The Use of Mobile Phone as Enhancement to Mark Multiple Choice Objectives English Grammar and Literature Examination: An Exploratory Case Study of Preliminary National Diploma Students, Abdu Gusau Polytechnic, Talata Mafara, Zamfara State, Nigeria

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Abstract—Most often, marking and assessment of multiple choice kinds of examinations have been opined by many as a cumbersome and herculean task to accomplished manually in Nigeria. Usually this may be in obvious nexus to the fact that mass numbers of candidates were known to take the same examination simultaneously. Eventually, marking such a mammoth number of booklets dared and dread even the fastest paid examiners who often undertake the job with the resulting consequences of stress and boredom. This paper explores the evolution, as well as the set aim to envision and transcend marking the Multiple Choice Objectives- type examination into a thing of creative recreation, or perhaps a more relaxing activity via the use of the mobile phone. A more "pragmatic" dimension method was employed to achieve this work, rather than the formal "in-depth research" based approach due to the "novelty" of the mobile-smartphone e-Marking Scheme discovery. Moreover, being an evolutionary scheme, no recent academic work shares a direct same topic concept with the 'use of cell phone as an e-marking technique' was found online; thus, the dearth of even miscellaneous citations in this work. Additional future advancements are what steered the anticipatory motive of this paper which laid the fundamental proposition. However, the paper introduces for the first time the concept of mobile-smart phone e-marking, the steps to achieve it, as well as the merits and demerits of the technique all spelt out in the subsequent pages.

Keywords—Cell phone, e-marking scheme, mobile phone, mobile-smart phone, multiple choice objectives, smartphone.

I. INTRODUCTION

THE Nigerian education system heavily depends on various facets of examination in the desire to assess and evaluate the performances of the students being hosted and taught. Schools and institutions of learning at different levels deploy either a single or hybrid methods to set examinations format to suit the final yard stick which determines the educational cognition of students. This implied that no individual student attains any educational certification without being tutored and having passed different examinations formats at each level. Thus, from basic primary education to tertiary, students are bound to encounter examination in formats such as: *fill in the blank space type; Multiple Choice Objectives, Essay or the Theory type, Oral and Verbal, Computer Based Test (CBT)*, etc. For instance, towards the end of the Basic Primary Education, all students in the Nigerian schools are expected to sit for and take a nationwide unique examination known as the "*Common Entrance*." The effect is to prepare them towards the next education strata, however, through an examination which is based on the Multiple Choice Selection format. Moreover, upon reaching the halfway in the secondary level, the students yet encounter another more advanced Multiple Choice Objective (MCO) in the third year called '*Junior WAEC*' to scale them on to the Senior Secondary Section.

At the pinnacle of the Senior Secondary studies, flux of Multiple Choice Objectives examination format were to be faced further. These come in the likes of *West African Examination Council (WAEC), Nigerian Examination Council (NECO), National Board for Technical Education (NBTE), Unified Tertiary Matriculation Examination (UTME) and Computer Based Test (CBT)*, however, the significant thing to note here is that virtually all the aforementioned examinations are predominantly MCO background, thus marking the students' scripts after these examinations within the shortest time frame always posed challenges, difficulties and eventually yield failure. Unless another means is devised and deployed, mass examination scripts / booklets marking would ever remain toilsome and laborious to examiners. At this juncture, the call for recent technological advancements such as the use of mobile-smart phone and computer incorporation to the hub of all examinations becomes indispensable.

Based on the antecedents mentioned, it would be fair to recall and worth-noting the substantial fact posited by a veteran. In his words, Olaofe [6] opinionated thus "there are better ways to evaluate achievement and ability; good teacher observation, documentation of student works and performance – based assessment are the most useful." This summation crowns the necessity for both aassessment and evaluation simultaneously.

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II. Literature Review

From the 1999, license to mobile phone companies were indiscriminately issued by the then Nigerian government to promote the telecommunication sector. Being a developing country economic-wise, and as well a highly populous country with over 150 million citizens; the use of mobile phone spread in the similitude of 'frenzy' amongst literate users, then the semi-literate small scale business individuals in the country. Currently, it is extrapolated that Nigeria has about 40 million mobile phone users. Since more than a significant number of people use mobile phones, development hierarchy in terms of usage is bound to surface. However, this motivated the reflection on how to come about the simple deployment of a mobile phone into the academics particularly in order to ease an objective English examination E-making scheme. For instance, Wong and Sellan [10] studied and postulated the use of the mobile phone as an academic assessment tool based on: the design factors to consider; the technical feasibility of using a mobile phone for assessment; latent gains of the scheme and problems encountered.

Wong and Sellan [10] were able to design a "custom-developed" version of software to successfully complete the work on the mobile assessment system technique. Unlike the duo, such design was not possible to the author herein owing to the technological backwardness prevalent in Nigeria at the moment.

Although there have been quite number of studies in academic assessment using a modernised methods such as what Thorne [8] termed the "Conventional Internet-Mediated" tools, yet few works exist on the direct use of smartphones to carry-out an E-marking of objective English language examination. This owes to the fact that more recently, non-print platforms like computers are currently in use to present the stimuli and responses of learners as the case is. Thus, the rapid increase in use of mobile phones has now prompted studies on the use of these mobile devices in assessment [10]. Moreover, the fact that Thorton [9] conducted a research on students' phone use frequency, the result proves that virtually all students email on mobile phones, with only a few emailing on personal computers. This is because large numbers of students consider smartphones as a valuable teaching medium [10].

A teacher training which centred on the use of mobile devices (digital cameras inclusive) to enhance supervisors, teachers and trainee teachers to share or discuss teaching ideas was likewise attempted. Through this, a Short Message Service (SMS) and digital pictures can be uploaded to a central server for wireless transmission which could be accessible to all [7].

Other functions on the use of mobile phone also include the method employed in tertiary English language teaching to achieve students' vocabulary learning; a supplementary learning material and tool [1] were all integrated pedagogic mobile possibilities.

Either way one view the feasibility functions of the smart phone in examination assessment, an E-marking project would not be successfully achieved without consideration to dual factors. These depend on how advanced the mobile phone's characteristic features, as well as the user anticipatory need or target intentions as opined by Grasso et al. [5]. This could be evident in the sense that an examiner's smartphone is not a mere inter-personal communicative tool, but rather a more heuristic device too.

Perhaps the major criticism of E-marking approach as indirectly put by Dooly et al. [2], is the fact that smartphones do handle other multimedia packages which could on one hand improve; as well at large hamper learning enhancement due to peripheral distractions. However, for an examiner, mobile phone would primarily be channelled towards the positive achievement of educational leaning goals [10]. Finally, it would be fair to regard the use of cell phone to generate an E-marking scheme as an appendage within the sphere of "Mobile Assisted Language Learning (MALL)" [1], as it is currently just about to eliminate the use of textbooks [3]. In as much as MALL undeniably focused instead on how smartphones employ downloaded application packages aimed at language teaching support for daily usage and communication purposes [4]; then this study would only be limited on the scope in which a smartphone could be used to achieve an E-marking process.

III. What Is an Assessment?

Sometimes assessment is commonly viewed as evaluation of which the two concepts exhibit virtual distinction. The two concepts can be distinguished based on:

An evaluation stands as a broad-based conception encompassing a large scale of assessments such as programmes, projects or phenomena. Assessment on the contrary is more or less a narrowly-focused activity when compared to evaluation….however, assessment is mostly restricted to the process and system of measuring how much (translated in terms of marks) a student or candidate has learnt. Usually, assessments are aimed and achieved at the end of a month, term, year or on weekly or daily bases [6].

It has therefore since become common and inevitable practice among all schools and academic bodies to always assess students' performances after either on term basis, semester, or even a session. The assessment could be a mere class test, assignment, homework, class exercise, presentation, research or ultimately an examination. It is based on this mindful duty that the academic examination script or booklet markings become a condition 'sine qua non'; and obviously becomes the same reason and need to evolve a simplified method of doing so through techniques such as the E-marking scheme.

A. Three Common Examination Formats

1. *Fill-in-the blank space:* The questions provided in this examination style or format have omitted word (s), a phrase or an entire expression, Here, the students are expected to supply the precise and most accurate response. No option(s) to the response or answer are hinted in this kind of format simply because it is a

"mnemonic prompter" based intended examination to support *'route'* learning. The answers are wholly 'subjective' in their approach. Thus blank spaces are usually either dotted with multiple ellipses or underlined.

2. *Essay / Theory:* Deals with written composition of either average or extensive length needed as an explication over what was enquired. It requires the student to explore the subject or issue at hand based on his/her cognitive competence. In most cases, the theory examination does not aim at one conclusive final response or even, exact idea. On the contrary, it encourages continuous written composition focuses at measuring individual student's critical thinking.

3. *Multiple Choice Selections:* Also known as *'Objectives'* examination, it comprises many questions ranging from 1 - 100 at a time. The style here supply both the true answer among the less probable or even wrong selections catered for the students to opt one. The options, choices or selections are usually labelled alphabetically (i.e. A, B, C, D and E) for each question.

Based on the third category above, a new scheme was discovered and designed on how to mark a mass number of students' examination booklets via the use of a cell phone. The scheme was observed to have enlivened and moderately expedite marking exercise as anticipated. Likewise, the scheme appeared and proved to be circa-panacea to examiners with the disability of poor eye-sight.

Because the scheme was carried out through the aid of mobile phone, by extension, it is therefore at this juncture onward, termed as an "e-Marking Scheme".

IV. E-MARKING

A. What Is e-Marking Scheme (eMS)?

Just like all initialisms and acronyms, the term e-marking merely refers to a system in which an electronic device, tool, gadget, or even computer related machine is used as an enhancement in order to simplify a task or job. Electronic device are commonly those technologically invented things which operated on the physical behaviour of electrons / electricity. Therefore, eMS could be akin to other "e-"family members such as: *e-banking, e-commerce, e-dictionary and e-mail,* etc. However, eMS might not so much be qualified as an advanced *"application handler software"* simply because it is not as sophisticatedly designed as the other installable mobile phone packages. On the contrary, eMS too is handled by "pre-installed" software on mobile phone which works on the principle of *"voice / audio capture"* that instantly stores directly either into the cell phone's in-built storage or to an external memory chip. Moreover, the eMS technique could be better understood when described as a *"high-fidelity"* form of mobile-smart phone *"voice recording"* of any carefully *'read aloud'* MCO marking scheme. Once recorded or captured, the voice content file could be converted to any audio file format such as AMR, MP3, WAV, 3GPP, MP4, etc.., depending on choice and purpose.

The length of an eMS ranges between seconds to minutes depending on how many questions the MCO marking scheme contains. For instance, an eMS of just 30 questions may last for about 55 seconds to one minute based on the reciter's speech rate. Thus, the mathematical ration of a 100 eMS would fall between two minutes 50 seconds to three minutes 20 seconds, respectively.

A *"reciter"* refers to the examiner or anyone who read aloud the MCO marking scheme meant for audio capture while preparing an eMS. During a recitation rehearsal, acute attention must be devoted to phonemic pronunciation of letters to avoid analogous sound confusion or switching sound effect. For instance, repeated and sequential utterance of the phonemic sound or letter **/ei/** or (a) would result to hearing the semi-corresponding letter (e) or **/i:/** phoneme. Similarly, letter (b) or **/bi:/** phoneme and (d) or **/di:/** may inversely be heard switching or swapping their phoneme when excessively reiterated.

To remedy such phonic confusion, Table I exhibits some useful suggestions.

TABLE I
LETTERS AND PHONIC SOUND EQUIVALENTS

Letter		Phonemic Sound	Remedied alternative word
A ,	a	/ **ei** /	Alpha
E ,	e	/ **i:** /	Epsilon
B ,	b	/ **bi:** /	Be
D ,	d	/ **di:** /	Delta

B. Method and Procedure

It is imperative to note that the eMS was used to mark the examination booklet of students from Preliminary National Diploma Programmes in Business Administration, Science and Engineering of Abdu Gusau Polytechnics respectively. The students' population was a total of 279. And the courses taken in the examination were based on English Grammar and Literature each composed 30 MCO questions on a different day. At the end, a grand total of 558 booklets were e-marked efficiently; Fig. 1 shows the work data statistics.

(a)   Profile
- *Institution: Abdu Gusau Polytechnics*
- *Level: Preliminary National Diploma (Pre-ND)*
- *Programme(s): Business Administration, Science and Engineering*

Level/Programme	No. of Students	English Grammar	Literature	Total
Pre ND Business Admin.	114	114	114	228
Pre ND Science	93	93	93	186
Pre ND Engineering	72	72	72	144
Grand Total 558				

Fig. 1 eMS data evaluation table

C. Apparatus

1. Cell phone (iPhone, Android, window smart phone, etc.);
2. An earpiece enhancement (or wireless blue-tooth device – optional);

3. Serene recording environment;
4. Typed or hand written MCO marking scheme (needed to be recited)
5. Pre-installed audio / sound / voice recording set-up package;
6. Available internal or external storage location; and,
7. Ensure the cell phone is adequately powered / charged.

D. Preparing an e-Marking Scheme

1. Touch on the mobile smart phone menu icon;
2. Locate the sound / voice / audio recording pre-installed set-up package;
3. Touch on the recording set-up package to open up;
4. Bring mobile-smart phone close to the mouth (for quality out-put);
5. Hold and recite aloud the typed / written MCO marking scheme;
6. Select the "start recording" option;
7. Recite the marking scheme orderly (e.g. 1. A, 2. B, 3. C.4. D, 5. E, etc.);
8. Touch the "stop" recording selection;
9. Rename the recorded eMS file;
10. Save the recorded eMS to the phone or memory device; and,
11. Test to ensure no speech errors or repetitions were captured.

V. STEPS TO E-MARK MULTIPLE CHOICE OBJECTIVES (MCO) EXAMINATION

➢ Capture a high fidelity eMS, rename and store it in the mobile phone;
➢ Alternatively transfer the eMS file to *"music player"* phone application;
➢ Set the phone music player to "repeat 1 song" standby mode;
➢ Plug in an earpiece or connect to blue-tooth device and pair with it;
➢ Arrange properly the MCO examination booklets / scripts to be marked;
➢ Select "play" mode on the mobile phone; carefully listen and follow the eMS speech content and tick right or based on "score" or "fail" vice versa until the last number is marked;
➢ Pick the next booklet /script and continue ticking "score" or "fail" accordingly (i.e. if the eMS is not paused for any cogent reason) as it would restart automatically from the first to last number continuously; and,
➢ Rewind, or forward the eMS at any number when a point is missed, doubted; or pause when distracted.

Note: "Hands-free, "speaker out" or "loudspeaker" modes could be selected to avoid auriculae pains.

A. Merits of e-MS

✓ It is faster than the traditional paper written/typed marking scheme system;
✓ Saves a lot of time;
✓ Less stressful;
✓ Easy and user friendly;
✓ Logical and comprehendible (especially where writing is illegible);
✓ Gives lots of fun and convenience;
✓ Check mate the burden of memorising the marking scheme;
✓ Yield high accuracy and precision;
✓ Maximise marking out-put (i.e. increase the amount of scripts/booklets) marked per day; and,
✓ A sort of "Push To Talk" (PTT) enhancement to examiners with poor eye sights.

B. Demerits

❖ Phonemic conflict/confusion may occur on some letters with analogous phoneme;
❖ It does not rewind or forward accurately because the mobile phone software reads the eMS file digitally;
❖ The voice / audio / sound recording pre -installed handler neither reverse nor auto play, rather it always start all over and afresh;
❖ eMS could / may play faster than the examiner's mind, listening skills and ticking/writing;
❖ Problematic and confusing where students chose to number or answer the MCO examination questions haphazardly;
❖ eMS may include captured noise(s) of the environment, especially where recorded at home/school;
❖ Often requires ear enhancements (earpiece / blue-tooth device) for efficient listening;
❖ Long term use can cause eardrum fatigue and headaches;
❖ It stops and cannot work when mobile-smart phone battery shutdown;
❖ Fail completely where students write or copied down the optional words or phrases of the MCO examination as the answers, instead of just the exact alphabets/letters; and,
❖ Susceptible and vulnerable to distractions from busy network phone calls, Short Multimedia Messages (SMS), video calls and other chat notifications.

VI. FINDINGS AND OBSERVATIONS

The field of eMS using smart phone could be further developed on a more grand scale once several research and academic writings take it into consideration. There could be the possibilities of the creation of electronic handler software specifically designed for more efficient tasks. In the light of developments, meticulous care and considerations would be put in place to eliminate the several demerits of the scheme so as to carry all along. For instance, a method of assistance must be embraced as well for examiners with ear or any hearing difficulties. This is evident because the eMarking would be of great help to developing countries like Nigeria to attain timely and efficient marking of the students' examinations.

Moreover, mobile literacy would be further entrenched among many examiners if the technique is employed in its fullest state. Through this, the economic aspect of smart-mobile phone would improve too as the limitation of phone purchase would rise. Likewise, software developers would

surge to the task of marking a new and upgradable eMarking application world-wide. Thus, a band of three parties that comprises the academic writers, smartphone vendors and software inventors would all benefit the outcome of the technique in the end.

A. Other Negativities

Unlike any other computer based assisted marking, eMarking was noticed from various angles as a detrimental scheme to those with any kind of ear and auriculae vexations. It has a negative effect in some ways similar to the ones associated with "earpiece" and Bluetooth devices. These may include damage to eardrums and or lead to infectious aureculae related diseases. Even when used via the "speaker-out" mode, the eMobile marking system would perhaps cause headaches and boredom to some examiners over long period of time.

Two other factors could also be linked to mobile phone eMarking namely: dependence on electronic devices and a cut in man-power development. Therefore, a discredit may be scored in this view, especially in developing countries where the strength of man-power outstretched scope for source of energy generation.

VII. RECOMMENDATION

It is fair to say that examiners would favour this pilot eMarking programme, even though a vast majority would opt for more advanced applications to handle the scheme. While the few that sees it as relevant, with time too, suggestions for betterment would ensue. For the majority, where the scheme is advanced; more profit making in paid marking jobs would be rekindled and increased. What is primary now is the wait for the near future time to see the transformation and transcendence of mobile phone eMarking technique.

VIII. CONCLUSION

This expository study which involves the use of mobile phone to overcome marking of MCO examination proves to be evolutionary and dynamic through its course. Once exploited, developed and utilised, it could ease the marking workload of both teachers and hired examiners. It could also greatly facilitate the time covered to achieve examination marking and help in monitoring students' performances.

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