

## Managing Health Education during the COVID-19 Pandemic: The RCSI Bahrain Experience

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## Abstract

**Background:** The Royal College of Surgeons in Ireland - Bahrain (RCSI Bahrain) was closed due to COVID 19. The aim of this paper is to present our experience, in managing teaching and learning, during this pandemic. **Methods:** Following, ethical approval, several meetings were held with the senior faculty and student representatives to select alternative virtual approaches for teaching, learning and assessment with evidence-based instructional design. Informed consent was obtained from all study participants. All procedures were carried out in accordance with relevant guidelines and regulations. In alignment with global scenario, we decided upon early graduation for our students, and expedited the clinical examinations, with special permission from health and education ministries. Two major clinical examinations were redesigned to form a single hybrid clinical examination with two parts. Following all COVID 19 preventive measures, students were taken in groups of seven and simulated patients were substituted for real patients. No more than 40 students were present at any point of time, with no more than 10 examined in one block. 149 out of 152 RCSI students attended the clinical examinations and 524 students from the three RCSI campuses attended the written online examination. A structured survey was conducted to elicit students' perceptions and participation was entirely voluntary. **Results:** 82% of students were happier to be joining the workforce early and, 22% expressed concerns. A comparison of student performance in these examinations against the equivalent components from semester one yielded no significant deviation in student performance, illustrating that the quality was consistent. **Conclusion:** We recommend that the government accredit online or distance learning programmes and explore appropriate methodologies for evaluation of online learning and assessment. Incorporating practical/clinical training, will continue to be a great challenge.

**Background:**

The Royal College of Surgeons in Ireland - Bahrain (RCSI Bahrain) is a constituent university of RCSI which was established in Ireland in 1784. RCSI Bahrain was established in 2004 through an invitation from the Government of Bahrain as a not-for-profit health sciences institution. The university aims to enhance health in Bahrain, the GCC region and beyond, through endeavour, innovation and collaboration in education, research and service. It provides the same qualifications and is under the same quality assurance system of the university in Dublin [1].

The Kingdom of Bahrain is an island state in the Arabian Gulf with a population of 1.5 million of which around half are non-nationals. The country is ranked as the top sixth most densely populated country in the world [2]. Their first case of COVID-19 was recorded on 24<sup>th</sup> February 2020. The country began testing for the virus early and extensively, and in only five weeks, the Bahraini government succeeded in containing the virus. The World Health Organization's (WHO) Regional Office for the Eastern Mediterranean has commended the Bahrain's national strategy to combat COVID-19 and other initiatives to protect public health. Bahrain was the first Arab country to join the WHO's Solidarity Trial to find an effective treatment for the virus [3].

As part of the national safety measures protocol, all public and private educational institutions in Bahrain, including schools and universities, were closed and an alternative remote method of learning was needed to be instilled. While RCSI Bahrain integrated some online education into its coursework, moving all programmes and teaching online proved to be challenging [4]. The fact that RCSI Bahrain is a health university with programmes which depend heavily on practical/clinical training, added further to the challenges [5].

The aim of this review is to present the experience of RCSI Bahrain as an international university operating in the Middle East, in managing teaching and learning during these unprecedented circumstances that may guide others in similar circumstances.

### **Early Graduation of Students**

Medical schools globally have accelerated the graduation of the class of 2020 at a time when the healthcare system needed to provide more physicians. As stated, “These are unprecedented times” with the need to focus the preparation of future physicians in the context of the global emergency, and the need to address potential shortages in healthcare workers through a responsive and flexible medical school response [6].

RCSI Bahrain needed to be responsive to the precipitous closure of the campus two days after the first case of COVID-19 was diagnosed in the country. The campus closure resulted in all clinical placements in our affiliated training hospitals to be suspended. At this time the original final medicine examinations were scheduled at 4 weeks (Observed Structured Clinical Examination - OSCE), at 5 weeks (written) and at 6 weeks (long case/direct observed history examinations) after the closure. At closure of the campus, the majority of clinical teaching for the class of 2020 had been completed and any outstanding teaching sessions were moved to an online format. A review of alternate approaches to graduating the class of 2020 was conducted to ensure it occurred on-time and potentially with an early graduation. Delaying graduation was the least favourable option, given the consequences on each individual student’s career and the potential impact on the healthcare systems of their respective countries. This resulted in an earlier graduation date two months ahead of the original planned date that was welcomed by the healthcare system and the

students alike. The decision for early graduation was in line with the verdict of other major medical institutions around the globe [7-8].

To facilitate an early graduation, a decision was made to expedite the clinical examinations forward and to accommodate this, two major clinical examinations were redesigned to form a single hybrid clinical examination with two parts. Institutional review board of the host institution approved this study. Informed consent was obtained from all study participants. All procedures were carried out in accordance with relevant guidelines and regulations. Hall et al (2020), wrote “The CoVID-19 pandemic has had a major impact, such that our ‘normal course of education’ is not feasible, and yet our systems of medical education are still valid” [9]. The guiding principle for RCSI, as the examinations were redesigned, was to ensure that they remained valid to ensure students could demonstrate achievement of the core learning outcomes and be safely assessed as competent interns. As the campus was closed and access to the teaching hospitals was not possible, special permission was obtained from the health and education ministries to hold the examinations on campus.

To ensure compliance with national guidelines and to protect both students and staff, a number of precautions were introduced. These steps were in consensus with COVID 19 measures followed by other health care institutions [10]. All students and examiners had temperature checks on arrival, all wore masks at all times and students had an orientation session stressing safety measures prior to the examination. Students were taken in groups of seven and all had a detailed briefing by the Head of School prior to their examination. The examinations ran from 08.00 until 18.00 hours. Simulated patients were substituted for real patients, with the appropriate adaptation of the relevant examination cases, which were all designed in conjunction with the parent campus, RCSI Dublin, and blueprinted as valid assessment instruments. The requirements for running the examinations in the context of the

pandemic necessitated four separate examinations to be designed, as no more than 40 students could be on campus at any one point of time, with no more than 10 examined in one block, using social distancing, personal protection equipment, sanitization and deep cleaning. 149 out of 152 of RCSI students attended the examinations without any untoward incidents. All of the long case encounters were recorded and the recordings were sent to the External Examiner (in the UK), who viewed them and provided feedback at a meeting with all examiners, prior to the Board of Examiners.

The written examination was run online using fully proctored software and was undertaken by 524 students from the three RCSI campuses: Ireland, Bahrain and Malaysia. Two separate examinations were run to facilitate students in different locations, from the west coast of the USA through Europe and to Australia. The examination questions were drawn from a comprehensive Question Bank of blueprinted and standard-set questions, to ensure validity, reliability and equity. All 524 students completed the examinations and connectivity issues were addressed in real-time by support provided by staff. Of note there was consistency between student performance in the long case clinical examinations, OSCE and subsequent performance in the written examination.

The final year Nursing students raised a challenging issue as regulatory body requirements require a minimum time of clinical placement for graduation, which was suspended with the University closure and the teaching hospitals being inaccessible. Student nurses, unlike medical students at the same stage, form part of the workforce and consequently the hospitals wrote to the university to request their placement and to offer their support. Discussions with the health and education ministries resulted in an agreement to allow final year nursing students to recommence their placements that allowed them to complete their training and to be able to graduate on time. A survey was conducted to elicit which students wished to resume their placements and participation was entirely voluntary;

all except 5 students indicated that they wished to resume their training. These placements were allocated such that the students would not be working on COVID-19 wards, but their presence would free up more experienced colleagues to be deployed to more critical areas [11].

### **Ensuring Quality of Delivery and Assessment**

For the students not in their final year a significant portion of the second semester was yet to be delivered. RCSI already had the Moodle Virtual Learning Environment (VLE) in place, so there was a high degree of familiarity with this tool amongst students and faculty. This platform was then expanded to deliver an online curriculum. The components of each programme were collated into a master file and made available for academic staff to indicate how they would deliver them through recorded lectures, live streaming, through interactive sessions or through other means. Academic staff were also asked to indicate sessions that could not be delivered through alternate digital means and would have to be deferred. To facilitate this technical assistance to record and/or deliver online, and a suite of resources was made available to them to assist them in engaging successfully with technology enhanced learning.

It is acknowledged that online learning approaches should not involve the movement of didactic, face to face lectures into an online space. In this regard the primary motivator for RCSI was to ensure complete delivery of the curriculum in a superior manner. Bezerra (2020) discussed how the effects of the global pandemic in healthcare education goes beyond a structural reorganisation of courses, requiring a change of attitude by managers, teachers and students and the use of innovative practices which preserve methodologies required to protect core elements of healthcare education [12].

In addition, Martin et. al. (2017) discussed quality in online learning noting that there are no global standards, despite many years of attention, in measuring the quality of online learning and cite the fact that the terms “quality” and “standards” are often used interchangeably [13]. Aldredge et. Al (2019) reported that the debate about quality in online education continues and that the elements for successful E-learning environments to function are quality instruction, academic integrity and security of online platforms [14]. Whilst the rapid move to online provision did not afford RCSI the luxury of programme redesign using evidence-based instructional design approaches, it did not prevent RCSI maximising the quality of online teaching and learning and ensuring the integrity of online assessment.

While MS Teams was the initial platform for rapid recording and provision of lectures, the limitations of this tool as a virtual classroom were recognised and a license for Blackboard Collaborate was acquired. Training and peer support in the use of recording tools were quickly provided to academics who needed this administrative support that ensured that the recorded lectures were made available through the VLE such that curriculum coherence was maintained. Student feedback was elicited continuously and used to inform practice improvement on an ongoing basis. The academic leads for each year held weekly online meetings to elicit student feedback and concerns which, in turn, were used to improve the type and quality of provision. Student engagement was of particular concern and a series of reports was created so that the academics could track student engagement with a variety of resources on the VLE; low engagement was followed up by the academics, the administrative staff and the student welfare staff, where appropriate.

Online examination was a particular area of focus and, from the end of March after the RCSI Dublin campus also closed, attention turned to the Marks and Standards Regulations governing each programme year. Rather than cancelling examinations and awarding marks based on assessment to date, a decision was made to move all years, except



those which contributed to an award, to Pass/Fail facilitated through ExamSoft. In addition, all examinations were redesigned, many becoming Multiple Choice Question (MCQ) based, or in a format that could be completed online. The associated changes needed to ensure that the core learning outcomes were still examined, and appropriate re-weighting of components, was conducted to reflect the examination redesign [15].

RCSI is currently using the E-Speedwell digital examination system for clinical examinations and this was expanded to accommodate large scale MCQ examination delivery. A comparison of student performance in these examinations against the equivalent components from semester 1 yielded no significant deviation in student performance, illustrating that the quality was consistent in the online environment. A decision was made not to try to conduct clinical examinations through online means, based on the firm belief that this would not authentically assess a student's clinical capabilities, and these examinations were deferred to August/September 2020 when we expect to be back on campus.

### **Feedback from Students**

Harvey (2011), cites the UK Parliamentary Select Committee as stating, 'What contributes to a successful university experience is an institution which actively seeks, values and acts on student feedback' [16]. Likewise, the Irish Universities Act (1997) [17] and many subsequent initiatives, such as the Irish Survey of Student Engagement [18], place emphasis on student representation on all levels of university governance. RCSI has well-developed formal and informal mechanisms to ensure the student voice is heard and listened to, and it was of paramount importance to ensure that this was continued and enhanced during these times. From the day of campus closure, students were engaged on a continuous basis, using a variety of media. A daily email update was sent to all students, with information regarding travel, curriculum, examinations and with a focus on trying to provide security, reassurance

and up-to-date information in a context where events and decisions, nationally and internationally, were unfolding on a daily basis.

To manage the academic changes implemented, a daily meeting with the senior Faculty, the Business Continuity Planning (BCP) was held. The Student Council President was invited to join these meetings once a week and this proved a useful platform for high level communication both to and from the student body. Student meetings were also held frequently, primarily using Microsoft Teams; meetings with the class representatives and with the wider classes were held to address concerns, answer queries and take input.

In addition, an online survey to elicit student views regarding early graduation was conducted with the final medicine class (Figure 1). The vast majority of students (82%) were happier to be joining the workforce early and, of the 22% who expressed concerns, these were mostly about the possibility of becoming ill or transmitting the virus to family members, but even these students expressed a desire to join the workforce despite their concerns. In addition, a survey of all students about their wellbeing and about any technical issues being experienced were conducted. Results of these are shown in Figures 2 and 3.

This data was used to inform pastoral activities such as a weekly online “Coffee and Chat” session, meetings with individual class groups, and an initiative to make mobile internet devices available to the small number of students in Bahrain who were experiencing serious internet issues.

### **Sharing Experiences with RCSI Dublin**

There are well developed communication mechanisms between the Bahrain and Dublin campuses, and these proved invaluable in the context of the disruption caused by COVID-19. The RCSI Bahrain campus closed 3 weeks before the Irish parent campus and the Irish senior management team has noted the value of the Bahrain experience in enhancing

their own preparedness for closure. The Bahrain senior management team maintained daily contact with their counterparts in Dublin, with wider meetings of the management teams from each campus taking place around core matters – initially the examination and graduation of the class of 2020 and then focused on the wider student body. From sharing of recorded lectures, to joint revision of Marks and Standards regulations, collaborative delivery of online examinations, to a focus on the structure and implementation of the next academic year, RCSI's well-developed collaborative discussion and decision-making bodies proved to be robust and responsive in the context of a rapidly changing external environment.

Staff and student communications are shared between both campuses to ensure consistency of messaging. Our internal communications platform (Workvivo) is used across both campuses with select staff given access to both platforms to ensure relevant cross-campus communications are shared accordingly. In addition, all staff within RCSI globally have been migrated to a global exchange from an ICT perspective to allow internal collaboration through the virtual learning environment, Microsoft Outlook and Microsoft teams.

## **Conclusion**

The pandemic of COVID-19 introduced greater challenges to all the higher education sectors. While RCSI Bahrain was successful in managing this unprecedented situation, more work has to be done on analysing our experience, and that of others, to implement the needed changes to ensure student access to learning, without compromising their safety or that of the staff [19]. RCSI Bahrain sees the current impetus to provide education through Technology Enhanced Learning (TEL) as an opportunity to expand and diversify our learning opportunities and resources for our students. More importantly, our goal is to map TEL to support our teaching and learning pillar and to enhance the learning experience of the

students. In universities such as RCSI Bahrain, which has only health subjects, training and practice, it becomes essential for the programme components, to adapt to a blended model of face-to-face and online delivery, which fits ideally during this new normal [20], We believe that the university's continuity plan for the short term had the necessary framework to guide us towards a vision of a more resilient and technology-based higher institution in the future. This vision will support the university's strategic goal to take a leading role in this field within the region.

On a national level, we have recommended that the government review their stance regarding remote learning, as currently most of the countries in the Middle East, including Bahrain, do not recognise or accredit online or distance learning programmes. The Government should review their national higher education strategies and incorporate a policy of TEL that accepts this format of learning as an integral part of education [21]. As part of the accreditation process of tertiary institutions, the relevant authorities must ensure that universities have the appropriate infrastructure and the experience to deliver and assess this method of learning. This includes a reassurance that all teaching and learning qualifications have a TEL component as a means of upskilling academic staff in this area. Moreover, leaders should review their national research strategy with a view to encourage research in the field of TEL, particularly in relation to authentic assessment and virtual practical training, and to promote global collaboration in this field [22, 23]. Finally, an appropriate methodology for evaluation of online learning to assess its efficacy and ensure this method of education supports the strategic needs of the country and the tertiary education sector needs to be developed.

### **Practice Points**

- Frequent meeting with the senior Faculty and Student representatives for bidirectional communication
- Select alternative virtual approaches for teaching and assessment built upon evidence-based instructional design
- Redesign examinations to suit an online format, ensuring that the core learning outcomes are assessed, wherever possible
- Seek, value and act on student feedback
- Explore appropriate methodologies for evaluation of online learning and assessment

## **Declarations**

- **Ethics approval and consent to participate**

The study was approved by Ethics committee of the host institution

- **Consent for publication**

No identifiable data are presented within this article.

- **Availability of data and materials**

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

- **Competing interests**

The authors have no declaration of interest to report.

- **Funding**

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- **Authors' contributions**

The concept was initiated by SO and JH, KS, AA, AN, SHM, GB SLA and SO all contributed to the writing of the manuscript. All authors have read and approved the final version

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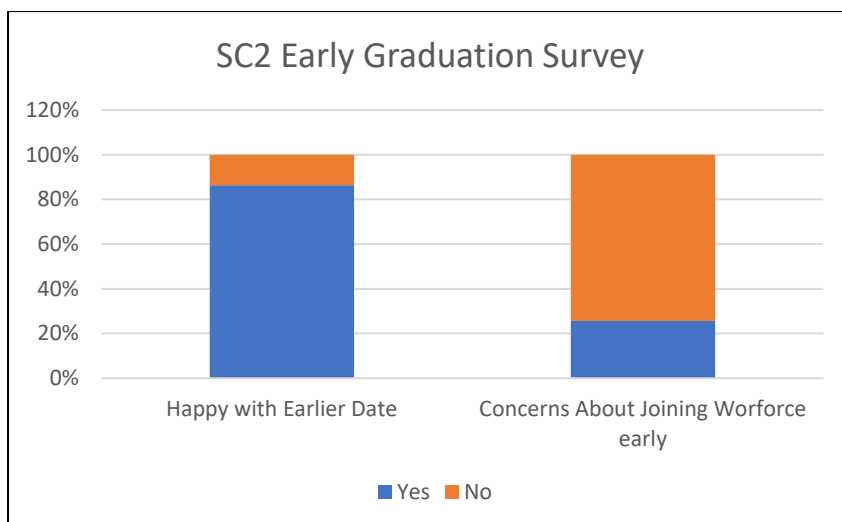
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## **Figure 1**

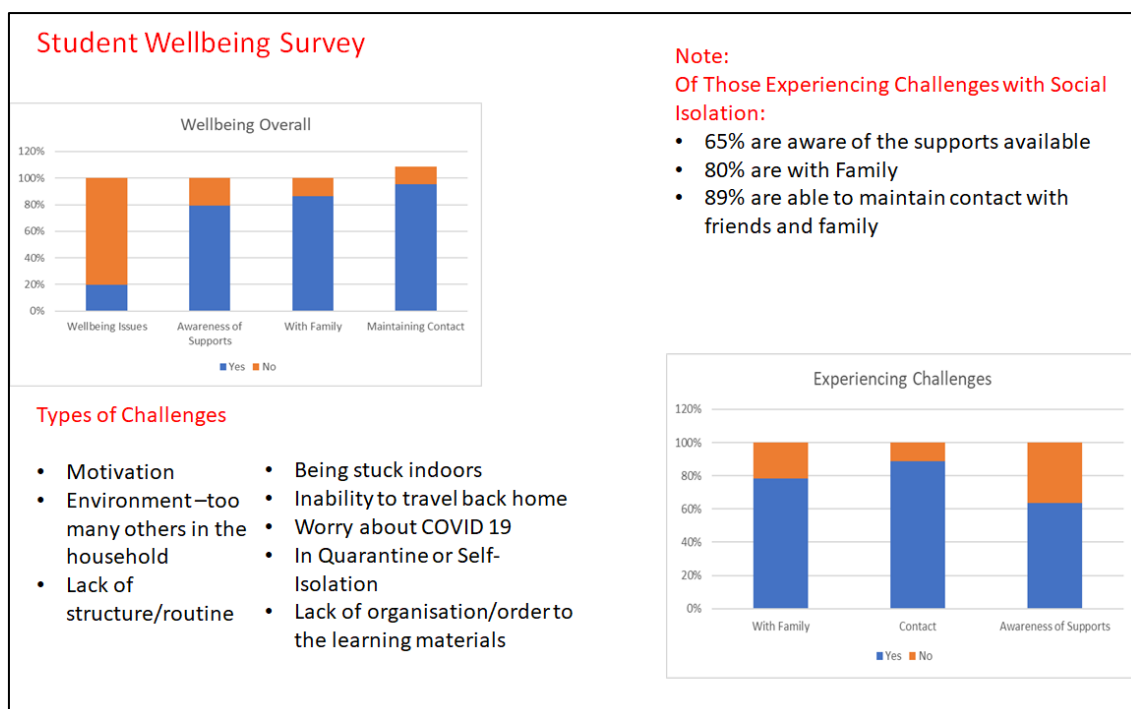
Early Graduation Survey Summary





**Figure 2**

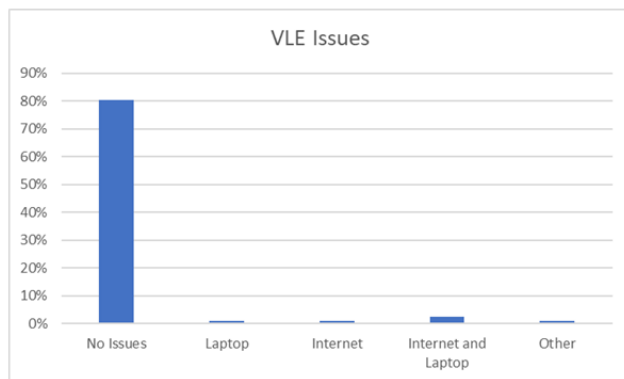
Student Wellbeing- Survey Summary



**Figure 3**

VLE Issues -Survey Summary

## VLE/Technical Issues



### Types of Issues

- Slow internet
- Laptop Freezes
- Electricity cuts out
- Lecture audio
- Poor Connection
- Unstable Connection
- Intermittent

Note: VLE - Virtual Learning Environment