on teaching and learning of English language and the quality of education in secondary schools in Nsukka L.G.A of Enugu State Nigeria. Specifically, the study sought to:

1. determine the perceived effects of ESCs on teaching and learning of English language in secondary schools in Nsukka L.G.A., Enugu State, Nigeria.
2. ascertain the perceptions of school principals, religious and traditional leaders on the effect of ESCs on the quality of education in Nsukka L.G.A., Enugu State, Nigeria.

Research questions

The study answered the following questions:

1. what are the perceived effects of ESCs on teaching and learning of English language in Nsukka local government area, Enugu State, Nigeria?
2. what are the perceptions of school principals, religious and traditional leaders on the effect of ESCs on the quality of education in Nsukka local government area, Enugu State, Nigeria?

Material and method

The descriptive survey design was used for the study. In the view of Nworgu (2015), descriptive survey design aims at collecting data on, and describing in a systematic manner, the characteristics, features or facts about a given population. The study was carried out in Nsukka Local Government Area of Enugu State. The Local Government Area is the home of the prestigious University of Nigeria. The choice of Nsukka Local Government is because of proliferation of ESCs in Nsukka and seizure of some SSCE results of secondary school students in Nsukka by WAEC and NECO on the ground of examination malpractice.

The participants for the study are 123 English language teachers, 31 principals (PPSMB, 2020 statistics); six religious and traditional leaders in Nsukka L.G.A. The multi-stage sampling technique was used in drawing the respondents. The following are the stages of the sampling. Firstly, the entire population of the teachers was included in the sample because the number can be managed as regards collecting their responses through questionnaire. Secondly, a simple random sampling technique was used to draw out five (5) principals to be interviewed. Thirdly, through purposive sampling, three religious priests and three traditional leaders in Nsukka LGA were also selected to be interviewed. Therefore, totalling the sample size to 134.

The instrument for data collection was a structured questionnaire developed by the researchers and an oral interview. The perceived effects of examination special centres on English language and quality of education questionnaire (PEESCEQEQ) was used in answering the Research Question 1 while the oral interview addressed the Research Question 2. The PEESCEQEQ was made up of 15-structured items. The PEESCEQEQ items were structured on a modified four-point scale thus, Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The Oral interview has three-structured questions organised into themes one, two and three in the result section.

The PEESCEQEQ was subjected to face validity. It was presented to three experts from Departments Art education (Language), Science Education (Measurement and Evaluation) and Educational Psychology respectively. All the experts are members of the Faculty of Education of the University of Nigeria, Nsukka.

The reliability of the instruments was determined by administering the PEESCEQEQ to 20 teachers from Community Secondary School, Iheakpu-Awka, Igbo-Eze South Local Government Area of Enugu State. The respondents are outside the area of the study. After the administration of the PEESCEQEQ, the researchers determined the internal consistency using Cronbach's Alpha Coefficient Method. This method is considered appropriate when the items in the instrument are not dichotomously scored, and that is the case here. The instrument yielded a reliability coefficient of 0.71, also indicating that it is reliable.

In collecting the data, 123 copies of the PEESCEQEQ were distributed, while 107 were filled and returned for data analysis, which represented 87% return rate. Mean and standard deviations were used to analyse the questionnaire-data. The mean score 2.50 and above was rated as agreed while 2.49 and below was rated as disagreed.

The oral interview was structured-based interviews conducted with the 5 principals of secondary schools, three priests, and three traditional rulers. The three priests were from Catholic, Anglican and Pentecostal denominations. The interviews of the selected principals, priests, traditional rulers were held at the various schools, churches and palaces. The interviewees granted permission to have all the interviews audio-recorded. To avoid biased responses during the interview (Merc 2011), the purpose of the interview was disclosed to the interviewees at the end of the interview session. The duration of each interview lasted between 10 to 15 min which was dependent on the responses of the interviewees.

The audio-recorded interviews were transcribed and analysed following thematic analysis. Thematic analysis according to Braun and Clarke (2006) is a qualitative method of data analysis that demand exploring a data set (such as transcribed scripts of in-depth interviews or focus groups), and identifying patterns in meaning across the data. This method is adopted because Braun and Clarke (2006), and King (2004) maintained that thematic analysis is a useful method for investigating the viewpoints of different research participants, emphasising similarities and differences. The interviews were used to shed more light on the explanations on the perceived effects of ESCs on the teaching and learning of English language and quality of education in Nsukka Local Government Area. The purpose of using interview sessions together with the quantitative data was, firstly, to get an authentic, deeper, and reliable understanding of the problem being investigated from educational, religious and traditional stakeholders. Secondly, variables that ordinarily may have been disregarded if the study had used only quantitative data were addressed. Finally, the research question one was answered using PEESCEQEQ, and PEESCEQEQ data was analysed using mean and standard deviation; while the research question two was answered using interview and the interview was analysed using thematic analysis below.

Results

The results of the analysis are presented in line with the research questions that guided the study.

Research question 1: how do ESCs affect teaching and learning of English language in Nsukka local government area?

The Table 1 (see [Appendix A](#)) shows the mean and standard deviation of teachers' responses on the perceived effect of ESCs on the teaching and learning of English

language in Nsukka local government area, Enugu State. From this, it can be seen that Items 1 ($M = 3.37$), 2 ($M = 3.43$), 3 ($M = 3.41$), 4 ($M = 3.41$), 5 ($M = 3.13$), 6 ($M = 3.27$), 7 ($M = 3.38$), 9 ($M = 3.14$), 10 ($M = 3.26$), 11 ($M = 2.70$), and 14 ($M = 2.73$) have mean scores that are above the cut-off point of 2.49 is hereby accepted. While Items 8 ($M = 1.68$), 12 ($M = 1.67$), 13 ($M = 1.61$), and 15 ($M = 1.82$) have mean scores below the cut-off point and therefore rejected. The standard deviation which is within the range of .84 and 1.11 shows that their responses were far from one another and also from the mean. The Grand mean of 2.80, indicates that the teachers agreed on the perceived effect of ESCs on the teaching and learning of English language in Nsukka Local Government Area, Enugu State, Nigeria.

Research question 2: what are the perceptions of principals of schools, religious and traditional leaders on the effect of ESCs on the quality of education in Nsukka L.G.A?

Theme one: are you aware of activities of ESCs in Nsukka? If yes, do the activities of ESCs promote or destroy the quality of education in Nsukka L.G.A?

The analysis of the interview revealed that most of the stakeholders interviewed acknowledged being aware of the activities of ESCs, which they most referred to as miracle examination centres.

Most of the principals maintained that the activities of these centres do not only destroy the quality of education but also destroy human beings who patronize such centres. The principals emphasized that some National Youth Service Corps (NYSC) members or graduates cannot write formal letters nor fill forms correctly yet, they are university graduates. A principal indicated his concern about the destructive nature of these ESCs as follows:

“It is a misnomer to call such centres miracle centres because what they do there are too dirty to be called (sic) miracle. It should be called miserable centres. Some lecturers, school principals, teachers and ministers of education are owners of these examination centres”.

Furthermore, other school principals reported that the activities of these so-called miracle centres are devaluing the quality of education in general. The excessive value placed on paper qualification or certificates is the major contributing factor for the existence of these ESCs for examination. Nigeria’s education system is largely certificate-oriented. The principals lamented the exodus of students from their various schools to these ESCs as soon as the West African Senior School Certificate Examination (WASSCE) is drawing close.

The religious leaders particularly noted that these ESCs adopt a whole lot of strategies to execute examination malpractice. According to one of the religious leaders, examination scripts are solved, photocopied and distributed to the students before or during the exam. Most times the students are allowed to use their handsets in the examination halls of such centres. The religious leaders went further to say that these students sometimes arrange with the subject teachers, external personnel or school management and contribute huge amount of money to be helped to engage in examination malpractice. In fact, one of the religious leaders frankly explained thus:

“The school management is very much aware of the activities of examination malpractice in such centres. Sometimes when they get information that syndicates are coming to supervise the external examinations, they lock the school gate so that when the syndicates arrive, they will delay in opening the gate just to enable them clear up their mess and asked the students to pretend.”

Another religious leader lamented that:

“Answers to external examinations WAEC, NECO, NABTEB, JAMB and so on are sometimes released even before the examinations.”

Consequently, these religious leaders maintained that the activities of these ESCs destroy the educational system. The concern of all the religious leaders was that such activities are not geared towards promoting the quality of education, rather they are deteriorating the quality of education in Nigeria in general since the easiest way of destroying a nation is by destroying the quality of education of that nation.

Information gathered from the traditional rulers in Nsukka LGA of Enugu State revealed that they are not aware of the activities of ESCs in their communities. In an interview, one of the traditional rulers vehemently refused to accept the fact that ESCs carry out activities in Nsukka LGA thus;

“No miracle examination centres in my community. I do not know and I do not want to know because if I say I know about these centres, I have to report to higher authority as the Chief Security Officer of my Kingdom.”

Two-third of the traditional rulers interviewed were of the opinion that they are not aware of activities of ESCs in Nsukka LGA. From their responses, they are not keen to know if such centres exist in their communities and possibly their activities. Although these traditional rulers maintained that they are not aware of the existence of such centres and their activities in Nsukka, one out of all the traditional rulers interviewed has this to say:

“Miracle examination centres exist in my communities and I hate such centres like a plague. It’s an octopus. Such centres are responsible for what we are suffering today in Nigeria. There is problem of unemployment in Nigeria not because there are no jobs but because many graduates are not employable because they have nothing to offer. There should be no shortcut to education.”

Theme two: what has been the performance of students who patronise these centres?

The analysis of the responses reflected that the performances of students who patronize these centres are potentially disastrous. The concerns of some of the principals on this point of view were related and pointed to the fact that the students produced by these examination centres will be a nuisance anywhere they go. They will have A’s Distinction on paper but will be empty in the brain. The principals further maintained that such students may eventually get admission into higher institutions and will have many

carry-overs, as a result, may resort to cultism. According to the principals, these students will not be able to defend their results and will suffer destruction thereafter. One of the principals explained her concern as stated thus:

“The outcome of students who patronize these centres will be failure. Many of the students will continue to fail academically, because you cannot eat your cake and have it. Many of them will not be able to deliver even when employed”.

Information gathered from all the religious leaders revealed that the performance of students who patronise these ESCs will be frustration at the long run. It carries a very serious negative implication because one cannot give what he/she does not have. The religious leaders lamented that when it is time for the students who patronise these centres to be in the labour market, they will not be able to perform. One of the religious leaders expressed his worry thus:

“This is why there are lots of quacks and incompetent personnel in different establishments. Some of them when they graduate and become medical doctors and they are asked to operate on a patient, they either leave scissors or cotton wool inside the patient. They will not be able to carry out surgeries properly because they maneuvered their ways into the medical field.”

Therefore, patronizing these ESCs has a lot of implications to students, teachers, parents, school administrators and the society at large.

According to the traditional rulers, the performance of students who patronise these ESCs would be a time-bomb. They maintained that every sector in Nigeria is corrupt and students who engage in examination malpractice serve as primary indicators of how corrupt the education sector is. In a different opinion, one of the traditional rulers; the one who admitted to be aware of the activities of ESCs lamented below:

“I do not blame the students in any way instead, I blame parents who pay for their wards to go to such centres. Supervisory personnel who come to supervise some of these external examinations collect bribe from students and allow them to cheat. Government at all levels is to be blamed as well. There are no strict penalties to examination malpractice engagements in Nigeria.”

Theme three: what measures can be put in place to curb this menace in our educational system?

The analysis of the principals' responses indicated that the only way out of this menace is for all hands to be on deck because every sector of the economy is directly or indirectly involved in patronizing these centres. They further insisted that parents should live up to their responsibilities by teaching their children the benefits of hard work. Also, teachers have major roles to play by carrying out their duties effectively and efficiently, inculcating hard work and discipline in the students and staying away from examination malpractice in general. Interestingly, one of the principals mentioned that the measures to put in place in curbing this menace are difficult. She further stated that

officers in higher positions in government are sponsors of these ESCs. Almost all the principals interviewed pointed to the fact that discipline is the key. In other words, discipline should be maintained by all and sundry; parents, students, examination bodies, supervisors, principals, and all who in one way or the other encourage the existence of such centres.

The following extract from a principal of a school would be enough to clarify the issue:

“There should be re-orientation of our value system. There should be de-emphasis on the certificate but on what an individual can do. Another major challenge is proliferation of schools. Many schools are not worthy to operate, yet they are operating with licenses”.

However, another principal expressed a different view that:

“Examination bodies should create identity number for all students on entering SS2 in their various schools. This is to prevent students from patronizing these centres because once you register with your school using your I.D. number, you will not have another opportunity of registering for WAEC/NECO elsewhere”.

The responses gathered from all the religious leaders are pointer to the fact that the solution to this problem of examination malpractice lies in the hands of the government of Nigeria. In fact, one of the religious leaders interviewed suggested that government should allow only approved schools to operate and register students for external examinations; and if any approved school is found guilty of examination malpractice, the license of such school should be withdrawn. He further stated that a bill should be passed by the legislature to close down such ESCs in Nsukka LGA and beyond. From another dimension, another religious leader proffered solutions to curbing this menace as he expressed thus:

“As a religious leader, preaching and kicking against it in the church, in meetings, youth gatherings, in workshops and conferences will help educate parents and youths on the dangers of examination malpractice and as well make them understand that engaging in such acts is sinful before God and man.”

The summary of the responses of the religious leaders interviewed showed that students, parents, teachers, school administrators, examination supervisors and government need to be guided by their consciences to be able to say no to examination malpractice of any kind.

Based on the analysis of the responses of the traditional rulers interviewed, it could be said that the solution to this cankerworm is a pointer to the government and those at helm of affairs. Many of the traditional rulers were of the opinion that the Nigerian government can do something if she actually wants to help curb this menace. One of the traditional rulers in his perspective frankly told the researchers in an interview that politicians and those in authorities do not allow their voices to be heard. He further maintained that politicians and top

government officials feel traditional rulers are insignificant and have nothing to contribute to the society. He lamented thus:

" Traditional rulers are handicapped. Politicians do not allow our voices to be heard. Some traditional rulers are longer throats; when politicians give them money, they cover the truth and dance to their tunes. It's shameful! We know what to do but we are not given opportunities to take actions."

Discussion

The findings of this study revealed that the perceived effects of ESCs on the teaching and learning of English language in Nsukka Local Government Area include: promoting examination malpractice, frustrating English language teachers' efforts in preparing students for external examinations. Others include producing half-baked secondary school graduates, hampering English teachers' zeal to teach, cajoling the teaching profession in general, giving room for people to believe that certificates could be bought, destroying hardworking students' confidence over their ability. Increasing students' restiveness during examination period and destroying English language teachers' instructional and professional developments. This implies that ESCs have negative effects on the teaching and learning of English language in Nsukka Local Government Area. This could be the reason some senior secondary students in examination classes do not take their studies serious. They move around causing chaos and confusion during school hours. Few months to the external examinations, they will massively exit to these ESCs where answers will be provided for them in various forms. Probably, due to the fake confidence that examination malpractice gives to these students, they neglect their studies even the hardworking ones tend to lose confidence in their abilities. As a result, they fail to attain their potentials in the acquisition of English language skills. The English language teachers on their own part get disenchanted since all their efforts are being stifled by the activities of these ESCs. In line with the findings of this study, Peters and Okon (2014) stated that examination malpractice discourages candidates from studying hard, promotes underachievement in the labour market and results to an overall reduction in the quality of education. The findings of this study are also in line with Onyibe et al. (2015) who revealed that examination malpractice leads to ineffective study habit among students. Davies et al. (2018) corroborate with the present study as their study revealed that examination malpractice harms the students as it discourages hard-work among students.

In the present study, teachers agreed that they are aware of activities of ESCs in Nsukka causing restiveness for students during external examination. These ESCs promote malpractice and their activities result in producing half-baked O'level graduates who are incompetent in using English for communication. Onyekuru and Kabari (2017) work supported this study's finding that parents are somewhat happy with the examination outcome spearheaded by ESCs since their children pass English language very well in external examination. The study established that exam malpractice demoralises hardworking students. This submission converges with Onyibe et al. (2015) who stated that students are discouraged from working hard since malpractice offers an easier way to good grades. On patronage of ESCs, and encouraging these centres since they lessen

teacher's workload, the teachers strongly disagreed. This is a pointer that the classroom English teachers are averse to the activities of ESCs in Nsukka LGA.

The findings of this study equally revealed that principals of secondary schools, religious and traditional leaders have negative perceptions about ESCs as their activities destroy the quality of education in Nsukka L.G.A. The activities of these ESCs could be the reason why there are lots of graduates who cannot express themselves (oral/written) in the English language. Employers of labour are disappointed at the quality of graduates in the labour force as their certificates do not represent their true ability. The denial of one of the traditional leaders in being aware of the activities of these ESCs is a way of being politically correct. In line with the findings of this study, Kolawole (2019) revealed that examination malpractice has invariably affected the quality of education and quality of students in Nigeria. Kawugana and Woyopwa (2017) also corroborate the findings of the present study as their study revealed that examination malpractice has a great negative effect on the quality of education and certificates issued to candidates.

Conclusion and recommendations

The activities of ESCs blow a destructive wind on the nation's educational system. The resultant effect of the activities of these ESCs is the churning out of half-baked graduates who cannot defend their qualifications. Owners of these enviable certificates could hardly perform task that require them to showcase proficiency in the English language skills thereby leading to poor performance and low productivity. The teaching profession is equally being cajoled when the products are mediocre instead of professionals. The nation's educational objectives still remain unattainable as long as ESCs flourish. Lowering the quality of education through a corrupt practice such as the operations of ESCs is a big threat to the quality of the country's greatest asset which is the human capital. If not checked, there will be a total collapse of the only instrument the country has for national development which is education. The study based on the findings recommend the following measures for curbing of examination malpractice:

1. Enugu state government should properly investigate and close down all ESCs operating under the umbrella of private and public secondary schools, and tutorial centres.
2. Merit and practical based-knowledge should be prioritized and less emphasis on paper qualifications/certificates.
3. Parents should instil hard work in their wards and discourage them from patronizing ESCs.
4. There should be total implementation of the Examination Malpractice Act of 1999 which stipulates twenty-one years' imprisonment for culprits.
5. Aggressive awareness campaigns should be organized and launched at the grassroots level, at various Local Government Areas, sensitizing parents, students, school authorities, communities as well as all educational stakeholders on the dangers associated with allowing ESCs to operate.
6. Religious and traditional leaders should speak against examination malpractices from the pulpit and throne respectively.

Appendix

Table 1 Mean and standard deviation of teachers' responses on the perceived effect of examination special centres on teaching and learning of English language in Nsukka local government area

S/ N	Item statement	\bar{x}	SD	Decision
1	There are proliferations of examination special centres in Nsukka	3.37	0.90	Agreed
2	Examination special centres frustrate English language teachers' efforts in preparing students for external examinations	3.43	0.84	Agreed
3	Examination special centres promote examination malpractice	3.41	0.97	Agreed
4	Examination special centres result in producing half-baked secondary school graduates of English language.	3.41	0.86	Agreed
5	Examination special centres hamper teachers' zeal to teach English language	3.13	0.89	Agreed
6	Examination special centres cajole the teaching profession in general	3.27	0.87	Agreed
7	Examination special centres give room for people to believe that certificates could be bought	3.38	1.03	Agreed
8	Examination special centres should be encouraged to enable students to obtain credit pass in English language in external examinations	1.68	1.09	Disagreed
9	Examination special centres increase students' restiveness during examination period	3.14	0.84	Agreed
10	Examination special centres destroy the hardworking students' confidence over their ability	3.26	0.99	Agreed
11	Many parents are happy with the new trend of Examination special centres in Nsukka because their children pass English language very well in external examinations	2.70	1.05	Agreed
12	Examination special centres should be patronized because English language teachers benefit financially from it particularly in Nsukka	1.67	0.98	Disagreed
13	Examination special centres should be encouraged because it lessens teaching work for the English language teachers	1.61	0.91	Disagreed
14	Examination special centres discourage English language teachers' instructional and professional developments	2.73	1.11	Agreed
15	Examination special centres reveal students' true ability in English language.	1.82	1.00	Disagreed
	Grand mean	2.80		

Abbreviations

ESC: Examination Special Centre; I.D.: Identification; JAMB: Joint Admissions and Matriculations Board; L.G.A.: Local Government Area; M: Mean; MEC: Miracle Examination Centre; NABTEB: National Business and Technical Examinations Board; NECO: National Examination Council; NYSC: National Youth Service Corps; PEESCEQEQ: Perceived Effects of Examination special centres on English Language and Quality of Education Questionnaire; PPSMB: Post-primary School Management Board; Post-UTME: Post-Unified Tertiary Matriculation Examination; SSCE: Senior Secondary Certificate Examination; UTME: Unified Tertiary Matriculation Examination; WASSCE: West African Senior School Certificate Examination; WAEC: West African Examination Council

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Competing interests

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References

- Adegoke B (2010) A survey of examination: malpractice among secondary school students – causes, effects and solutions. GRIN Verlag, Munich Retrieved 06 May, 2019 from <https://www.grin.com/document/178869>
- Afu MO, Ukofia IBF (2017) Assessing predictive validity of WASSCE and NECO results on 100 level students' cumulative grade point average in university of Abuja. *Int J Educ Eval* 3(12):1–8
- Agwu, P., Orjiakor, T., Odii, A., Onalu, C., Nzeadibe, C., & Okoye, U. (2020). Nature and drivers of 'miracle examination centres' in private schools in Nigeria: a systematic review of literatures on examination malpractice. Working Paper 026, Anti-Corruption Evidence (ACE) Research Consortium
- Amajuoyi IJ, Joseph EU, Udoh NA (2013) Content validity of may/June west African senior school certificate examination (WASSCE) questions in chemistry. *J Educ Pract* 4(7):1–6
- Amake D (2019) How exam bodies help 'miracle centres' to flourish. In: *Blueprint* Retrieved June 12 2019 from <https://www.blueprint.ng/%EF%BB%BFhow-exam-bodies-help-miracle-centres-to-flourish/>
- Animasahun R, Ogunniran J (2014) Correlates of examination malpractice among secondary school students in Oyo state, Nigeria. *IJEAPS* 6(9):181–189
- Anzene S (2014) Trends in examination malpractice in Nigerian educational system and its effects on the socioeconomic and political development of Nigeria. *Asian J Humanities Soc Sci* 2(3):1–8
- Atanda AI (2011) A survey of secondary students achievement in English language and mathematics in Nigeria: lessons for secondary school administrators in Nigeria. *J Sociol Educ Afr* 10(2):125–142
- Atueyi, U. (2019). 'Examiners reveal how private schools aid exam malpractice'. *The Guardian*, (<https://guardian.ng/features/examiners-reveal-how-private-schools-aid-exam-malpractice/>)
- Aworinde, T. (2015). 'PUNCH undercover reporter exposes mass cheating at NECO miracle Centre'. *The PUNCH*, (<https://punchng.com/punch-undercover-reporter-exposes-mass-cheating-at-neco-miraclecentre/>)
- Bandeke SO, Adewale AE (2013) Comparative analysis of the reliability and validity coefficients of WAEC, NECO and NABTEB constructed mathematics examination. *J Educ Soc Res* 3(2):397–407. <https://doi.org/10.5901/jesr.2013.v3n2p397>
- Bandura A (1977) Self-efficacy: toward a unifying theory of behavioural change. *Psychol Rev* 84(2):191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Borghouts LB, Slingerland M, Haerens L (2017) Assessment quality and practices in secondary PE in the Netherlands. *Phys Educ Sport Pedagog* 22(5):473–489. <https://doi.org/10.1080/17408989.2016.1241226>
- Braun V, Clarke V (2006) Using thematic analysis in psychology. *Qual Res Psychol* 3(2):77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Commonwealth (2017). Universal Standards for Quality in Education. Available at: https://www.thecommonwealth-educationhub.net/wp-content/uploads/2016/05/Quality_Standards_Education_2017_07.pdf
- Davies, k, Abubakar, U., & Essien, O. (2018) An indepth evaluation on the issues of examination malpractice in Nigeria. *Res Pedagogy* 8(2):204–213. <https://doi.org/10.17810/2015.84>
- Edeh MO, Ani UE, Nnaji AD, Abdullahi I, Ajhuseen OA, Quadri NN (2019) The role of technology in mitigation of examination malpractice in West Africa. *Int J Innovative Res Comput Commun Eng* 7(10):3990–4002
- Ejigou A (2001) *Morality and National Development: a case for National Rebirth*. National Orientation Agency, Abuja
- Examination Malpractice Act 33 of the 1999 Constitution of the Federal Republic of Nigeria as Amended
- Eze, S. G. N. (2009). Features of quality education. Retrieved June 20, 2019 from <https://www.researchgate.net>
- Fasasi KA, Amadi GU (2015) Four radical panaceas for reversing mass failure in certificate English language Examinations in Nigeria. *J Educ Pract* 6(17):160–165
- Fayombo GA (2004) Assuring quality in school practices and strategies, 1st National Conference of the Institute of Education, Olabisi Onabanjo University conference proceedings, pp 160–167
- Federal Republic of Nigeria (2013) National policy on education, 6th edn. NERDC Press, Abuja
- Ifeakor, A. C. & Anekwe, JU (2010). Achieving standard in secondary education through the eradication of examination malpractices: The Nigerian experience. *African Research Review*, 4(4). <https://doi.org/10.4314/afrr.v4i4.69235>
- Igwe, O. I., Ogadi, C., & Nwokobia, U. C. (2018). Special (miracle) centres: Blessing or curse to secondary school external examinations in Nigeria? Retrieved from www.globalacademicgroup.com
- Information Nigeria (2012) 'Nigeria ranked number one in world examination malpractice index'. *Information Nigeria*. <https://www.informationnigeria.com/2012/07/nigeria-ranked-number-one-in-world-examination-malpractice-index.html#:~:text=Nigeria%20Ranked%20Number%20One%20in%20World%20Examination%20Malpractice%20Index,By&text=Nigeria%20occupies%20the%20number%20one,Mike%20Omeri>
- Jokthan E (2013) Curbing examination malpractice in schools: participative advocacy. *JORIND* 11(2):125–131
- Joshua MT, Obo FE, Joshua AM, Edet AO, Ekpoh UI (2010) Perception of examination malpractice, and intervention strategies by some stakeholders in the Nigerian school system. *J Educ Assessment Africa* 4:255–268
- Kamal M, Bener A (2009) Factors contributing to school failure among school children in very fast developing Arabian society. *OMAN Med J* 24(3):212–217. <https://doi.org/10.5001/omj.2009.42>
- Kawugana A, Woyopwa AK (2017) Impact of examination malpractice on the quality of graduates in Nigeria. *Int J Educ Eval* 3(6):45–51

- King, N. (2004). Using templates in the thematic analysis of text. In C. Cassell & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 257–270). London, UK: Sage
- Kolawole, O. P. (2019). Causes and effects of examination malpractices on educational standard. Retrieved from <https://zamb Brut.com>
- Merc A (2011) Sources of foreign language student teacher anxiety: a qualitative inquiry. *Turkish Online J Qualit Inquiry* 2(4)
- National Policy on Education (2013). Lagos: Federal Government of Nigeria Press
- Nnam M, Otu S (2015) The rule must be broken: an integrative-anomie perspective of examination malpractice in Nigeria. *FUNAI J Human Soc Sci* 1(2):63–77
- Nworgu BG (2015) *Educational research: basic issues and methodology*, 3rd edn. University Trust Publishers, Nsukka
- Odo LO (2015) Institutionalization of examination malpractice in secondary schools: a threat to quality secondary science education in Nigeria and development beyond 2020. *Knowledge Rev* 33(3):1595–2126
- Olabode, O. O. (2019) Assessment of moral and ethical issues of examination malpractices in Christian faith based institution. *South Asian Res J Human Soc Sci*; 1 (3) 338-343
- Ololube NP, Amaele S, Kpolovie JP, Onyekwere LA, Elechi GE (2012) Quality higher education for improved knowledge essential for national and regional development. *Int J Educ Econ Dev* 3(2):179–204. <https://doi.org/10.1504/IJED.2012.047109>
- Omoniye, K. (2019). 'Kano miracle Centres: I don't know the location of school where I passed my WAEC -housewife confesses'. *Solacebase.com*, 30 September (<https://www.solacebase.com/2019/09/30/kanomiracle-centres-i-dont-know-the-location-of-school-where-i-passed-my-waec-housewife-confesses/>)
- Onyekuru BU, Kabari BM (2017) Parenting styles as correlates of students' attitude towards examination malpractices in Obio/Akpor local government area of Rivers state: implications for counselling. *Eur J Educ Dev Psychol* 5(2):1–11
- Onyibe CO, Uma UU, Ibina E (2015) Examination malpractice in Nigeria: causes and effects on national development. *J Educ Pract* 6(26):12–17
- Peters JS, Okon MO (2014) Students' perception of causes and effects of examination malpractice in the Nigeria educational system: the way forward for quality education. *Proc Soc Behav Sci* 114:125–129. <https://doi.org/10.1016/j.sbspro.2013.12.671>
- Raji IA, Okunlola JO (2017) Examination malpractice and quality assurance of senior secondary school certificate examination in Oyo state, Nigeria. *Afro Asian J Soc Sci* 8(2):1–21
- Rind IA, Mari MA (2019) Analysing the impact of external examination on teaching and learning of English at the secondary level education. *Cogent Education* 6(1):1574947. <https://doi.org/10.1080/2331186X.2019.1574947>
- Sahara Reporters (2019) Police, judiciary among the top five most corrupt institutions in Nigeria. *Sahara Reporters* <http://saharareporters.com/2019/03/27/police-judiciary-among-top-five-most-corrupt-institutions-nigeria>
- Shonekan, M. O. (1996). Various forms of examination malpractice and WAEC penalties for them. Paper presented at the symposium organized the Federal Ministry of Education on character formation in secondary schools, May 22, National Theater Lagos.
- Spearman, C (1904). The proof and measurement of association between two things. *American Journal of Psychology*, 15, 72–101.
- Slade, S. (2016). 'What do we mean by a quality education?' *Huffpost*. Available at https://www.huffpost.com/entry/what-do-we-mean-by-a-qual_b_9284130
- UNICEF. (2000). *Defining quality in education*. Working paper presented by UNICEF at the meeting of the international working group on education Florence, Italy. Available at: https://www.right-to-education.org/sites/right-to-education.org/files/resourceattachments/UNICEF_Defining_Quality_education_2000.PDF
- United Nations General Assembly (1948) *The universal declarations of human rights*. United Nations, New York
- Yusuf AA, Baba A, Isa A (2021) Mass failure of students in English language in senior school certificate examination at government science and technical college Potiskum, Yobe States) *Dutsin-Ma J Engl Lit (Dujel)*:311–322 <https://www.refworld.org>

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