

**Peer-reviewed article**

**Designing a competency-based, blended curriculum using Kern's model for undergraduate psychiatry clerkship in Pakistan**

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**Abstract**

There is a significant shortage of qualified psychiatrists and related service providers in Pakistan against the backdrop of burgeoning evidence of a high prevalence of mental health disorders in the country. At the Aga Khan University Medical College, psychiatry has been taught to the undergraduates as a mandatory one-month clinical rotation since 1987. AKU is the only medical college with a formal psychiatry training at the undergraduate level. In 2017, a team of faculty members reassessed the curriculum, teaching methodology and learning outcomes of the psychiatry rotation. As a result, an outcome-based, blended curriculum was designed to integrate virtual and classroom-based learning with patient-skills training. The new curriculum has now been in implementation for one year. The article aims to discuss and reflect on the process of reviewing, redesigning, and piloting a psychiatry competency-based curriculum (CBC) which used the 'Six-Step Approach' proposed by David Kern. This paper highlights the challenges of curriculum design and its implications in the broader context of Pakistan. The insights add to the existing literature about the experience, challenges and successful outcomes of designing a blended curriculum in Pakistan. The authors' critical reflections also inform future directions regarding the design and implementation of a Pakistan-wide mental health programs.

## Background

According to the World Health Organization – Assessment Instrument for Mental Health System (WHO-AIMS) report, psychiatric training in Pakistan is at its early stages for both undergraduate and postgraduate levels (WHO, 2005, 2009). Currently, there are only 350-400 qualified psychiatrists in Pakistan, making it a startling ratio of one psychiatrist to half a million people (Khan, 2016). According to community-based studies, these numbers are inadequate to meet both the academic and clinical needs of the discipline (Mirza & Jenkins, 2004). Most of these clinicians practice privately with only a handful of working in academia, teaching, and research. Though psychiatry is recognized as an essential specialty in the undergraduate medical education (UGME) curriculum by the Pakistan Medical & Dental Council (PM&DC, 2019), there is no prescribed or standardized curriculum. Thus, given the paucity of academic psychiatrists, only a few medical schools teach psychiatry as a formal curriculum with a robust assessment arm.

With approximately 120 medical schools in Pakistan, the country graduates around 15-20,000 students every year. In most of these medical schools, psychiatric knowledge is assessed through one optional question in the final year of a 5-year curriculum (Naeem & Ayub, 2004). With minimal training, graduating physicians lack competency in the area of mental health. Those who go on to practice primary care specialties, gatekeepers of patients with mental health disorders, are likely to miss psychiatric symptoms, misdiagnose, or practice polypharmacy. In order to bridge this wide gap between needs and available services, it is essential that psychiatry be included as an individual clerkship, with robust training that addresses the contextual need through a competency-based curriculum (CBC) (WHO, 2013).

However, despite the growing body of literature (Carraccio, Wolfsthal, Englander, Ferentz, & Martin 2002) of changing needs, advancing knowledge, and innovations in medical education, we found little evidence of the implementation of outcome-based integrated curricula in medical colleges in Pakistan. If the learning environment were to be transformed into a new approach to address the above need, teaching and learning would require multi-layered attention to faculty development, residents' teaching skills, and development of the curriculum.

## Literature Review on mental health education using technology

Globally, there has been a shift of focus seen in designing UGME that emphasizes developing specialty-based competencies of graduating physicians who can thus provide compassionate, evidence-based healthcare to their patients (Frank, Mungroo, Ahmad, Wang, De Rossi & Horsley, 2010). This wave of the 'competency movement' has influenced undergraduate psychiatry education as well (Guerrero, Beresin, Balon, Brenner, Louie, Coverdale *et al*, 2017). The competency-based curriculum approach focuses on system needs (health system or patient outcomes), rather than only the learner's needs. Carraccio, Wolfsthal, Englander, Ferentz & Martin (2002:362) define competency as a "complex set of behaviors built on the components of knowledge, skills, attitudes and competence as personal ability". One of the effective strategies to develop integrative, outcome, and competency-based curriculum that inspires active student learning is Blended Learning (Laster, 2010). Garrison & Kanuka (2004:96) define Blended Learning (BL) as "the thoughtful integration of classroom face-to-face learning experiences with online learning experiences". There are two integral ingredients of BL, i.e., face-to-

face (FTF) and online instruction and learning. Freeland (2014) explains four overarching ways in which BL complements the CBC approach. First, online content offers a flexible pace of learning and student progress. Second, assessment can be done on-demand—that is when students are ready to be assessed. Third, it facilitates an integrated presentation of the curriculum in a modular manner rather than traditional FTF instruction. This feature offers a conceptual understanding of the content, and learners have a range of pathways to mastery that is less likely to happen with a single lesson or textbook. Finally, BL provides tools to enhance and personalize learning as per individual needs.

Technology has been used in clinical clerkships like family medicine, radiology, surgery, paediatrics, psychiatry, and many more. The results from various studies have favoured BL with an improved educational environment and its cost-effective approach. Results further showed that the Virtual Learning Environment (VLE) was found to be user-friendly, with easy access to course content via mobile devices, improved summative scores, greater knowledge and skills score achieved with more students in the BL group receiving a final course grade of honours. (Wiecha, Vanderschmidt & Schilling, 2002; Chur-Hansen, Devitt, Crabb, Palmer & De Young, 2012; Aryal & Pereira, 2014; Langenau, Lee, & Fults, 2017; Alexander, Deas & Lyons, 2018).

Given the severe shortage of competent teaching faculty, the development of a CBC that uses innovative and creative teaching methodologies drawing upon the BL approach, can be offered to other medical schools. It can also be delivered by teaching assistants or other teaching faculty in the absence of content experts as research has suggested (El Alfy, Gómez, & Ivanov, 2017) that teachers needed a fairly minimal amount of pedagogical and technical training to employ BL successfully. Blended learning has also enabled students to be more responsible for their own learning. This gives teachers an opportunity to better provide personalized assistance, keep better track of student progress, and cover more materials (Graham, 2013). Ultimately, with graduating physicians trained and competent in contextual recognition and management of common mental health (MH) disorders in primary to tertiary health care settings, the huge burden of mental health disorders in the Pakistani population could be better managed.

The article aims to discuss and reflect on the process of reviewing, redesigning, and piloting a psychiatry CBC using the 'Six-Step Approach' proposed by David Kern (Thomas, Kern, Hughes & Chen, 2015). The authors describe a systematic approach to online curriculum development based on their 'Six-Step Approach' for curriculum development for medical education.

### **Methodology for curriculum design**

Kern's framework has been considered as a landmark model of curriculum development, which is a widely accepted, systematic approach to Curriculum Development (CD) for health care education (Thomas *et al*, 2015; Chen, Kern, Kearns, Thomas, Hughes & Tackett, 2019). The 'Six-Step Approach' defines curriculum as any "planned educational experience" and can be applied to short educational sessions or multiyear programs (Schneiderhan, Guetterman, Dobson 2019:1). Though presented sequentially, the CD is a continuous, cyclical process, and all steps influence each other (Figure 1). This widely used method has led to the successful implementation of a variety of traditional and online curricula. In each step, special considerations for curricula with more extensive and more diverse learner audiences—characteristic of many online curricula—are highlighted.

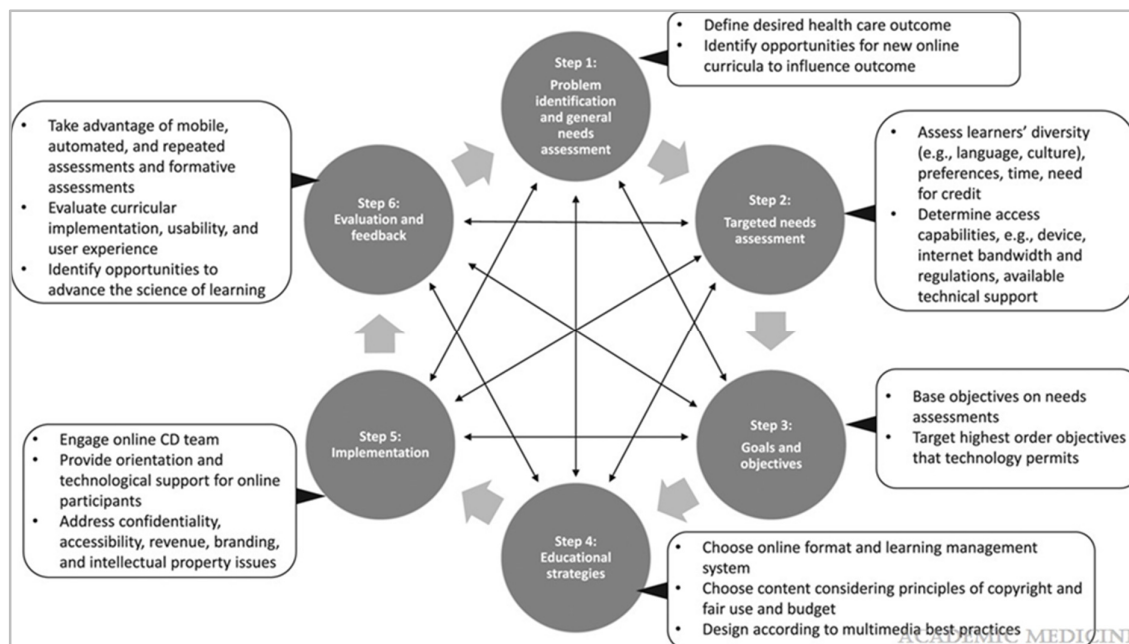


Figure 1. Considerations for online curriculum development according to the 'Six-Step Approach' for curriculum development for medical education (Chen *et al*, 2019).

The university's ethics review committee approved the study for the academic years of November 2016 – October 2018. The course design takes a BL approach, in alignment with the BL strategy of the university's 'Network of Blended and Digital Learning'. Curriculum development followed a stepwise process that began with conducting a thorough needs assessment to develop a contextualized rationale for the curriculum. This then led to the second step of content development based on local needs and priorities. The authors conducted a literature search in PubMed and educational portals such as MedEd Portal in preparation for these two steps. A departmental retreat was set up to engage all stakeholders in a discussion on the first two steps; a competency-based robust blended curriculum with facilitator guides, could be offered to other medical schools in the context of paucity of teaching psychiatrists in the country. Young trainees brainstormed on the diverse needs of learners and focussed on the minimum competencies that all graduating physicians would need in the area of mental health. Institutional digital learning experts joined to trouble shoot issues regarding national online access, and commonly available technologies – contextual realities that would inform the online component of the curriculum.

A core working group (WG) was then put together based on the level of expertise and interest in this area of scholarship; this group initiated work on the third step of developing SMART objectives (Doran, 1981). The fourth step then followed, namely, careful selection of educational strategies to deliver the objectives. In the fifth step, medical educators determined the practical and operational aspects of the planning, i.e., resources needed to implement the curriculum leading to the actual implementation. Finally, medical educators evaluated the curriculum with an ongoing dynamic process to effectively reassess and make changes, if required.

## Redesign of curriculum for psychiatric clerkship

The team revisited the overall course outcomes, teaching strategies, assessment methods, and curricular design. Following that, content for each module was developed based on the same general principles of integration, student engagement, and outcome focused competencies. We divided the curriculum into eight modules, with each module comprising two days each. These included foundation, mood disorder, psychosis, anxiety disorders, liaison/psychosomatic, child psychiatry, substance abuse, and psychotherapeutic communication. A summary of our curriculum process is presented in Table 1

Table 1: Summary of curriculum process (Source: Authors).

Curriculum development steps	Areas	Outcomes
<b>Step 1:</b> Problem Identification and General Needs Assessment	Problem identification	<ul style="list-style-type: none"> <li>High disease burden of common mental health disorders.</li> <li>Graduating physicians have very minimal or knowledge on common mental health disorders and are likely to miss psychiatric symptoms, misdiagnose, or practice polypharmacy due to lack of adequate training.</li> </ul>
	Current Approach	<ul style="list-style-type: none"> <li>Minimal or no UG psychiatry teaching in medical schools with no mandatory professional exams.</li> <li>Shortage of psychiatry faculty in medical schools.</li> </ul>
	Ideal Approach	<ul style="list-style-type: none"> <li>Based on the literature search, expert opinions, and faculty feedback.</li> <li>Mandatory 4-week psychiatry rotation in medical schools.</li> <li>Certified professional exams.</li> </ul>
<b>Step 2:</b> Targeted Needs Assessment	Targeted learners and Prior Experience	<ul style="list-style-type: none"> <li>Working Group formed.</li> <li>Literature search done.</li> <li>Blended learning and an integrated and outcome-based curriculum.</li> <li>Revisited clerkship curriculum in place and pedagogy.</li> </ul>
	Target environment	<ul style="list-style-type: none"> <li>A departmental retreat led by the chair of the department for departmental capacity building in curriculum re-modelling.</li> </ul>
<b>Step 3:</b> Goals and Objectives	Goals	<ul style="list-style-type: none"> <li>The main objective was to train all medical students to be competent in recognizing and managing common psychosocial and mental health problems prevalent in our communities.</li> </ul>
	Specific Objectives	<ul style="list-style-type: none"> <li>By the end of this rotation, all students will be able to: <ul style="list-style-type: none"> <li>Identify essential psychopathology for common psychiatric disorders.</li> <li>Demonstrate the principles of management of mild/moderate common psychiatric disorders.</li> <li>Assess risk towards self- harm and violence.</li> <li>Identify the clinical situation requiring a referral to psychiatric services.</li> </ul> </li> </ul>
<b>Step 4:</b> Educational Strategies	Redesigning the curriculum	<ul style="list-style-type: none"> <li>Blended learning format on VLE.</li> <li>Competency-based, integrated curriculum.</li> </ul>

<b>Step 5: Implementation</b>	Introduction	<ul style="list-style-type: none"> <li>Started with new academic batch.</li> <li>The students enrolled in these first few months were exposed to both the old and new curriculum and were able to appreciate and give feedback to differentiate the two.</li> </ul>
	Resources	<ul style="list-style-type: none"> <li>Core team members: Chair of the department, UGME program director, two early-career faculty members &amp; Assistant Director, Blended and Digital Learning Network along with team of VLE professional's</li> <li>The administrative coordinator provides general administrative, communications, evaluations, scheduling, and secretarial support.</li> <li>Departmental faculty engagement: reviews the yearly evaluation of the program and proposes curricular updates for the ensuing year.</li> <li>Blended and Digital Learning Network: Virtual Learning Environment (VLE) using institutional Moodle platform.</li> </ul>
	Training <sup>1</sup>	<ul style="list-style-type: none"> <li>Teaching and Learning Enhancement Workshop (TLEW).</li> <li>Rethinking Teaching Workshop (RTT).</li> <li>Faculty Development Programme in Blended Learning (FDPBL).</li> </ul>
<b>Step 6: Evaluation</b>	Learners Assessment	<ul style="list-style-type: none"> <li>Formative and summative assessment</li> </ul>
	Evaluation	<ul style="list-style-type: none"> <li>Integrating data collection into the curriculum: The course website's report was analyzed to explore the temporal patterns and dynamics of the use of the website across the course conduction.</li> <li>Evaluation methods &amp; instruments: The Web-based Learning Environment Instrument (WEBLEI) at the end of the course from each group (Chang &amp; Fisher, 2003).</li> <li>Additionally, students were asked to rate BL as compared to the traditional curriculum in 4 domains.</li> <li>Data related to emotional engagement was gathered through WEBLEI and blended vs. traditional curriculum questionnaires at the end of the rotation from each group.</li> </ul>

1: Problem Identification and General Needs Assessment (Problem identified, current and ideal approach).

According to a study from India, knowledge of psychiatry is essential for all doctors as mental health problems are prevalent in the population either as part of other physical illnesses or independently (Manohari, Pradeep, Galgali, & Sathyanarayanan, 2013) In another study, primary care practitioners often failed to recognize psychiatric disorders in patients with a physical disease (Goldberg, Guadagnoli, Silliman & Glicksman, 1990). Psychiatric disorders were identified as a leading cause of morbidity and mortality in low- and middle-income countries (LAMICs) despite the existence of effective treatment options. Over 800 000 people die due to suicide every year, and it is the second most common cause of death among 15–29 year olds. About three-quarters of all suicides occur in LAMICs. The health care provision in various parts of the world varies in terms of both quality and accessibility. Treatment gap is the difference between the number of people with mental health

<sup>1</sup> <https://www.aku.edu/qtl/programmes/Pages/home.aspx>

disorders and the number of those people who can access appropriate services. (Kohn, Saxena, Levav, & Saraceno, 2004). The gap is more evident in LAMICs, especially lacking in infrastructure and development (Demyttenaere, Bruffaerts, Posada-Villa, Gasquet, Kovess, Lepine *et al*, 2004). This treatment gap, along with limited health care provider knowledge gaps regarding and treatment recommendations were found to be a significant barrier, making psychiatric care responsive to an educational intervention. Existing curricula were FTF, which limited their reach because of travel costs and scheduling logistics. As a step towards bridging the treatment gap, the AKU department of psychiatry launched a blended mental health curriculum to provide evidence-based services at the primary and secondary levels for the prevention and management of psychiatric and disorders. The course was developed and piloted to undergraduate medical students, successfully teaching 100 learners each year, most of who will practice in non-psychiatric settings with a high prevalence of psychiatric disorders.

#### 2: Targeted Needs Assessment (Targeted learners and Prior Experience & Target environment).

AKU is one of the few medical schools in the country that teaches psychiatry as a recognized clerkship since 1987. Formerly, in a 4-week rotation, students rotated through both outpatient and inpatient psychiatry and attended 20 lecture-based sessions. Faculty members conducted these sessions based on their specialized expertise in both inpatient and outpatient settings. This was complemented by occasional case presentations and small group discussions. At the end of the clerkship, students were examined through written and oral exams, and at the end of the year through a certifying examination in psychiatry (Sajid, Khan, Shakir, Moazam-Zaman & Ali, 2009). We conducted a target needs assessment through the examination of current curriculum, assessment, methodology as well as through student and faculty feedback. It was found that although students have historically liked the rotation and given positive feedback, the traditional curriculum was neither competency nor outcome-based. The teaching methodology was facilitator centered and did not actively engage students in the learning process. Moreover, the curriculum lacked congruence between learning outcomes and teaching and assessment methodology; therefore, its ability to affect students' outcomes was questionable (Tam, 2014). Transformations of the learning environment to a new approach needed both stakeholder engagement and faculty capacity development in medical education, the enhancement of 'residents' teaching skills, along with redesign of the curriculum. The department, therefore, held a full-day retreat with an objective to engage both faculty and residents with the aim of developing a revised curriculum for the undergraduates.

#### 3: Goals and Objectives.

The overarching goal was to develop an integrated competency-based curriculum using blended learning to be made available to other medical schools in Pakistan. The curriculum was designed to impart all students with the basic mental health competencies required to graduate from medical school, specific to the Pakistani context (Table 2). The overall objectives emphasized the recognition and management of common psychosocial and mental health problems prevalent in our communities (Mian, Naseem, Chachar & Saeed, 2018). The authors further operationalized this aim into specific learning objectives summarised in Figure 2.

#### 4: Educational strategies.

As discussed above, the literature search has shown that BL has been used effectively to develop integrative, outcome, and a CBC that inspires student learning (Laster, 2010). The authors redesigned



an existing curriculum based on the principles of optimal student engagement. The aim was to address the multiple learning styles of students by using a mix of Virtual Learning Environment (VLE) and educational activities, making sure to link them to identified learning outcomes (Figure 2). The new curriculum included FTF contact sessions, self-directed, and electronic (e-) learning. Eight, two-day modules were developed, centered on the principles of integration, student engagement, and outcomes-focused. They included foundation, mood disorder, psychosis, anxiety disorders, liaison/psychosomatic, child psychiatry, substance abuse, and psychotherapeutic communication (Figure 2).

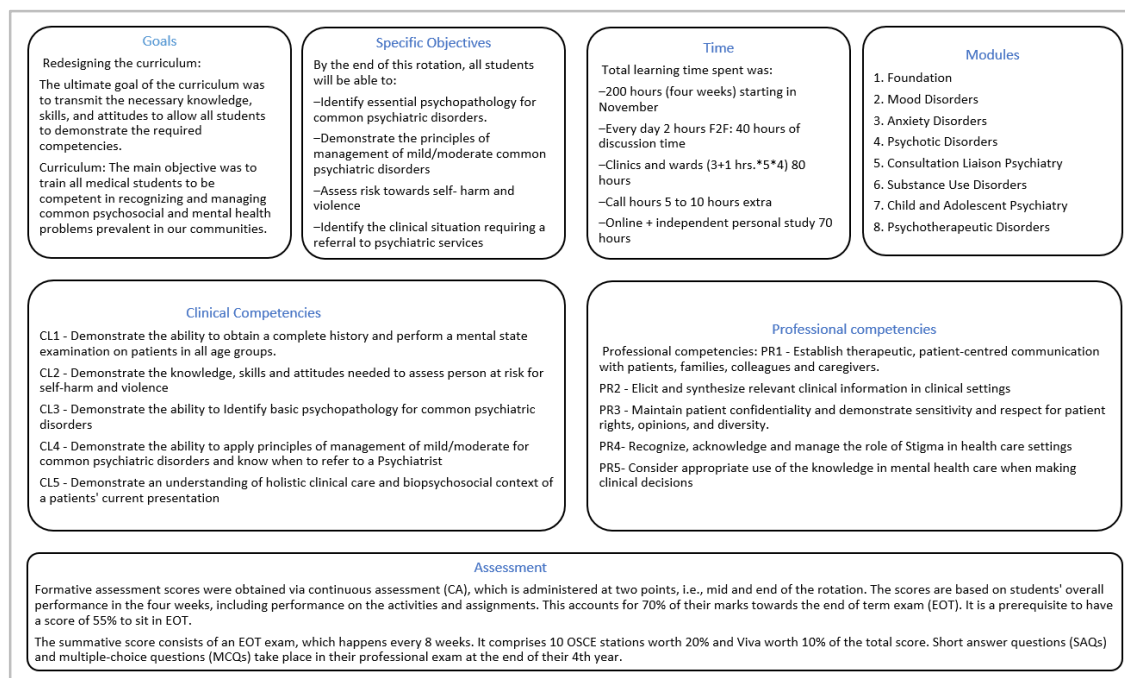


Figure 2. Summary of redesigned curriculum (Source: Authors).

## 5: Implementation.

Historically a group of 10-15 students was enrolled every month as assigned to psychiatry through a schedule decided by a central curriculum committee. The implementation design was to introduce one to two new modules per month. The students enrolled in these first few months would be exposed to both the old and new curriculum and provide feedback on both. The process involved the core WG, VLE team, an administrative coordinator, and all departmental teaching faculty. There was a provision of continuous training that aimed to equip the WG with knowledge and skills in using the VLE as teachers. The UGME director attended an institutionally-run four-day experiential workshop on 'rethinking curriculum' where she used the psychiatry curricular change as her workshop project. Some team members attended a three-day workshop on active teaching and learning – 'teaching and learning enhancement workshop' (TLEW), while other faculty members trained in the use of flipped classrooms through workshops offered by institutional faculty. Table 2 summarizes the difference between the old and revised curriculum.

Table 2. Difference between the old and revised curriculum (Source: Authors).

	<b>Traditional didactic curriculum</b>	<b>Blended curriculum</b>
<b>Competency-based</b>	No	Yes
<b>Integrated</b>	No	Yes
<b>Outcome-based</b>	No	Yes
<b>Needs assessment done</b>	Mostly based on faculty availability and teaching preference.	A literature review was conducted to review the culturally informed content, skills, and community health needs of faculty and students.
<b>Modules</b>	No 20 lecture-based sessions	Yes Eight modules
<b>Teaching methodology</b>	Didactics Group discussions	Virtual Learning (VL) using Moodle, flipped learning activities and skills training in the patient environment.
<b>Assessment</b>	Not aligned to the outcomes.	Aligned with the teaching methodology.
<b>Pre-session knowledge</b>	Optional	Pre-readings and formative assessments
<b>Cognitive domains</b>	Exam results	Pre-session quiz
<b>Psychomotor domains</b>	Clinic case presentations	Skills training is now taught through role-plays and assessed through real-time patient encounters in clinics and wards.
<b>Affective domains</b>	Not formally designed.	Reflection-based exercises during virtual and classroom-based learning.
<b>Facilitators training</b>	Based on their clinical subspecialty training.	A robust departmental faculty development exercise was conducted for curriculum development, active teaching and learning, VLE master training, and the use of the flipped classroom.

#### 6: Assessment and Evaluation.

Assessment methodologies were redesigned that used both formative and summative evaluations. These assessment methods were aligned with the learning outcomes and included self-reflection journals, self-assessment, peer assessment, online quizzes, and one-minute presentations during FTF sessions. As the curriculum was implemented, students' assessment scores were obtained and analyzed. As part of the program evaluation, the course website's report was analyzed to explore the temporal patterns and dynamics of the use of the website through the course. Learners' satisfaction and engagement were determined through a validated questionnaire called The Web-based Learning Environment Instrument (WEBLEI) (Chang, & Fisher, 2003). The overall mean score was 3.334, with a standard deviation of 0.5482. The mean and standard deviation for each subscale are presented in Table 3.

Table 3. WEBLEI scores and interpretation (Source: Authors).

Factors	Mean	Std. Deviation	Interpretation
Access	3.472	.6740	Indicates that students generally agree that they can access the online learning materials within their overall mixed learning environment in a reasonable manner.
Interaction	3.251	.7509	Shows that the students believed they were able to participate and interact with other students within the online environment.
Response	3.291	.6317	This indicates that generally, students feel a reasonable sense of achievement and satisfaction after using VLE to help complete the curriculum.
Results	3.336	.7671	It indicates that students agree that the learning outcomes and alignment of the online course materials were crucial in helping them in their studies.

Additionally, students were asked to rate BL as compared to the traditional curriculum in four domains through a blended vs. traditional curriculum questionnaire. Students rated blended curriculum higher than the traditional curriculum on all subscales. The results regarding students' perceptions of blended versus traditional curriculum, were as follows on the subscales of: student engagement (78.6%), student led learning (75%), critical thinking (78.6%), and alignment of assessment methods with learning outcomes (75%), as shown in Figure 3.

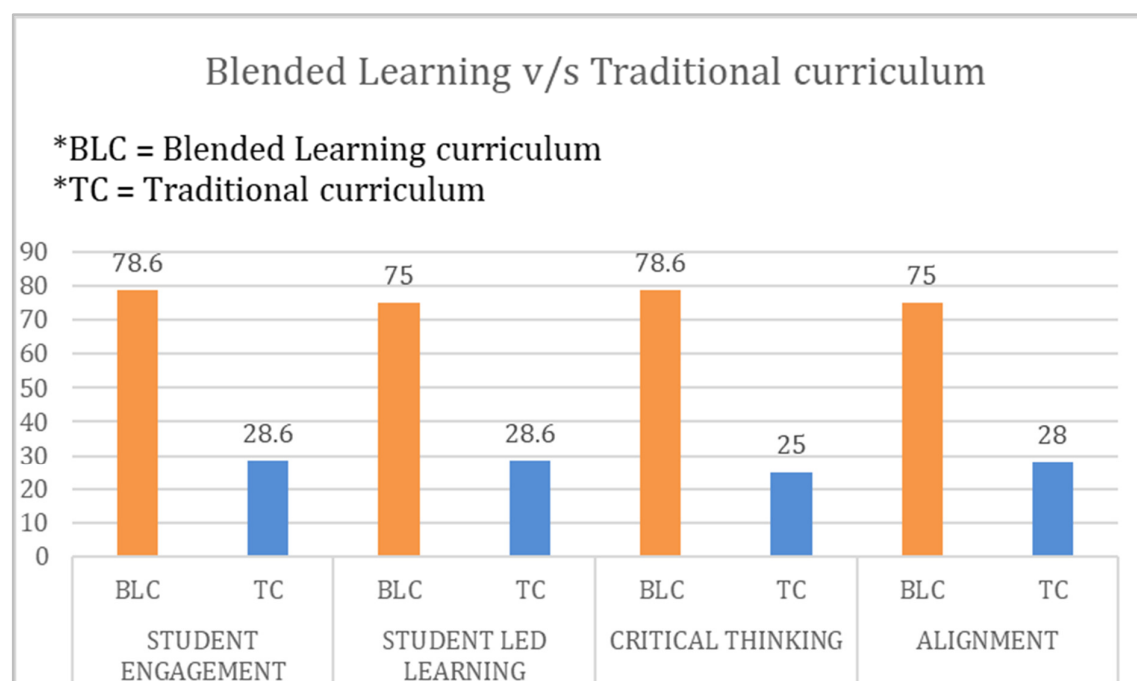


Figure 3. Blended versus Traditional Curriculum (Source: Authors).

### Discussion and Reflection

Globally, there have been many calls for curriculum reform in psychiatry (Anderson, Blumenfeld, Pintrich, Clark Marx & Peterson, 1995), but various cultural and structural barriers have hampered progress in Pakistan. Barriers cited by literature include a lack of oversight for the educational

program; limited resources and an ill-defined budget for medical students' education; faculty inertia and a lack of incentive for faculty to teach; lack of leadership in the educational program; and lack of measurement of outcomes (Swanson & Anderson, 1993). Our experience and critical reflection on the curriculum design add to the existing global literature about the experience, challenges, successful outcomes, and the process of redesigning an UGME psychiatric curriculum in Pakistan. We have integrated best practices by adapting the Kern's 'Six-Step Approach' for curriculum development (Chen *et al*, 2019). The underlying principles of Kern's approach emphasize the broader responsibility and accountability of medical educators towards the community and health care system. It follows a logical, systematic approach to curriculum development with an emphasis on professional, ethical, and moral obligations of medical educators to achieve their goals and objectives (Figure 4).

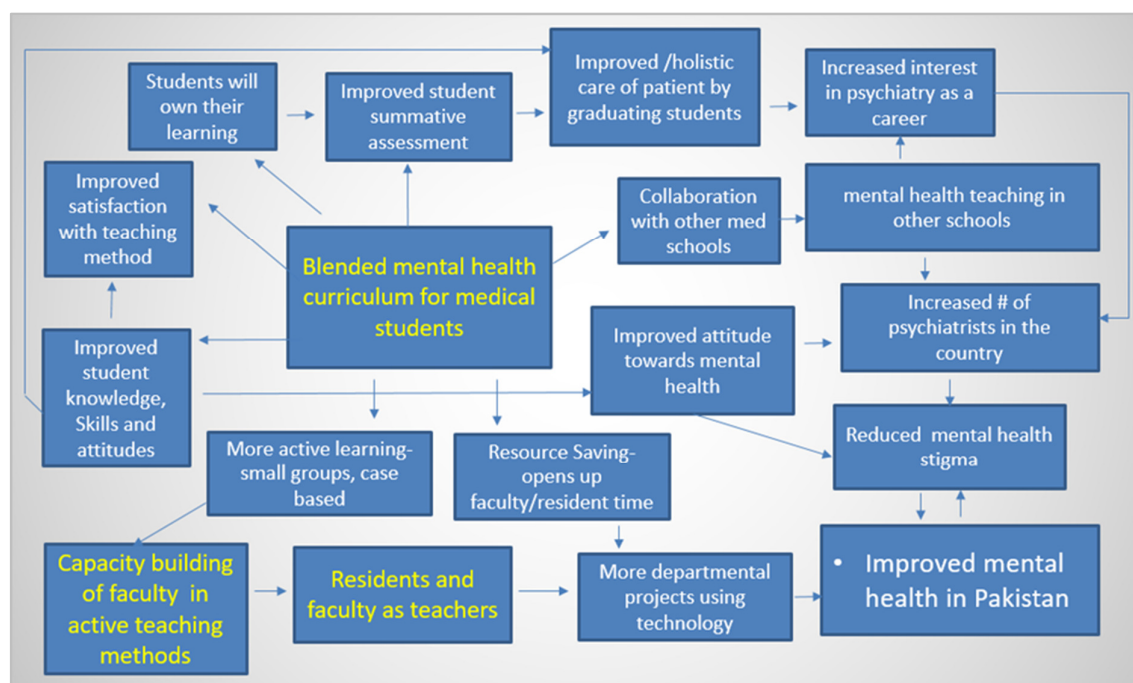


Figure 4. Concept Map of Blended Mental Health Curriculum for medical students (Source: Author: Ayesha I Mian)

Pakistan is in the early stages of a significant academic psychiatry curriculum reform process. It is essential from the outset to recognize the ground reality of UGME psychiatry. The results of our study necessitate the paradigm shift in current academic psychiatry practices in Pakistan from a more traditional curriculum approach to an active learning pedagogy. There is now a substantial body of evidence that points to the importance of active learning teaching strategies in an effective knowledge transfer, understanding, and retention for the students (Hrepic, Zollman & Rebello, 2007). Meyers & Jones, (1993) have discussed the effect of effective educational methods and student engagement on a variety of brain functions. This enables students to create mental structures that are more meaningful, transferable, and lasting as compared to when students are taught using traditional passive instructional methods (Hrepic *et al*, 2007).

Our curriculum was spanned out for four weeks. Positive results have been previously reported with a four-week educational of psychiatry clerkship (Niedermier, Way, Kasick & Kuperschmidt, 2010). The

authors were mindful of the 'course-and-a-half' phenomenon as a potential roadblock; students may feel that there is too much work (Hartnett, 2009). Considering this, the planning phase took around six months before the course was launched. A similar period of three to six months in advance of implementation has been seen previously while redesigning courses (Crummett, Mazoué, Anderson, Daughtrey, Love, MacDonald *et al*, 2010). A requirement of high levels of interaction may limit the effectiveness of the blended course design. While it is recommended to make expectations clear to the students, instructors may not be willing or capable of continuous interaction, and therefore miscommunicating course requirements to students may increase attrition, resulting in lower levels of achievement, and lower course evaluations (McGee & Reis, 2012). Student rotations always start on a Monday; two days before the start, students were sent an explanatory email on Friday, with login instructions to the course website to access the course. Detailed pre-reading material included an introduction to the new blended curriculum, as well as mandatory online reading and exercise for the first module (foundation) before the FTF session. An orientation session on Monday further explained the new format, which included the methodology of evaluation and feedback. However, it is imperative to understand that the focus of curriculum design must be on what the instructor and the learner do rather than the delivery mode. Decisions about the redesign of the course should be based on educational principles, not the potential and push to use the technology (Simpson & Anderson, 2009). Setting more realistic curriculum targets has worked in raising achievement in some contexts. Bogie, Harms, Saperson, & McConnell (2017) emphasize the need for the training of faculty members for competency-based education and how it should not be pushed any faster than frontline faculty supervisors can manage to remain informed and engaged.

## Challenges

Our paper centrally discusses the challenges of curriculum design and its implications in the broader context of Pakistan. The focus is positively skewed towards the development of cognitive and psychomotor domains more than the affective domain, which is the essential goal of mental health competencies. One of the challenges was limited protected time to carry out the clerkship related responsibilities. Evidence has recommended an allocation of 20% full-time equivalent (FTE) for clerkship administration, 25% FTE for direct teaching, and 10% FTE for educational research or other education-related scholarly work, for a total of 55% of time devoted to clerkship-related activities. (Kuhn, Cohen, Polan, Campbell, Clegg & Brodkey, 2002). The second challenge was the lack of support for administrative tasks. Morgenstern (2012) indicated similar challenges. Moreover, they have recommended a full-time administrative assistant whose time is primarily assigned to curriculum development. Individual institutions may vary, but published guidelines have recommended that 75% to 100% of the administrative assistant's time be devoted to the psychiatry clerkship (Brodkey & Sierles, 1999).

## Future directions

This critical reflection offers a few implications for medical student psychiatry education. First, the clerkship can positively influence and reinforce their perceptions of psychiatry, ultimately improving their attention to psychosocial aspects of patient care, regardless of specialty choice (Sajid *et al*, 2009). A longitudinal follow-up could assess whether this course prompted interest in psychiatry, leading to a change in career choices and clinical application of the knowledge learned (Skochelak, 2010).

Second, a system should be developed to identify the students who are at the highest risk of failure, by providing a graphical view of achievement and a prioritized list of students for tutors to engage with. A gradebook could be developed and used to measure achievement data, including grades associated with examinations, assignments, and participation (e.g., in online discussion). When contextualized within course-level pedagogical frameworks, predictive learning analytics can be used to forecast intricate patterns of student learning by tracking student behaviors within VLE. This feature holds significance in the context of the countrywide implementation of this course. These patterns can subsequently be used as the basis for real-time interventions with students who vary in baseline knowledge at the start of this course.

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**References**

- Alexander, A.G., Deas, D. & Lyons, P.E. 2018. An Internet-based radiology course in medical school: comparison of academic performance of students on campus versus those with absenteeism due to residency interviews. *JMIR medical education*. 4(1): e14.
- Anderson, L.M., Blumenfeld, P., Pintrich, P.R., Clark, C.M., Marx, R.W. & Peterson, P. 1995. Educational psychology for teachers: Reforming our courses, rethinking our roles. *Educational Psychologist*. 30(3): 143-157.
- Aryal, K.R. & Pereira, J. 2014. E learning in surgery. *Indian Journal of Surgery*. 76(6): 487-493.
- Bogie, B.J., Harms, S., Saperson, K. & McConnell, M.M. 2017. Learning the tricks of the trade: the need for specialty-specific supervisor training programs in competency-based medical education. *Academic Psychiatry*. 41(3): 430-433.
- Brodkey A.C. & Sierles, F.S. 1999. Psychiatric clerkships. In Kay, J., Silberman, E.K. & Pessar, L. (eds.) *Handbook of Psychiatric Education and Faculty Development*. Washington DC: American Psychiatric Press. 255-304.
- Carraccio, C., Wolfsthal, S.D., Englander, R., Ferentz, K. & Martin, C. 2002. Shifting paradigms: from Flexner to competencies. *Academic medicine*. 77(5): 361-367.
- Chang, V. & Fisher, D. 2003. The validation and application of a new learning environment instrument for online learning in higher education. In Fisher, D. (ed.) *Technology-rich learning environments: A future perspective*. Singapore: World Scientific Publishing. 1-20.
- Chen, B.Y., Kern, D.E., Kearns, R.M., Thomas, P.A., Hughes, M.T. & Tackett, S. 2019. From modules to MOOCs: application of the six-step approach to online curriculum development for medical education. *Academic Medicine*. 94(5): 678-685.
- Chur-Hansen, A., Devitt, P., Crabb, S., Palmer, E. & De Young, N. 2012. Online, blended learning materials in psychiatry for medical students and trainees. *Australasian Psychiatry*. 20(5): 445.
- Crummett, C., Mazoué, J., Anderson, R., Daughtrey, T., Love, W., MacDonald, S., Stoloff, M., Wilcox, D. & Zemliansky, P. 2010. *Best Practices for Online and Hybrid Course Delivery*. James Madison University. Available: [https://iemonlinedelivery.files.wordpress.com/2013/03/jmu\\_best\\_practices.pdf](https://iemonlinedelivery.files.wordpress.com/2013/03/jmu_best_practices.pdf). Accessed: 20 September 2020.

- Demyttenaere, K., Bruffaerts, R., Posada-Villa, J., Gasquet, I., Kovess, V., Lepine, J., Angermeyer, M.C., Bernert, S., de Girolamo, G., Morosini, P., Polidori, G., Kikkawa, T., Kawakami, N., Ono, Y., Takeshima, T., Uda, H., Karam, E.G., Fayyad, J.A., Karam, A.N., Mneimneh, Z.N., Medina-Mora, M.E., Borges, G., Lara, C., de Graaf, R., Ormel, J., Gureje, O., Shen, Y., Huang, Y., Zhang, M., Alonso, J., Haro, J.M., Vilagut, G., Bromet, E.J., Gluzman, S., Webb, C., Kessler, R.C., Merikangas, K.R., Anthony, J.C., Von Korff, M.R., Wang, P.S., Brugha, T.S., Aguilar-Gaxiola, S., Lee, S., Heeringa, S., Pennell, B.E., Zaslavsky, A.M., Ustun, T.B. & Chatterji, S. 2004. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA*. 291(21): 2581-2590. DOI: 10.1001/jama.291.21.2581.
- Doran, G.T. 1981. There's a SMART Way to Write Management's Goals and Objectives. *Management Review*. 70(11): 35-36.
- El Alfy, S., Gómez, J.M. & Ivanov, D. 2017. Exploring instructors' technology readiness, attitudes and behavioral intentions towards e-learning technologies in Egypt and United Arab Emirates. *Education and Information Technologies*. 22(5): 2605-2627. <https://doi.org/10.1007/s10639-016-9562-1>.
- Frank, J.R., Mungroo, R., Ahmad, Y., Wang, M., De Rossi, S., & Horsley, T. 2010. Toward a definition of competency-based education in medicine: a systematic review of published definitions. *Medical teacher*. 32(8): 631-637.
- Freeland, J. 2014. Blending toward Competency. Early Patterns of Blended Learning and Competency-Based Education in New Hampshire. Clayton Christensen Institute for Disruptive Innovation.
- Garrison, D.R. & Kanuka, H. 2004. Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*. 7(2): 95–105. <https://doi.org/10.1016/j.iheduc.2004.02.001>.
- Goldberg, R., Guadagnoli, E., Silliman, R.A. & Glicksman, A. 1990. Cancer patients' concerns: congruence between patients and primary care physicians. *Journal of Cancer Education*. 5(3): 193-199.
- Graham, C.R. 2013. Emerging practice and research in blended learning. In Moore, M.G. (ed.) *Handbook of distance education*. 3<sup>rd</sup> ed. 333-350. New York: Routledge. DOI: 10.4324/9780203803738.ch21
- Guerrero, A.P., Beresin, E.V., Balon, R., Brenner, A.M., Louie, A.K., Coverdale, J.H. & Roberts, L.W., 2017. The competency movement in psychiatric education. *Academic Psychiatry*. 41: 312–314. <https://doi.org/10.1007/s40596-017-0712-6>.
- Hartnett, M. 2009. Factors Undermining Motivation in Place-based Blended Learning. In Atkinson, R.J. & McBeath, C. (eds.) *Same places, different spaces: Proceedings of ASCILITE 2009*. 26th Annual Australasian Society for Computers in Learning in Tertiary Education (ASCLILITE) International Conference. 6-9 December 2009. The University of Auckland, Auckland, New Zealand. 439-443. Available: <https://www.ascilite.org/conferences/auckland09/procs/hartnett.pdf>. Accessed: 20 September 2020.
- Hrepic, Z., Zollman, D.A. & Rebello, N.S. 2007. Comparing students' and experts' understanding of the content of a lecture. *Journal of Science Education and Technology*. 16(3): 213-224.



- Khan, M.M. 2016. Economic burden of mental illnesses in Pakistan. *Journal of Mental Health Policy and Economics*. 19(3): 155.
- Kohn, R., Saxena, S., Levav, I. & Saraceno, B. 2004. The treatment gap in mental health care. *Bulletin of the World Health Organization*. 82(11): 858-866.
- Kuhn, T.W., Cohen, M.J., Polan, H.J., Campbell, E.C., Clegg, K.A. & Brodkey, A.C. 2002. Standards for psychiatry clerkship directors. *Academic Psychiatry*. 26(1): 31-37.
- Langenau, E.E., Lee, R. & Fults, M. 2017. Blended Learning Educational Format for Third-Year Pediatrics Clinical Rotation. *The Journal of the American Osteopathic Association*. 117(4): 234.
- Laster, S. 2010. Model-driven design: Systematically building integrated blended learning experiences. *Journal of Asynchronous Learning Networks*. 14(1): 39-53.
- Manohari, S.M., Pradeep, J., Galgali, R.B. & Sathyanarayanan, V. 2013. How to teach psychiatry to undergraduates. *Indian Journal of Psychiatry*. 55(5).
- McGee, P. & Reis, A. 2012. Blended course design: A synthesis of best practices. *Journal of Asynchronous Learning Networks*. 16(4): 7-22.
- Meyers, C. & Jones, T.B. 1993. *Promoting Active Learning. Strategies for the College Classroom*. San Francisco: Jossey-Bass.
- Mian, A., Naseem, A., Chachar, A. & Saeed, H. 2018. Mental health curriculum for Pakistan: integrating virtual, classroom and onsite training. *Medical Education*. 52(11):1201-1202. DOI: 10.1111/medu.13705.
- Mirza, I. & Jenkins, R. 2004. Risk factors, prevalence, and treatment of anxiety and depressive disorders in Pakistan: systematic review. *BMJ*. 328: 794.
- Morgenstern B.Z. (ed.) 2012. *Guidebook for Clerkship Directors*. 4<sup>th</sup> Edition. Syracuse, NY: Gegensatz Press.
- Naeem, F. & Ayub, M. 2004. Psychiatric training in Pakistan. *Medical education online*. 9(1): 4369.
- Niedermier, J., Way, D., Kasick, D. & Kuperschmidt, R. 2010. Effect of curriculum change on exam performance in a 4-week psychiatry clerkship. *Academic Psychiatry*. 34(3): 216-219.
- Pakistan Medical & Dental Council (PM&DC). 2019. *Curriculum of M.B.B.S.* Available: <http://pmdc.org.pk/LinkClick.aspx?fileticket=EKfBIOSDTkE%3d&tabid=102&mid=556>. Accessed September 24 2020
- Sajid, A., Khan, M.M., Shakir, M., Moazam-Zaman, R., & Ali, A. 2009. The effect of clinical clerkship on students' attitudes toward psychiatry in Karachi, Pakistan. *Academic Psychiatry*. 33(3): 212-214.
- Schneiderhan J., Guetterman T.C. & Dobson M.L. 2019. Curriculum development: a how to primer. *Fam Med Com Health*. 7:e000046. DOI:10.1136/fmch-2018-000046.
- Simpson, M. & Anderson, B. 2009. Redesigning initial teacher education. In Stacey, E. & Gerbic, P (eds.) *Effective blended learning practices: evidence-based perspectives in ICT-facilitated education*. Chapter 4. 62-78. Hershey: IGI Global.

- Skochelek, S.E. 2010. A decade of reports calling for a change in medical education: What do they say?. *Academic Medicine*. 85(9): S26-33.
- Swanson, A.G. & Anderson, M.B. 1993. Educating medical students. Assessing change in medical education—the road to implementation. *Academic Medicine*. 68(6): S1-46.
- Tam, M. 2014. Outcomes-based approach to quality assessment and curriculum improvement in higher education. *Quality Assurance in Education*. 22(2): 158-168. <https://doi.org/10.1108/QAE-09-2011-0059>.
- Thomas, P.A., Kern, D.E., Hughes, M.T., & Chen, B.Y. (eds.). 2015. *Curriculum development for medical education: a six-step approach*. Baltimore: Johns Hopkins University Press.
- Wiecha, J.M., Vanderschmidt, H. & Schilling, K. 2002) HEAL: an instructional design model applied to an online clerkship in family medicine. *Academic medicine: journal of the Association of American Medical Colleges*. 77(9): 925-926.
- World Health Organization (WHO). 2005. *World Health Organization assessment instrument for mental health systems-WHO-AIMS version 2.2* (No. WHO/MSD/MER/05.2). Geneva: World Health Organization. Available: [https://www.who.int/mental\\_health/publications/who\\_aims\\_instrument/en/](https://www.who.int/mental_health/publications/who_aims_instrument/en/). Accessed: 20 September 2020.
- World Health Organization (WHO). 2009. *Who-Aims Report on Mental Health System in Pakistan*. Geneva: World Health Organization. Available: [https://www.who.int/mental\\_health/pakistan\\_who\\_aims\\_report.pdf](https://www.who.int/mental_health/pakistan_who_aims_report.pdf). Accessed: 20 September 2020.
- World Health Organization (WHO). 2013. *Mental health action plan 2013-2020*. Geneva: World Health Organization. Available: [https://www.who.int/mental\\_health/publications/action\\_plan/en/](https://www.who.int/mental_health/publications/action_plan/en/). Accessed: 20 September 2020.



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