Transitioning from Pandemic to Endemic Pedagogy: Redesigning Teaching and Learning

Siham G. Farrag, Mohammed F. Abushammala, Sachin Kuckian

Civil Engineering Department, Middle East College, Knowledge Oasis Muscat, Muscat, Sultanate of Oman

[siham@mec.edu.om, mabushammala@mec.edu.om, skuckian@mec.edu.om]

www.mec.edu.om

Abstract

COVID-19 was declared a pandemic by the World Health Organization in 2020. A year later, we consider the shift and accept the necessity of continually re-imagining blended learning for life and work in the wake of COVID-19. This paper offers strategies initiated in teaching and learning at Middle East College, Muscat, Sultanate of Oman, during and post-pandemic. This research also shows how these changes have affected students' learning. It involved three stages of Practise: Surviving during the pandemic without compromising on any loss of education, managing continuity, and accelerating the education system by using the opportunity.

All students registered in the Civil Engineering Programme in the Spring 2020, Spring 2021, and Spring 2022 semesters were involved in this study. The teaching and learning practise was evaluated utilising quantitative and qualitative methods. The quantitative method involved the students' performance in the assessment and findings from the survey. The qualitative method includes online analysis of students' feedback through Blitz Survey and Module Evaluation Survey (MES) by the Quality Assurance Office (QAO). The results indicated the approach adopted was quite effective in enhancing students' learning. The findings support the intuition of teachers seeking to help their students become digitally fluent in creating better tools and methods to support effective blended teaching and learning.

Keywords: Civil Engineering, Oman, Covid-19, HyFlex.

1. Introduction

Education is about more than simply awarding certificates to students; it is also about assuring the importance of their learning for success and preparing them for future uncertainties. The World Bank's research has shown a clear link between education and greater lifetime earnings for people. According to the study, increasing levels of education allow people to live longer lives, question preconceptions and misconceptions about the world, themselves, and others, and acquire the capacity to build deeper understandings of the world (Borgonovi & Burns, 2015, Lawrence, 2017).

Higher education has been mostly conventional and unchanging for more than a century. Classroom teaching based on the expertise of an expert instructor is still widely acknowledged as the primary teaching style in many educational institutions. A teacher's purpose in conventional situations is to convey knowledge to those who lack it (Holz-Clause et al., 2015).

Despite numerous technological advancements and innovative pedagogical approaches, most colleges and universities continue to use this top-down traditional teaching method.

Higher education has been plagued by the need for change for many years. Various publications in higher education have been written to assist teachers and staff and to provide a scientific foundation to institutional and faculty-driven enquiries into teaching and learning; demonstrating the usefulness of active learning, student interaction, and high-impact teaching strategies (Hutchings et al., 2011; Freeman et al., 2014; Kuh, 2008; Mayhew et al., 2016). Simultaneously, some colleges and universities established or expanded teacher development programmes to enhance teaching and achieve more equitable student outcomes (Beach et al., 2016). Higher education improvement was still limited in terms of movements; pushing students to be actively involved in learning and developing meaning from that learning (Soloway et al., 1996).

The epidemic prompted university facilities to be locked down and closed, and universities transitioned from on-campus to totally online 'remote instruction'. The concept of the university as a bricks-and-mortar institution was challenged like never before (Marsicano et al., 2020). This shift was sometimes disruptive for everyone concerned, some universities and colleges saw rapid changes in pedagogy and curriculum required (Herron, 2020; Wood, 2021) with teachers totally redesigning courses overnight and students developing new methods of attending college (Smith & Hornsby, 2021).

Moreover, one of the most crucial issues during and even after the pandemic was designing the pedagogy in ways that also contribute to students feeling cognitively and emotionally; trusting faculty as teachers and persons who care about their students' best interests (Imad, 2020).

Therefore, this study explored the changes in designing teaching and learning and the impact of these changes on students through the last years since the pandemic, and the future of education in Civil Engineering Programmes at Middle East College, Sultanate of Oman. The evaluation involved the students' performance in the assessment and

the feedback of students through Blitz Survey and MES conducted by the QAO at the college.

2. Case-Study Practice

Our practise consists of three stages:(1) surviving during the pandemic to decrease when the college was closed, (2) managing continuity of learning to promote learning recovery as college reopened safely, and (3) using the pandemic as an opportunity to improve the education system to make it stronger and more equable.

2.1 Stage 1: Surviving

We completed a week of our regular operation in spring 2020 when the teaching and learning were face-to-face. Despite an exceptional closing of the college, education systems have responded by developing remote learning plans which depend on several approaches that combine different technologies (softcopy materials, voice-over PPT, videos on Moodle, etc.). Also, some mobile applications have been used, such as Kazila, WhatsApp, and other apps to contact students.

The classroom teaching was shifted to synchronous online teaching using the new technological tool, MS Teams, which was already available as part of the institutional subscription. The key task was to provide the staff development programme and orientation sessions to students for undertaking online sessions during the lockdown period.

However, because of these new delivery modalities, numerous teachers had difficulty navigating this new shift. Therefore, the key success during that time depended on several aspects, including helping instructors manage this crisis and teaching them how to use the new technologies. In addition, a daily online meeting with the programme managers (PM) and Head of Department (HoD), as it was required, and each teacher to provide a weekly report on each module, including individual student's attendance, performance, and achievement.

Since the worth of the assignment is determined by its quality in relation to its intended learning objectives (Buijs et al., 2013; Sun et al., 2019; Farrag, 2020), it was also due to the lockdown of the college that the assessment was designed especially to be a coursework-based assessment during that time. The assessment following MEC Special Regulations and Assessment Approach Spring 2020 and the students in the programme were assessed twice: Assignment 1- 50%, Assignment 2 -50%.

Also, the teaching method was redesigned to react quickly to this problem. Teaching the laboratory-based activity during that stage was based on faculty-made videos; and support videos on those experiments for which each student had different data and provided their reflection based on these data. Regarding the modules that require software, the remote access technique allows the student to use the computer on campus. Also, the students were guided to download and install the educational version of

most of the software. For the unavailable educational copy of the software, and for quick action, the teachers found alternatives to that software.

2.2 Stage 2: Continuity Management

This situation demonstrates that sustaining high-quality education requires more than technical infrastructure, software, and content. Teachers need to devote substantial time and effort to maintaining good connections with their students and delivering class content remotely. Teachers also learnt how to combine multiple modes of delivery (i.e., online, offline, and blended) to facilitate effective learning.

Therefore, workshops were conducted to provide technical support and help teachers plan for online lessons using MS Teams and MS White Board, graphics tablets, neck bands with inbuilt microphones, classroom speakers and mobile phones. At this stage, we continue with the same assessment criteria to be a coursework-based assessment following MEC Special Regulations and Assessment Approach Spring 2020.

2.3 Stage 3: Improving and Accelerating

We learnt at this stage how the crisis might be used to improve teachers' skills as before. The education systems started to increase investments in remote learning, adopting blended models, or developing remedial e-courses. In accordance with that, MEC has implemented its HyFlex-based model since Autumn 2021 across the institution (Kiran et al, 2022). All modules offered by the college were delivered using this approach during the two main academic semesters (Autumn 2021 and Spring 2022). To ensure social distancing norms, sessions with more than 25 students were split into 'on campuses and 'online' groups that alternated the modes during their 14-week study period.

Overall attendance percentages and specific attendance percentages for on-campus were mandated in both semesters for a pass in the module and the overall passing marks. The assessment was designed to be a coursework-based assessment. Therefore, the assessments follow MEC Special Regulations and Assessment Approach Spring 2020. Students in the programme this semester were assessed three times in all modules; modules with the End Semester Exam (ESE) in their modules descriptors had two internal assignments, and ESE with weightage of 25%, 25%, and 50%, respectively.

To effectively engage students in the learning materials and make the class more active, a maximum of 10% of the total assignment mark has been assigned to in-class, pre-class and post-class H5P activities in both internal assessments. Moreover, to reduce the AIV cases, all mathematical modules were designed with automated excel sheets with different data for each student (Farrag, 2020). Additionally, all students have conducted awareness sessions on students' academic integrity violations at the beginning of each semester.

Providing constructive formative feedback on the assignment 10 days before the due date helped students

improve their performance. Finally, to enhance students' ability to develop knowledge on modules studied critically, the students were asked to complete one MOOC course (Kiran et al, 2022) with maximum 10 marks of the internal assignment.
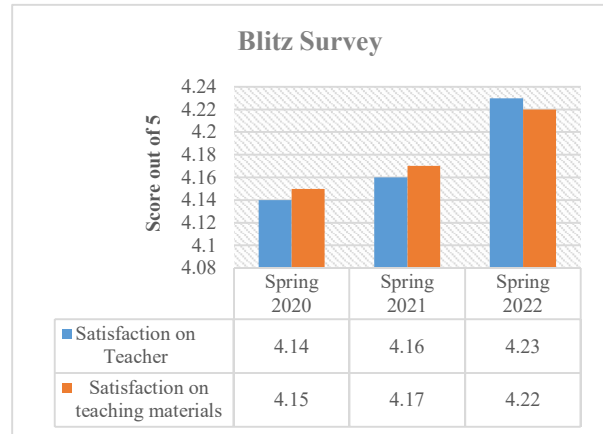
3. Methodology

The applied Practise techniques were assessed using qualitative and quantitative methodologies (Creswell and Clark 2006, Nutly,2008). The quantitative approach involves assessing and analysing survey results based on student performance and comparative analysis of the average marks. This research included 1164, 997,945 students enrolled in the Civil Engineering Programme for Autumn 2020, 2021, and 2022 semesters, respectively. The internal assignment (coursework), final exam, and classroom activities were reviewed by an internal department moderator and an external moderator from the partner university to confirm the correctness of the findings (Coventry University).

The qualitative technique involves analysis of the feedback of students on two online surveys. The two online surveys were conducted via SIS platform to all students; the first one is called Blitz Survey that was conducted during the fifth week to evaluate the teaching quality in terms of satisfaction with teaching materials and teachers. The second one is called the MES that was conducted during week nine. The college's QAO conducted the surveys. The survey topics were identified from MES by the quality control office. Survey items were explicitly written to understand how the transition to remote instruction affected college students across various dimensions. The online survey was available to all students via SIS. Blitz Survey was completed by 326,494, and 446 students in spring 2020, spring 2021, and spring 2022, respectively. And MES survey was completed by 166, 354, and 397 students in spring 2020, spring 2021, and spring 2022, respectively.

For the current study, we focus on total satisfaction and seven specific survey questions out of ten. These questions include (quoted list):

- Advice and support from faculty were available when required,
- Effective/useful feedback to the assessments,
- The study materials provided for this module were useful and up to date,
- The teaching and learning activities of the module and assessments were well co-ordinated,
- The teaching and learning methods used were innovative and made learning interesting,
- The type of assessment was suitable to the module,
- Timelines and conduct of the assessments were appropriate.

Responses were on a five-point agreement scale (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree).

Blitz Survey

	Spring 2020	Spring 2021	Spring 2022
■ Satisfaction on Teacher	4.14	4.16	4.23
■ Satisfaction on teaching materials	4.15	4.17	4.22

4. Findings and discussion

4.1 Students Performance

To evaluate the student's performance, a comparative analysis of the average marks between the year Spring 2020 when the pandemic began, spring 2021 during the pandemic, and spring 2022 after the pandemic, was conducted. Table 1 illustrates average marks during the three semesters by the module level, while table 2 compares students' marks in spring 2020-2021-2022 semesters.

The analysis of student's performance by student's level shows higher improvement in students' performance with high level (level 3). This may be due to the students having more capability to adapt to the system change. The improvement ranges from 2-3%. The improvement wasn't observed as the type of assessment was changed over time. However, the overall achievement was good.

Table 1. Average marks comparison by the module level.

	Spring 2020	Spring 2021	Spring 2022
Level 1	75.99	75.23	69.74
Level 2	70.2	74.27	72.58
Level 3	71.65	72.55	73.97

When comparing the overall achievement of students during and after the pandemic, we can see a slight improvement between spring 2020 and spring 2021, when the pandemic started to be over and the situation was relatively settled. However, in spring 2022, there was a slight decrease of around 2%. This may be due to changing the type of assessment (see sec 2.3).

Table 2. Average marks comparison by Semester.

	No. of modules	No. of students	No. of student Assessed	Pass%	Average mark
Spring 2020	44	1164	1157	96.89	72.41
Spring 2021	42	997	988	96.86	73.85
Spring 2022	40	945	909	94.17	72.44

4.2 Survey Analysis

The Blitz Survey was compiled by QAO, the overall satisfaction on teachers was 4.14, 4.23, and 4.16 out of 5 in spring 2020, spring 2021 and spring 2022, respectively, and the overall satisfaction on teaching materials was 4.15,4.22 and 4.17 out of 5 spring 2020, spring 2021, and spring 2022, respectively. Figure 1 shows students' satisfaction of Blitz Survey.

The figure shows that student satisfaction of teachers was high; that proves the effort and the support that was provided from the teachers. Also, during the Hyflex, it proves how the teachers were able to deal with the technology and manage the class effectively.
The Student Experience Office (SEO) compiled the MES at MEC in Middle East College. The students were asked to indicate their satisfaction on the whole. Fig. 2 shows the MES.
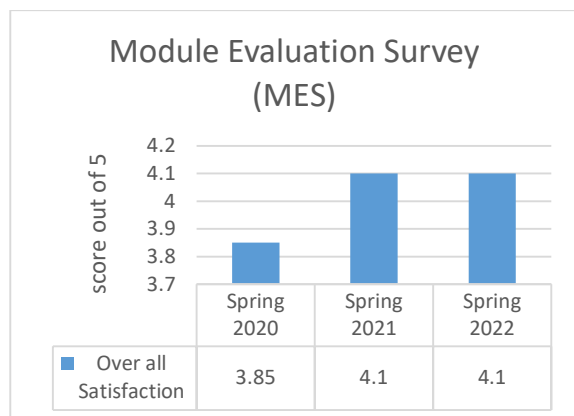

Figure 2: Module Evaluation Survey – Overall Satisfaction

The overall satisfaction was very good, 3.83, 4.1, and 4.1 out of 5 in spring 2020, spring 2021 and spring 2022, respectively

5. Conclusion

COVID-19 has brought many existing patterns and trends to the surface. As a result, we can expect to increasingly have Hyflex forms of teaching and learning, in different spaces, inside and outside the college.
The feedback and performance results analysis showed that the practise effectively enhanced the students' achievement and supported active learning relevant to real life. Students' feedback also reflected that more interactive activities and formative assessments improve students' performance in coursework and end semester examination. It is strongly recommended to develop the teaching and learning process during the HyFlex teaching mode, and to focus on co-curricular and extracurricular activities to enhance the overall teaching and learning process. Until it is correct then the student cannot move to the next question.).

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