

CURBING EXAMINATION FRAUD THROUGH INNOVATIVE TECHNOLOGY IN QUESTIONS DISTRIBUTION SYSTEMS

Introduction

Owing to the worrying trend examination malpractice in Ghana poses to the quality of pre-tertiary external assessments, i.e. the Basic Education Certificate Examination (BECE) and West African Senior Secondary Certificate Examination (WASSCE) respectively, Africa Education Watch (Eduwatch) in June 2021 commissioned a report on the 2020 WASSCE which detailed the causes of examination irregularities by the various actors in the examination value chain and called for a collective effort by all stakeholders led by the Ministry of Education (MOE) to identify and address the causes of examination irregularities, especially question leakages, and ensure a more credible certification system. One of the recommendations in Eduwatch's WASSCE 2020 Report is the digitization of the examination questions distribution system to minimize the human influence in the questions transmission chain and eliminate fraud. This Policy Brief explores two key digitization options for enhanced questions security.

Background

For an education system to yield positive and quality outcomes, there is the need for a robust assessment mechanism to track, measure and improve its performance. Assessments form an

integral part of any education system and Cowan (2005) contends that assessments encourage active learning, measure learners' progress and help develop critical skills among other.¹ When considered broadly, assessment involves the use a wide variety of tools or methods to evaluate, measure and document the academic readiness, learning progress, skills acquisition or educational needs of learners,² but the term is often understood as the traditional standardized tests administered to a large population of learners in high stake examinations based on which decisions for learners to progress to higher stages of education are made.

According to Campbell's Law, the more a quantitative social indicator is used for social decision-making, the more it will be subject to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor.³ This, accurately describes the BECE and WASSCE which are both standardized tests conducted for Junior and Senior High School students in Ghana, and the results used to decide if candidates progress to the next level of education or not. The high stake nature of these examinations breed various forms of fraud at different levels in the value chain, leading to reduced integrity in the process and low credibility of results obtained in these tests. It is not surprising, that the conduct of the BECE and WASSCE in Ghana over the years

¹ Cowan, J. (2005). In *Designing Assessment to Enhance Student Learning*. Available at http://www.heacademy-ac.uk/assets/ps/documents/practice_guides/practice_guides/ps0069_designing_assessment_to_improve_physical_science_learning_march_2009.pdf

² Race, P., Brown, S. and Smith, B., (2005). *500 Tips on assessment: 2nd edition*, London; Routledge

³ Campbell, D. T. (1975). *Assessing the impact of planned social change*. In G. Lyons (Ed.), *Social research and public policies: The Dartmouth/OECD Conference*. (Chapter 1, pp 3-45). Hanover, NH: Dartmouth College, The Public Affairs Center. (p. 35)

have been fraught with numerous irregularities, so much so that it is described as an annual ritual due to its persistence and the 2020 WASSCE was not different with a section of the public suggesting that it is by far the examination characterized by the most irregularities. This sentiment, in part is due to the leakage of details of WAEC examiners which was a first in assessment history in Ghana.

Examination Fraud

WAEC defines examination malpractice as any irregular behavior exhibited by candidates or anybody charged with the responsibility of conducting examination in or outside the examination hall, before, during, or after such examination with the aim of taking undue advantage¹; and annual reports on the conduct of WASSCE in Ghana by WAEC notes leakage or foreknowledge resulting from improper handling of examination questions during the printing and distribution process as a form of examination malpractice. This aligns with the argument that excessive human interference in any system breeds biases and fraud.² A 2018 trend analysis of examination malpractices in WASSCE by the International Final Awards and Examiners' Appointment Committee (IFAEAC) points to a worsening situation³, thus the need for attention on use of ICT to reduce the human interferences in handling examination questions, as another dimension of mitigating examination fraud in Ghana.

The Use of Technology in Curbing Examination Fraud

Even though modern trends of examination fraud involve the use of technology such as mobile phones, social media, digital wrist watches etc.,

technology still remains a great part of a multi-faceted approach to tackling examination fraud. Some countries have taken the lead in this regard by installing CCTV cameras in examination halls, using biometric verification of candidates and facial recognition systems among others. Different examination frauds and malpractices occur at different stages in the examination value chain, thus different strategies should be adopted to mitigate same. One of such is the examination questions distribution stage of the examination value chain, where after the printing of exams questions by WAEC, the Ghana Police Service and GES take custody of the questions at various times until they arrive on the desks of candidates.

Under the current arrangement, sealed question packs for each of the over 700 examination centers are transported from WAEC to depots at the district and regional levels. While most depots are police stations, a few are senior high schools and WAEC offices, all manned by state security. To wit, questions are always in the custody of the Police until dispatched hours to the examination time under the escort of a GES staff and state security to the examination center. The GES staff, and a WAEC External Supervisor are supposed to play key roles of ensuring question packs are sealed and intact, ahead of being received at the examination center. Unfortunately, due to the high number of examination centers and human involvement, this process suffers some integrity deficits as the compromise of one person could lead to a leakage, which is not possible to trace within the current manual system.

The conduct of the 2020 WASSCE saw instances of examination questions being leaked. While WAEC claims questions leaked after they

¹ West African Examination Council (WAEC) Publication on Examination Malpractice (2003).

²Lebowitz, s. (2019). 58 cognitive biases that screw up everything we do. Business Insider Africa; June 5, 2019.

³International Final Awards and Examiners' Appointment Committee Report. (2018).

had left the strong room, no one has been held responsible since there is no fact pointing to the exact location where that question pack may have been opened and leaked unto social media hours ahead of the examination. Similarly, on 20th August 2021, questions for the Food and Nutrition Practical Paper 3 were leaked on a social media questions marketing platform two-and half hours before the paper. It is impossible to trace which question pack out of the over 700 was opened and at which location, and therefore impossible to hold anyone to account. The puzzle brings us to the point of engaging technology to either transmit or secure questions for the purposes of accountability.

Digitizing the Examination Questions Distribution Value Chain

To forestall the future occurrence of examination questions leakage within the question distribution chain, the 2020 WASSCE report by Eduwatch recommended a digitization of the questions distribution system through an internet-based encrypted email system, a method of transmitting data where only the sender and receiver can read the email message, i.e. have access to the examination questions; and nobody in between can read or tamper with it. This should be done 30-45 minutes ahead of the examinations, by which time all candidates should be seated. The questions will then be printed in the open at the Centre, and shared. This will be feasible in the short to medium term, as over 90% of senior high schools, according to the Ministry of Communications, already have Wi-Fi connectivity. All Senior High Schools (SHSs) require in addition to the Wi-Fi, a printer and backup power, if government completes the Wi-Fi connectivity to all SHS.

The Electronic Seal System as an Alternative

As indicated earlier, there are three locations within the questions distribution system where sealed question packs can be opened:

- a. At the depot (guarded by the Police)
- b. On transit from depots to schools (guarded by Police/GES staff escort); and
- c. At the school (Handed to GES staff)

During this process, question papers are kept in sealed plastic packs which require physical tearing to have access to; but there is no system to determine exactly where along this transmission chain question packs are opened. The game changer is to have a technology that is virtually impossible to open question packs without the time and location being recorded. These two variables are key in determining who had custody of the papers when the seal was broken, and whether the time the seal was broken was sanctioned by WAEC's guidelines.

To secure examination questions and ensure question packs are only opened in the examination hall, 45 minutes or less to the commencement of an examination, MOE/WAEC should explore the use of an electronic seal system, where a PIN code or biometric identity data is required to open the seal. With this technology, not only will WAEC's External Supervisor have exclusive access to the PIN code to open the question pack, but when this seal is broken, the date, time and location are transmitted unto a central server using universal satellite connectivity. A similar technology is used by the Electricity Company of Ghana (ECG) and GC Net in tracking the opening and location of metres and containers. A permanent question box made of unbreakable polycarbonate material could be fabricated to contain a maximum of 2,000 question papers and designated for each school/center per examination paper. This reusable container shall

contain an in-built lithium battery which lasts 14 days after charging and a universal sim with satellite connectivity, ensuring there is internet connectivity and communication to the main server irrespective of its location. The 14 days battery life allows WAEC to transport questions to the depots at least one week prior to a particular paper, and another one week of storage at the depot before the day of the paper. With this technology, WAEC should easily locate the point and time at which a seal is broken, and who had custody of the question box at that time. This will provide the basis for demanding accountability from actors within the questions distribution system.

Next steps

Eduwatch strongly recommends a piloting of these recommended technologies, not only in Ghana, but other WAEC member countries facing similar challenges, as part of an international policy reform agenda to strengthen the pre-tertiary external assessment systems of Ghana, Liberia, Sierra Leone, the Gambia and Nigeria. Governments in WAEC member countries must lead the process to collectively improve credibility and accountability in the external assessment system.

Conclusion

Ghana is part of the global system, and for her students to effectively compete with their counterparts across the globe, the MOE and WAEC must establish and maintain assessment standards in line with best practices around the world; the MOE must set and enforce high standards in the sector; and WAEC must revisit their objective to conduct assessments in the public interest, and award certificates of high standards of attainment, similar to that of British Examining authorities. The achievement of these objectives is threatened in part by the

numerous irregularities in our assessment system, caused by leakages which end up on social media marketing platforms. Tackling examination fraud requires a multi-faceted approach, and efforts at mitigating same must include investment in and deployment of modern technology, as it is one of the best ways of dealing with the current trends of examination malpractices and fraud.

About Africa Education Watch

The Education Alert Policy Brief is a monthly publication by Africa Education Watch, an Education Policy Research and Advocacy Organization working to promote quality, inclusive education policy management & reform by drawing on cross-cultural, trans-national and international comparative perspectives across Africa. At Africa Education Watch, we envision a continent with globally competitive human capital that drives economic and social development.

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