

# SWOC analysis of e-learning educational services at Rawalpindi Medical University in the midst of COVID-19

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## Abstract

**Introduction:** The SWOC (strengths, weaknesses, opportunities, and challenges) analysis of e-learning at Rawalpindi Medical University during the period of the COVID-19 pandemic was conducted.

**Methods:** This cross-sectional survey-based study using a mixed quantitative and qualitative approach was conducted at Rawalpindi Medical University in June 2020 through an online survey. Data were collected electronically from 400 undergraduate medical students and faculty members using online Google forms. The study was carried out after obtaining ethical approval from the Institutional Review Board of Rawalpindi Medical University. Anonymity and confidentiality of data were maintained.

**Results:** The salient features of e-learning at RMU was the establishment of prospect for remote learning in unprecedented circumstances and promotion of learner-centered, self-directed lifelong learning while the unavailability of internet and professional isolation was reported as a potential weakness, an opportunity provided by this platform was the introduction of blended learning programs and digital competence while potential challenges reported were conduction of valid, reliable and feasible e-assessment and strategies for teaching, learning, and assessment strategies for psychomotor and soft skills.

**Conclusion:** In-depth analysis of e-learning during the midst of COVID-19 has made this evident that RMU is fully equipped and ready to cope up with any unforeseen event with regards to undergraduate medical education. There is startling need to develop infrastructure for long term sustainability and acceptability by availing opportunities, improving strength, and overcoming potential weaknesses and challenges.

**Keywords:** SWOC, e-learning, COVID-19.

## Introduction

Since the report of the first cluster of COVID -19 (CORONA Virus) cases around the end of December 2019 in China, it has shown rapid spread over a short span of time.<sup>1</sup> On 30<sup>th</sup> January 2020, the International Health Regulations Emergency Committee Meeting regarding the outbreak of Novel CORONA Virus (2019-nCoV) declared it as *Global Public Health Emergency of International Concern* (PHEIC). On 11<sup>th</sup> February 2020, the virus was labelled by WHO as 'severe acute respiratory tract coronavirus-2' (SARS-CoV-2; also referred to as 2019-nCoV) and disease as 'COVID-19'.<sup>2</sup> On 11<sup>th</sup> March 2020, this outbreak was declared as *Global Pandemic* by WHO.<sup>3</sup>

Over the past six months, the world has undergone drastic changes related to the unprecedented emergence of this deadly virus. The pandemic escalated quickly without any prior warning there was little reaction time available for preparedness and other mitigation measures. This situation has impacted all systems and institutions and the entire human race is struggling to fight against an invisible, callous, and deadly virus.<sup>4</sup>

The world has never experienced such a melodramatic impact on human capital investment. "Society-dissolving effects"<sup>5</sup> of this pandemic have influenced economic, social, political, and the education sector. Several measures and policies like social distancing, quarantine, and self-isolation were implemented to prevent the spread of this deadly virus. The stay and work from home become obligatory practice all over the world.<sup>6</sup> A report presented by UNESCO on 14<sup>th</sup> April stated that 1.5 billion learners were affected around the globe due to closure of educational institutes in 188 countries influencing more than 91% enrolled learners.<sup>7</sup>

Such unanticipated circumstances have disrupted long-standing educational practices and triggered the need to adopt an alternate educational strategy. After the announcement of COVID-19 as Global pandemic on 11<sup>th</sup> March 2020, in pursuance of the direction by the Government of Pakistan, both private and public universities and degree awarding institutes were advised to suspend academic activities and close immediately. As per the official notification of HEC<sup>8</sup>, all the universities across the country were directed to build up their system for e-learning to initiate online classes. A deadline of 31<sup>st</sup> March was given to overcome technical, logistics, technological, and spatial limitations.<sup>8</sup> In this backdrop of radical change, universities and degree awarding institutes focused to

take necessary action to continue educational activities which accelerated the need for the development of e-learning in which learning occurs remotely through a digital platform. It involves asynchronous (one-way communication) or synchronous (two-way communication) mode of teaching.<sup>9</sup>

Term "SWOC" initially labelled as "SWOT", SWOC is an acronym for Strengths, Weaknesses, Opportunities, and Challenges. "T" threat in SWOT has been replaced by "C" to create a more positive attitude. SWOC analysis is an analytic tool that evaluates key internal and external factors for better strategic planning.<sup>10</sup>

The purpose of this study is an in-depth exploration of issues faced by students and faculty after the implementation of the e-learning system amid COVID-19. Therefore, the objective of this study was to evaluate strengths, weaknesses, opportunities, and challenges of online learning at Rawalpindi Medical University. The results of this analysis are expected to provide useful information to the higher education system in making targeted strategies and need base planning.

In principle, SWOC analysis is conducted with the purpose of environment scanning ideally before the new initiative is taken to identify the potential issues in the environment. However, this does not apply to our case as online learning has been already launched under erratic circumstances due to pandemic, yet it would help to highlight the targeted areas for improvement and will serve as guidelines for policymakers for up-gradation of the e-learning system.

## Materials and Methods

This cross-sectional survey-based study using a mixed quantitative and qualitative approach was conducted at Rawalpindi Medical University in June 2020 through an online survey. A questionnaire was developed using google forms. A separate questionnaire was developed for faculty and student. The student proforma consisted of four sections. The first part was regarding the socio-demographic profile of study participants, the second section was regarding current practices, third is about perception and last part dealt with challenges followed by suggestions for improvement as an open-ended question. With regards to faculty proforma first part was reserved for socio-demographic data, the second part about current practices, third was regarding the experience of newly introduced e-learning system at the university, the last one was about perception regarding online teaching

followed by overall experience and suggestion for improvements. Both questionnaires had the option of open-ended questions to obtain qualitative data with utmost clarity and precision. Each question had an option for responding on a 5 point like rt scale ranging from 0-5 (strongly disagree, disagree, neutral, agree, and strongly agree). The online survey proforma was electronically shared with faculty and students through social media forums. Non-probability convenient sampling was used. Data was collected voluntarily and after obtaining informed consent. All participants were bound to give their willingness of voluntary participation and informed consent before proceeding further. Informed consent was taken as an option (yes/no). Participants selecting the option of Yes were allowed to proceed further. Those who opted No option were not allowed to proceed further, as the questionnaire ended at the point. Moreover, the participants were given the option that they quit anytime if they are not willing to proceed further. Data were entered into SPSS, descriptive analysis was performed where mean and standard deviation was used for quantitative variables, frequencies and percentages were calculated for categorical variables and. Data were analysed using SPSS version 25. This study was carried out after obtaining ethical approval from the Institutional Review Board of Rawalpindi Medical University. Anonymity and confidentiality of data were maintained.

## Results

Various features of the e-learning system initiated at Rawalpindi Medical University (RMU) were evaluated and mentioned as strengths, opportunities, weaknesses, and challenges. The questionnaire was electronically shared to 3<sup>rd</sup>, 4<sup>th</sup>, and final year MBBS students as well as the faculty members of the university. More than 400 complete responses were obtained from students and faculty. Themes from responses obtained from survey proforma were divided into two broad subcategories of each component of SWOC). These responses were presented as mean and standard deviation (Table 1). Details of responses under each subcategory are further elaborated in SWOC Matrix (which included the responses obtained both from quantitative and qualitative variables) (Table 2).

**Table 1: Distribution of responses according to SWOC**

<i>Statements</i>	<i>Mean</i>	<i>SD</i>
<b>Distribution of responses according to the potential strength</b>		
Prospect for remote learning in unprecedented circumstances	7.86	1.12
Learner centered self-directed lifelong learning	10.1	0.14
<b>Distribution of responses according to potential weaknesses</b>		
Lack of availability and accessibility of internet & technology	5.55	2.12
Professional isolation	4.89	1.13
<b>Distribution of responses according to potential opportunities</b>		
Introduction of the concept of blended learning with the incorporation of e-learning in undergraduate and postgraduate curriculum	13.12	1.10
Digital competence	4.65	1.12
<b>Distribution of responses according to potential challenges</b>		
Teaching, learning & assessment strategy to be adapted for psychomotor & soft skills	6.51	1.15
Conduction of valid, reliable and feasible e-assessment	8.58	3.12

Table 2: SWOC MATRIX

<i>Strengths</i>	<i>Weakness</i>
<ul style="list-style-type: none"> <li>• Prospect for remote learning during the pandemic crisis</li> <li>• Flexibility of timings</li> <li>• Introduction to the digital world</li> <li>• Upgradation of IT Skills &amp; technology usage</li> <li>• Flexibility of learning</li> <li>• Faculty development and capacity building</li> <li>• Reading material; readily available</li> <li>• competitive edge over traditional face-to-face colleagues</li> <li>• Usher into a new era of work from home</li> <li>• upskilling in new technologies</li> <li>• Development of alternative teaching/learning and examination strategy</li> <li>• More learner autonomy</li> <li>• Promotes independent self-directed lifelong learning</li> </ul>	<ul style="list-style-type: none"> <li>• Unavailability of internet</li> <li>• Bandwidth issue contributes towards the low quality of videos and visual output</li> <li>• Difficulty in reading and comprehending recorded lectures</li> <li>• Lack of digital awareness</li> <li>• Lack of basic technical skills</li> <li>• Electrical power failure</li> <li>• Unavailability of devices/ gadgets</li> <li>• Lack of orientation to new software</li> <li>• Lack of information technology fluency</li> <li>• Faculty training/ orientation</li> <li>• Resource &amp; time-intensive activity</li> <li>• Lack of faculty motivation</li> <li>• Communication apprehension</li> <li>• Faculty time and monetary commitment</li> <li>• Difficult to engage students</li> <li>• Lack of student-teacher interaction</li> <li>• Below par quality of e-learning environment</li> <li>• Diminished student-teacher relationship</li> <li>• Professional isolation</li> </ul>
<i>Opportunity</i>	<i>Challenges</i>
<ul style="list-style-type: none"> <li>• Adoption of e-learning in the future as part of medical education</li> <li>• Technological integration into learning space</li> <li>• Global learning opportunities for gen- Z</li> <li>• Enrichment of digital competence</li> <li>• Development of new online courses</li> <li>• Switching off all certificate courses to online teaching</li> <li>• e-portal for quality enhancement cell</li> <li>• 360-degree evaluations can be done using this portal</li> <li>• Initiation of new online certificate and diploma courses</li> <li>• Academic Collaboration with other medical schools</li> <li>• College representation at national and international level</li> <li>• Faculty development</li> <li>• Use of advance e-learning tools digital libraries, Moodle</li> <li>• Incorporation of blended learning in the curriculum</li> <li>• Development of e-teaching/learning and assessment strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Teaching, learning &amp; assessment strategy adapted for Psychomotor, soft skill</li> <li>• Conduction of valid, reliable and feasible e-assessment</li> <li>• Program acceptance by senior faculty members</li> <li>• Faculty resistance</li> <li>• Faculty development/capacity building</li> <li>• Working remotely in challenging circumstances</li> <li>• Competencies &amp; learning approaches of learner</li> <li>• Receiving and giving timely feedback</li> <li>• e-Logistics and e-Administration (scheduling timetabling, notification, correspondence, announcements)</li> <li>• Cybersecurity, hacking of data, exam software</li> <li>• Faculty readiness for e-learning, digital literacy</li> <li>• Student readiness for e-learning</li> <li>• adoption of innovative teaching-learning strategies</li> <li>• Engaging stakeholders ( faculty, student,</li> </ul>

<ul style="list-style-type: none"> <li>• Free access to online learning resources/access to HEC Digital library</li> <li>• Establishment of integrated e-learning systems in the form of virtual learning environments</li> <li>• Blended learning programs</li> <li>• e-Community support network</li> <li>• Health information “any time, any place”</li> <li>• Stimulated learning environment</li> <li>• Promotion of the use of artificial intelligence</li> <li>• Continuing Medical Education and Continuing Professional Development (CME/CPD) and e-learning</li> <li>• Development of new entrepreneurial and technological approaches</li> <li>• e-mentoring and e-tutoring software</li> <li>• Establishing a link with alumni and foreign faculty to share a learning experience</li> </ul>	<p>IT Staff, Admin, departmental clerical staff )</p> <ul style="list-style-type: none"> <li>• Long term sustainability</li> <li>• Upskilling in technology, resources, and infrastructure</li> </ul>
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## Discussion

Indubitably, COVID-19 has impacted the entire human race at a pervasive level. The chaos and panic are palpable, and nobody was sure of how to proceed. However, this pandemic has not only brought challenges and threats but also opened the horizon for opportunities and newer perspectives. It has served as a catalyst to look for alternate solutions and provide a stimulus for the adoption of new strategies for the upgradation of the education system.<sup>11</sup> Under the entire spectrum of unrivalled circumstance, RMU took the initiative of online classes with the aim that students would be able to resume their studies at the earliest possible and their education would not be compromised. The aim of this study is an in-depth analysis of the e-learning system initiated at RMU into four components of the SWOC matrix.

### Strength

The most salient strength that has been identified after the implementation of e-learning is that it makes the remote learning possible during the hour of distress and agony.<sup>12</sup> Result of our study documented that it is the most practical, manageable, and user-friendly approach adopted in an hour of need. It keeps the learning process intact in an era of a global crisis in which the psychological well being of every single person is already compromised. It is also depicted from students' perspectives, as one of the students highlighted that “*Health of the family is more important than education. Corona has already put enough stress into our lives, online education is a better strategy adopted in current circumstances*”. Another statement from a

student was “*At least online teaching keeps the process of learning intact*”. Other positive points highlighted by our survey were that the whole process of the learning process has been shifted towards a student-centered approach, reading material is readily available to them and they have the opportunity to study with the flexibility of timings. Such an approach fosters autonomy and self-directed learning. Similar findings have been cited by the results of recent a study.<sup>13</sup>

### Weakness

With regards to limitations, unavailability and inaccessibility to technology and internet facility was the major issue reported both by students and faculty. Since it is a resource-intensive activity, underlying factors responsible for poor accessibility include affordability, logistics, and economic issues.<sup>14</sup> This problem was specially reported by students residing in rural areas. Students made a strong suggestion that the government should take immediate measures to resolve the problem of availability and accessibility of internet services by introducing subsidized student packages and expanding the 4G services across the country.

Another shortcoming of e-learning is professional isolation. This term refers to a physical and temporal separation between facilitator and student leading to a feeling of isolation. Problem reported by students particularly in our study was that the facilitator was passively reading heavy texted slides without engaging students. This problem can be successfully overcome by introducing ice breakers, scavenger hunt, discussion posts, and incorporating videos in lectures. Other options include the sharing of scenario-based questions and asking students to share their responses through the chatbox. Virtual flip classroom activities

like challenging your students' knowledge by critical thinking based questions, think-write-pair-share strategy, collaborative learning group strategies can also be incorporated.<sup>16</sup>

Other issues reported were lack of a formal mechanism for either receiving or giving timely feedback between teacher and student, reduced attention span, and lack of pedagogical support to the learners. These factors influence their motivation and overall level of satisfaction. Similar findings were reported in the result of a recent study.<sup>17</sup>

### **Opportunity**

COVID-19 has opened the horizon for digital literacy, especially for the faculty. Term Digital literacy refers to 'The ability to use digital technology, communication tools or networks to locate, evaluate, use, and create information'. This exposure to the digital world will help them to synthesize and evaluate the information to attain the digital competences which contribute significantly in their capacity building.<sup>18</sup>

Our undergraduate students belonging to *Generation-Z* are already exposed to modern technology in the form of Web 4.0 and this pandemic can serve as 'hit the ground running' by rapid exposure to advanced technology. It will cultivate the habit of self-directed lifelong learning and provide them with an opportunity to create their learning environment and remain abreast of rapid advancement in science and technology in health care around the globe.<sup>19</sup>

Online teaching serves as an opportunity for universities in the future to incorporate components of e-learning for their students in the future as part of medical education. Later on, even when the pandemic is over, this portal will provide them with an opportunity to start blended learning programs.<sup>20</sup> This platform also provides an opportunity for Continuing Medical Education and Continuing Professional Development (CME/CPD). The University is currently running 11 different certificate courses. These courses can be continued successfully as a blended learning approach using e-portal which can save manpower, logistics, time, venues, and finances required for face to face sessions. The platform of e-mentoring and e-tutoring will expand international collaboration by establishing a link with alumni and foreign faculty to share learning experiences. It will also help in the up-gradation of the department of quality enhancement cell by digitalizing its functioning, 360-degree evaluations, and feedback can be taken with confidentiality and anonymity.

This forum will also serve as an opportunity to broaden the prospect for enhancement of e-learning

with the establishment of a virtual learning environment using Computer-assisted teaching. Sharing information and dissemination of information through digitalization and globalization using Simple Syndication (RSS), vodcast, podcast, blogs, social book markings will be enhanced.<sup>21</sup> (*Important links for e-learning are attached as appendix 1*).

### **Challenge**

The biggest challenge with regards to online learning is the conduction of valid, reliable, and feasible online assessment. The entire framework of undergraduate medical education needs conscientious planning to build a foundation on the basic principles of validity and reliability covering all standard formats.<sup>22</sup>

e-assessment is also known as computer-aided assessment must employ relevant teaching, learning and assessment tools to cover all domains of assessment including knowledge-based (MCQ, EMQs), practice-based assessment (logbooks, portfolios) performance-based (OSCE, OSPE, virtual patients and virtual learning rooms) attitude/behaviour assessment including (facilitator-led discussion boards, discussion boards, bulletin boards or forums moderator discussion boards MDG, graded discussion board GDB, Team-based learning, pair share learning and peer assessment of project work).<sup>23</sup>

Successful summative assessment strategies cited in the literature include MCQs and EMQs. More sophisticated techniques include computer-based assessment using virtual patients followed by C3 level MCQ which attempt to test the application of knowledge and problem-solving. "Consensus-based" scoring system is also used in membership examinations in which marks distribution of each item is weighted according to consensus of an expert panel. A similar model can be employed in virtual learning environment.<sup>24</sup>

Another challenge faced during online learning is of teaching psychomotor skills. Technique cited in literature describes four steps of teaching psychomotor skills through videos. The first step involves teacher demonstration, in the second step teacher demonstrates with explanation, in the third step learners describe while the teacher demonstrates and in the fourth step, the learner performs along with an explanation.<sup>24</sup> Administrative support required for logistics and administration such as scheduling, timetabling, notification, uploading assignments, result announcement, monitoring deadlines, and submission will be challenging in terms of human resources.

## Conclusion

Rawalpindi Medical University took the revolutionary lead among all public sector universities by implementing an e-learning management system. COVID 19 has tested the preparedness of universities to deal with crisis and this in-depth analysis has made this evident that RMU is fully equipped and ready to cope with any unforeseen event and can tackle it successfully. Effective implementation of the e-learning system is a pressing need of hours which will also serve as a roadmap for other institutions. However, RMU should strive for further improvement to create a culture of excellence for future seven-star doctors by imparting the highest standard of medical education, striving for the implementation of the innovative way of having a strong impact on clinical outcomes, population health, and health care services delivery across the nation. There is an urgent need to develop infrastructure for long term sustainability and acceptability by availing opportunities, improving strength, and overcoming potential weaknesses and challenges.

*Joining hands together in an era of stress and agony involving all stakeholders is need of the hour*

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