A SWOT analysis of the new pattern of examinations of the Kerala University of Health Sciences

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INTRODUCTION

Learning is often assessment driven[1] and teachers often use it to as a tool for student learning.[2] The validity of assessment can be influenced negatively by construct irrelevant variance[3] such as leaked question papers (QPs), equipment failure, etc. The conduct of secure examinations is a challenge for universities, especially the blocking of unwarranted means of communication[4] in examination halls. The Kerala University of Health Sciences (KUHS) took several steps to make the examinations secure. A SWOT (strength, weakness, opportunity, threat) analysis was done for these processes.

THE NEW EXAMINATION PROCESS

All students are given numbered and bar-coded photo identity cards after registration to a course. An examination calendar is published at the start of the academic year and examinations are notified 45 days in advance. After verifying the eligibility, an admit card is generated for each student and sent to the principal of the college electronically who issues signed copies.

Panels of national-level QP setters are given the syllabus, guidelines and the model QP. The QPs in compact discs (CDs) with a broad answer key are scrutinized by subject experts and deposited in a secure QP bank. During every examination, new QPs are added. On the day of the examination, the QPs are loaded to a computer that randomly selects the QP for that day's examination and uploads to a website 45 minutes before the start of the examination. The website is accessible from the colleges from then onwards through a secure login, but the QP remains inaccessible.

A university observer from another college and of a different discipline arrives at the centre 45 minutes before the examination. The observer monitors the proceedings up to the despatch of answer bundles from the colleges. The examination halls are also under surveillance of a closed circuit television (CCTV) system.

The candidates are permitted to enter the halls 45 minutes before the examination. Candidates who do not report at least 30 minutes before the examination are denied entry. Retrieval of QPs at the examination centre is permitted only after this cut-off time.

Thirty minutes before the examination, another password is sent to all the examination centres to access the QP. At every centre, a printout of the QP is taken and photocopied. At the university too, a QP is downloaded and this is then erased from the QP bank.

Students write answers only on bar-coded answer books provided by the university. The answer books and QPs are distributed to the students 10 minutes and 30 minutes before the examination, respectively.

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Complaints about QPs can be reported by students till 5 minutes after the commencement of the examination, i.e. 15 minutes after the distribution of QPs. In case of a complaint, the nodal officer for that series of examinations in consultation with that day's subject expert decides the required action. A correction file (corrections or no correction message) is transmitted electronically through the same system to the centres between 15 and 30 minutes after the commencement of the examination.

An absentee statement is uploaded online from the centre before completion of the day's examination. Immediately after the examination, the part of the answer book (with its bar-code) carrying the student's identity is torn off and despatched to the university. The answer books are packed in bundles of 25 each and sealed. On the same day, all the bundles of answer books, the invigilator's diary, the chief superintendent's diary, and a DVD record of the examination is sent to the university. The observer sends an independent report in a prescribed format.

At the university, the answer books are opened, shuffled and re-bundled in batches of 15 and sent to the valuation camps. The torn off portion with the data on the students' identity is stored securely.

At the centralized valuation camp, evaluators are briefed about the QP and the answer keys, and allotted answer books. The marks are entered in the evaluation slips in the answer books. No entries are permitted on answer books. The evaluated answer book is scrutinized by the chairperson and the bar-coded evaluation slip is torn off. The marks are entered into the computer against the bar-code. The printouts of mark sheets are verified and signed by the evaluator and the chairperson. The answer book goes to another evaluator for a second evaluation and the entire procedure is repeated. Thus, against every bar-code in the system, there are two independent entries of marks of the same paper. The average of these two marks forms the final marks for that paper. If the difference between the two sets of marks is more than 15%, a third evaluation is conducted by a separate team. After the third evaluation, the closer two of the three marks are averaged to obtain the final marks. The pass board meets and approves the results. If grace marks are given, these are entered into the computer and the system calculates the eligible marks. A copy of the list of marks is signed by the chief examiner and stored in a secure place. The bar-coded part of the answer book containing the student's identity—name, register name, name of college and the subject of examination—which was torn from the examination hall and kept in the secure store, is released for entry into the system followed by merger with the bar-coded, recorded marks. The system then picks up marks of the internal assessment and practicals from other locations, and adds these to the university marks to generate the final result. Till this point, these marks remain scattered in different files at different locations. The result is declared on the university's website within 24 hours of the meeting of the pass board. Photocopies of the answer books are provided on request by the student.

THE SWOT ANALYSIS

In-depth interviews with different stakeholders of the university examination were conducted by the KUHS. The respondents included examination and information technology staff of the university, the chief and other examiners, college teachers and students.

A medical college is a system for educating students to produce qualified health professionals.[5] For an educator of health professionals, there could be a conflict of interest in showing beneficence and avoiding malfeasance to society and students at the same time.[6] Performance in examinations is measured and compared with predetermined standards.[7] Students get limited formative evaluation[8] and summative evaluation measures competence.[9] It is therefore important to make examinations secure.

Internal strengths

At the beginning, based on a roadmap, several strategies were devised to implement the system efficiently. A series of workshops were organized to sensitize the affiliated colleges, which are peripheral centres.

The system was largely based on information technology with minimal human involvement. This ensured a tamper-proof system that responded uniformly to all inputs.

The presence of an independent observer at the examination centre ensured effective monitoring. As the observer was from a different field, her/his responsibility was limited to monitoring the conduct and not the content of the examination. The QPs were generated at the university, only after all students were inside the hall.

Answer books instead of loose sheets were chosen as a safeguard against the sneaking in of undistributed papers to the examination hall. Bar-coding ensured confidentiality till the declaration of results. The evaluators and university staff remained unaware of the identity of the candidate whose marks they were processing. The marks remain in different files at different locations and the identity of the candidate remains separated from it. Only after the decision of the pass board, the system collated the marks and decoded the information to generate individual results.

The provision of valuation guidelines and an answer key ensured a uniform marking pattern. The system of double valuation ensured that each examiner was careful in her/his evaluation. Also publishing the results immediately after the pass board meeting insulated the system from any extraneous pressures.

Internal weaknesses

There was no dedicated pathway for transmission of the QPs. This could hinder the transmission. The software that has been developed is not registered and cannot be considered tamper-proof.

There were no systems to counter an observer dropout or connivance between the examination centre and the observer. The CCTV system was not linked to the university for monitoring. Also, there was no jammer for mobile phones and bluetooth devices in the examination halls.

Having a QP bank instead of a question bank was a limitation. The invigilators were untrained and there was no checking by a surprise squad.

Double valuation with inter-rater correlations does have a role in quality assurance.[2] However, we are yet to give feedback to evaluators on their valuation. Students enrolled prior to the introduction of this system in the same colleges continue to remain with earlier universities with the older system of examinations. The same establishment and faculty of colleges are thus involved in the conduct of two types of examinations.

External opportunities

Being a new university, there were no established practices and the staff willingly participated in the implementation of reforms. The courts in India, have on many occasions passed remarks regarding ensuring standards in professional courses. Secure examinations are one measure among many to improve the standards of medical education.

Medical students are against a course lag as postgraduate entrance test in various colleges in India happens at fixed times. A course lag denies them a chance to appear in these, sometimes forcing them to appear in such entrance tests along with their junior colleagues.

Delayed results delay the entry of the new batch of health professionals into practice. The conduct of a course without lag will result in more professionals qualifying and contributing to reducing the gap between demand and supply.

External threats

The public at large is not aware about safeguards incorporated into the examination system. Any system can sustain successfully only if the stakeholders are well informed and apprehensions, if any, are removed. 'A responsive and self-correcting open system is bound to succeed in its performance'.[5]

A fair conduct of examinations may lead to exposure of potential weaknesses of some colleges. If a secure system exposes these then there is likely to be opposition to it. Also most people would prefer a known system with its fallacies rather than a different system with uncertain outcomes.

LIMITATIONS

The SWOT analysis formed a component of the examination reforms. A research study was not the objective. Hence, our study lacks qualitative rigor. Reforms have many components and at each point there are different stakeholders. The QP setters were not available for interview as they were from a nation-wide list and only three information technology staff prepared the software. The largest group of stakeholders were the students, but they were not involved in any of the processes. No one except the first, second and the fourth author were aware of the happenings at every point. Common discussion points covering all the components equally, were not possible.

CONCLUSION

The KUHS has made several improvements in the conduct of secure examinations. A SWOT analysis identified strengths and weaknesses, both internal and external. We believe that the reforms done by the KUHS are a major step towards the conduct of secure university examinations in India.

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