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**To cite this article:** Rehan Ahmed Khan, Annemarie Spruijt, Usman Mahboob, Mohamed Al Eraky & Jeroen J. G. van Merriënboer (2023) A mixed-method study on student and teacher perceptions of curriculum viability inhibitors, *Innovations in Education and Teaching International*, 60:1, 91-100, DOI: [10.1080/14703297.2021.1960880](https://doi.org/10.1080/14703297.2021.1960880)

**To link to this article:** <https://doi.org/10.1080/14703297.2021.1960880>



Published online: 27 Jul 2021.



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## A mixed-method study on student and teacher perceptions of curriculum viability inhibitors

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### ABSTRACT

Perceptions of teachers and students about curriculum viability inhibitors are equally important yet may differ. Divergence can lead to destructive friction and adversely affect curriculum viability. Our team aimed to find the perceptions of teachers and students on inhibitors affecting the viability of an implemented medical curriculum, report their convergence or divergence, and explore approaches to reduce divergence. Through a mixed-method approach, using valid and reliable questionnaires, we found the curriculum under review had no clear inhibitors. Whereas teachers exhibited complete agreement that no educational programme inhibitors existed, students did not fully agree. Upon qualitative inquiry, using focus group discussion with students and teachers, we found that ‘improving the communication gap’, ‘enhancing the role of faculty and students in curriculum’, and ‘improving the assessment process’ can reduce the friction between teachers and students. This study provides an approach that identifies the curriculum viability inhibitors and solutions to address them.

### KEYWORDS

Mixed method design; student perceptions; teacher perceptions; curriculum viability; curriculum inhibitors

## Introduction

Curriculum is a complete educational experience and not just a syllabus (Thomas et al., 2016). Its definition has evolved over time, expanding from the core areas of curricular outcomes, teaching strategies, assessment, and evaluation (Prideaux, 2003) to include student support, faculty development, educational environment, and governance (Harden, 1986). It is an ever-changing process, hence it can develop issues that can inhibit achieving quality standards or affect its viability (Khan et al., 2020). Measuring these viability inhibitors in a curriculum is crucial. Perceptions of teachers and students, the two key curriculum stakeholders, can elucidate curriculum viability inhibitors (Chan et al., 2020; Turner et al., 2017). However, they may have varying perceptions about specific aspects of the curriculum (Perera et al., 2008). Convergence occurs when students’ and

teachers' perceptions are congruent; friction occurs when perceptions differ (Könings et al., 2014). Congruence increases the curriculum's productivity regarding bridging the gap between the taught and learnt curriculum (Pyhältö et al., 2015; Wubbels et al., 1991). Teachers with constructive interactions with their students foster environments conducive to learning, as social interaction plays a vital role in learning (Hurst et al., 2013). Conversely, differing perceptions may decrease curriculum productivity. For example, when a teacher's teaching strategy and student's learning strategy are incompatible, friction results, decreasing learning or thinking skills (Könings et al., 2005; Vermunt & Verloop, 1999). This requires finding the reasons for friction to facilitate remedies.

Curriculum viability is a new concept (Khan et al., 2019). The curriculum's quality is usually evaluated by assessing it against specific standards set by accreditation bodies (Tackett et al., 2015). For instance, the 'World Federation for Medical Education (WFME) basic quality standards' are globally accepted by many institutions and independent curriculum reviewers to evaluate an undergraduate medical curriculum (Sjöström et al., 2019). Their goal is to evaluate whether a curriculum meets the standards, yet this process does not identify responsible viability inhibitors. Real curriculum quality assurance is challenging without identifying and understanding these inhibitors. The inhibitors can be identified through internal quality assurance process as a part of institutional self-evaluation. We measured curriculum viability inhibitors; to determine curriculum viability, defined as the degree to which quality standards have been met or not met, combined with the presence of inhibitors (Khan et al., 2019). Inhibitors of a curriculum are issues or factors that are detrimental for the achievement of quality standards. Examples of such inhibitors include irrelevant curriculum content, lack of time for sufficient studying, neglecting student demands, research culture undervaluing education, lack of social interaction, and presence of strong disciplinary cultures (Khan et al., 2019).

This study aims to develop an approach for measuring the presence of curriculum viability inhibitors in a medical college; find the variations of teacher and student perceptions regarding these inhibitors and explore solutions for disagreement. To do so, this study addressed three research questions: (1) Which curriculum viability inhibitors are present in an undergraduate medical curriculum as measured by teacher and student curriculum viability questionnaires? (2) What are the curriculum viability inhibitors teachers and students converge and/or diverge on? (3) What, according to students and teachers, are approaches to deal with divergence on curriculum viability indicators?

## Methods

This is a mixed-method study. For quantitative data, teachers' and students' perceptions were collected through validated, targeted questionnaires measuring viability inhibitors (Khan et al., 2021). For qualitative data, a focus group discussion (FGD) among teachers and students explored possible approaches to diverging teachers' and students' perceptions.

## Settings

The study was conducted in a medical college having a five-year MBBS program, established in 1996. The current curriculum consists of two phases spread over five years. It has

undergone an external curriculum review based on WFME standards twice in the last eight years and undergoes an internal review every year.

### **Participants**

For quantitative assessment, all the 87 medical college faculty members (lecturers, senior lecturers, assistant professors, associate professors, and full professors) involved in teaching and 100 final-year students were asked to participate, as they have maximum experience and knowledge of the curriculum.

For qualitative assessment, five teachers and five students participated in the FGD. Teachers included were actively involved in teaching, three from pre-clinical, and two from clinical sciences.

### **Materials**

Two valid, reliable questionnaires were developed to collect teachers' and students' perceptions (Khan et al., 2021). The teacher questionnaire is a 25-item, closed-question questionnaire measuring curriculum viability inhibitors in six constructs: Educational program, Disciplinary Culture, Social Interaction, Institutional policy, Communication practices, and Faculty Involvement. The student questionnaire is a 14-item, closed-question questionnaire with three constructs (Inhibitors): Educational program, Student requirements, and Institutional culture. Eight items for the two questionnaires are identical measuring educational program and institutional culture. Each item is scored on a 5-point Likert scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, and 5 = strongly agree. A semi structured approach was adopted to the focus group discussion with a flexibility to prompt and probe the pre-structured questions that were used to start the discussion (Annexure A).

### **Procedure**

For the quantitative assessment, questionnaires were developed using Qualtrics ([www.qualtrics.com](http://www.qualtrics.com)) and distributed to 87 faculty members and 100 medical students through email and social media. Respondents' identities were kept anonymous. They were requested to complete the questionnaire within two weeks, with a reminder sent after one week. Faculty and students who did not fill out questionnaires online were also provided hard copies of the questionnaire, during teaching activities.

For the qualitative part, five teachers and five students were invited to participate in the FGD online on Zoom ([www.zoom.us](http://www.zoom.us)). All had filled out questionnaires earlier and were briefed about the purpose of the FGD. In addition to it, students were asked to provide open and honest opinions without any anxiety or fear as the aim of FGD was to find common solutions in areas of divergence along with their teachers. The FGD started with introducing participants and establishing understanding of the topic under discussion (primary author, RAK). Questions probed the reasons and their solutions regarding the curriculum viability inhibitor. The FGD was closed by soliciting any additional comments. Another author (UM) observed the FGD and took notes for discussion.

Data were transcribed using the Otter online application (otter.ai) that converts speech to text (Jüngling & Hofer, 2019). RAK checked the text for any inaccuracies by listening to the recording and member checking it with the participants. Remaining authors (AS, UM, MAL, JVM) reviewed it to ensure credibility and validity of the data. Ethical approval was obtained from the Ethical Review Committee of the Riphah International University (#Riphah/IRC/20/230).

### *Data analysis*

Answering our first research question, we calculated the median, and internal consistency (Cronbach's alpha) of all the items using SPSS 26. To measure the presence of curriculum viability inhibitors, the total score of the inhibitors was calculated (Boone & Boone, 2012). We interpreted the results as (i) complete agreement (median 1) or partial agreement (median 2) on the absence of the inhibitor; (ii) neutral when the median was 3; and (iii) complete agreement (median 5) or partial agreement (median 4) on presence of the inhibitor. Cronbach's alpha was considered acceptable between .50 and .70, good between .70 and .90, and excellent if higher than .90 (Altman, 1991; Taber, 2018).

Answering our second research question, we compared the total scores of teacher and student questionnaires for the two shared inhibitors, educational program, and institutional culture. Differences between teacher and student scores were tested with the Mann-Whitney  $U$  test.

Answering our third research question, thematic analysis of the FGD data was done (Braun & Clarke, 2006). RAK performed the manual analysis of the transcribed data. Another author (UM) also examined and reviewed the transcript thoroughly. The raw data were coded to enable interpretation in a meaningful way and analysed to establish the relationship between them and how they can be combined to form a theme or fitted in a sub-theme. Finally, three themes were generated as being relevant to answering the research question. The coding followed by the formation of sub-themes and main themes was done by RAK and validated by UM.

## **Results**

Questionnaire respondents included 79 of 100 students (79%), and 74 of 87 faculty members (85%), comprising 25 full professors (34%), 11 associate professors (15%), 11 assistant professors (15%), 6 senior lecturers (8%), and 21 lecturers (28%); 49% were from clinical sciences, and 51% from pre-clinical sciences.

### ***Research question 1: Which curriculum viability inhibitors are present in an undergraduate medical curriculum as measured by teacher and student curriculum viability questionnaires?***

Kolmogorov-Smirnoff and Shapiro-Wilk tests showed that data were not normally distributed ( $p$ -value < .05), hence median and IQR are reported (Field, 2018). In the teacher questionnaire, all inhibitors had an average value < 3 (neutral value), so the curriculum under review had no clear inhibitors according to our criteria, however the disagreement of teachers were in the category of somewhat disagreed as compared to the students in

**Table 1.** Internal consistency of teacher and student questionnaire measuring curriculum viability inhibitors.

Teacher Questionnaire	
Subscales	Internal Consistency (Cronbach's alpha)
1-Educational Program (EP) Inhibitor	.58
2-Disciplinary culture (DC) Inhibitor	.54
3-Social interaction (SI) Inhibitor	.77
4-Institutional policies (IP) Inhibitor	.81
5-Communication Practices (CP) Inhibitor	.80
6-Faculty involvement (FI) Inhibitor	.82
Student Questionnaire	
1-Educational Program (EP) Inhibitor	.76
2-Student Requirements (SR) Inhibitor	.72
3-Institutional Culture (IC) Inhibitor	.68

the category of strongly disagreed. The mean value of the Educational Program (EP) inhibitor was 1; Communication Practices (CP), Social Interaction (SI), Faculty Involvement (FI), and Institutional Policy (IP) was 2; and Disciplinary Culture (DC) was 2.7. In the student questionnaire, the median value of all inhibitors was 2. The Cronbach's alpha of all the inhibitors (subscales) is shown in Table 1.

**Research question 2: What are the curriculum inhibitors teachers and students converge and/or diverge on?**

Table 2 shows teachers had a median of 1 in the Education program inhibitor with an interpretation that teachers strongly agree that the inhibitor was absent, whereas students' median value was 2, indicating they somewhat agree this inhibitor is absent. The  $p$ -value was found to be  $< .05$ , indicating a significant difference between teachers' and students' perceptions.

Table 2 also shows the total score under Institutional Culture is 2 for both student and teacher questionnaires, with a  $p$ -value  $> .05$ , indicating no differences between teacher and student perceptions.

**Research question 3: What, according to teachers and students, are approaches to deal with divergence regarding the curriculum viability inhibitors?**

Table 3 displays the thematic analysis of the FGD done to further explore the curriculum viability inhibitor and approaches to reduce divergence. Answering our third research question, three main themes and eight sub-themes emerged, including 'bridging the communication gap', 'enhancing the role of faculty and students in the curriculum', and

**Table 2.** Comparison of perceptions of teacher and student questionnaire based on the common inhibitors in the questionnaire.

Educational Program Inhibitor	Median	Likert Scale Value	P- value
<i>Teacher questionnaire</i>	1	Strongly Agree	.00
<i>Student questionnaire</i>	2	Somewhat agree	
Institutional Culture Inhibitor			
<i>Teacher Perception</i>	2	Somewhat agree	.22
<i>Student Perception</i>	2	Somewhat agree	

**Table 3.** Thematic analysis of focus group discussion.

Themes	Sub-themes	Quotes
Bridging the communication gap	Communication gap between teachers and students	<ul style="list-style-type: none"> <li>• 'If we think, we (student's) have problems with any of the content, we do not tell it properly to the teachers'.</li> <li>• 'I think the most important thing in this regard (to bridge the gap between teacher and students) is communication, and more of an interactive session (while teaching)'.</li> </ul>
	Communication gap between departments	<ul style="list-style-type: none"> <li>• 'I think there should be intradepartmental meetings to discuss such issues where there is no clarity in assessment'.</li> </ul>
Enhancing the role of faculty and students in curriculum	Teaching by senior faculty	<ul style="list-style-type: none"> <li>• '(It is) more common in clinical sciences and varies from batch to batch. They (students) are taught by junior doctors (while) senior faculty is not available'.</li> </ul>
	Faculty development	<ul style="list-style-type: none"> <li>• 'I feel that those faculty members who have less experience of integrated curriculum or are not CHPE qualified may find it difficult to understand the usage of these different assessment tools'.</li> </ul>
	Teachers guidance	<ul style="list-style-type: none"> <li>• 'The teachers teaching in basic sciences should guide students in preclinical years about the basic (sciences) content that will be required by them (students) in clinical sciences to have better concepts'.</li> <li>• 'Teachers should guide students about what (to) read and learn'.</li> </ul>
	Recognition of the role of Students	<ul style="list-style-type: none"> <li>• '(There should be) assessment and curriculum student's committees that interact with the faculties committees, to bring the students viewpoint in sync with the faculty'.</li> <li>• 'I think the learning outcomes should be revised. and if they are revised the students should have a say'.</li> </ul>
Improving the assessment process	Align assessment to teaching	<ul style="list-style-type: none"> <li>• 'If some LO (learning outcome) is to be assessed through MCQ, it should not be asked in OSCE'.</li> <li>• 'I am not taught by the teachers about prioritising an investigation for a specific disease. But in my assessment, I am expected to answer one (specific) answer (in MCQ), and I'm completely blank 'as I am not assessed the way I am taught'.</li> </ul>
	Uniform pattern of assessment	<ul style="list-style-type: none"> <li>• 'Formative (low-stake) assessment should be properly structured and monitored as our faculty members do CBAs (mid-stakes) and professionals (high-stakes assessment)'.</li> </ul>

'improving the assessment process'. Teachers and students agreed that proper communication could bridge the gap in perceptions between them. They suggested that explicit instruction by the teachers regarding delivery of the curriculum and intradepartmental meetings can reduce the teacher and student disconnect. They also emphasised that teachers should guide them more about the contents in the module books and recognise students' role in developing and revising the learning outcomes and the contents. For example, one student said, 'If we think we (students) have problems with any of the content, we do not tell it properly to the teachers'. Similarly, to address the difference in perceptions regarding learning outcomes, a teacher said, 'They (learning outcomes) need to be laid out in a clearer manner'. Students also affirmed this, illustrated here: 'I think the learning outcomes should be revised and if they are revised, the students should have a say'.

## Discussion

This study provides an approach to measure curriculum viability inhibitors in an undergraduate medical curriculum, to find variations in teachers' and students' perceptions of curriculum viability inhibitors, and to bridge these differences.

On comparison of the 'educational program' inhibitor, we found divergence between teachers' and students' perceptions. This divergence can possibly cause destructive friction (Vermunt & Verloop, 1999); we further explored it through FGD. Whereas teachers showed complete agreement that no educational program inhibitors existed, students did not fully agree.

We found no difference in teacher and student perceptions regarding the institutional-culture inhibitor. This result is dissimilar to Miles and Leinster (2009), who found teaching staff felt unable to comment on the students' social environment. They also reported a limitation in that they used a tool designed for measuring students' perceptions to find teachers' perceptions, which may have led to misinterpretation of teacher perceptions. However, our study used questionnaires designed separately for both teachers and students. Another study compared student and teacher perceptions regarding the curriculum environment using the Dundee Ready Educational Environment Measure (DREEM) questionnaire for both students' and teachers' perceptions, but they did not follow it with qualitative inquiry to probe the perceptions (Shehnaz et al., 2012). We avoided both these limitations by using teachers and students questionnaires followed by FGD to find divergence in perceptions and to identify approaches to reduce this gap. We believe this approach might help to improve the curriculum, even when no strong inhibitors are present.

The three suggestions to reduce the friction between teachers and students, that is, improving the communication gap between teachers and students, enhancing the role of faculty and students in curriculum, and improving the assessment process, have also been reported in other studies as approaches to improve curriculum quality (Bland et al., 2000; Huang et al., 2014; Watson et al., 1998). Martens et al. also emphasised the importance of teacher-student partnerships in enhancing educational quality and highlighted the importance of co-creation in which teachers should be open to involving students in improving education quality (Martens et al., 2020).

Our study was limited to one medical college, running an integrated outcomes-based curriculum, so it only provides insight into curriculum viability inhibitors of this type of curriculum. Expanding the study would enable determining viability inhibitors in other curricula. Another limitation was that two subscales had internal consistencies  $< .7$ : educational program (EP) with internal consistency of .58 and disciplinary culture (DC) with internal consistency of .54, both for the teacher questionnaire. This low value was still in the acceptable range of internal consistency (Cortina, 1993; Field, 2018; Schmitt, 1996; Sijtsma, 2009). Our findings on the divergence between teachers and students on the educational program scale must thus be interpreted with care, because of the relatively low internal consistency. Also, the influence of subject/ discipline over flexibility to address teacher/student disparities in expectation or experience should be considered while using these questionnaires.

Questionnaires measuring curriculum viability inhibitors can be used stand-alone or as part of the curriculum evaluation process. Used stand-alone, questionnaires measure the presence of curriculum inhibitors; help curriculum evaluators focus on relevant areas and see how inhibitors affect the curriculum's quality; and help find remedies for curriculum weaknesses. Used as part of curriculum evaluation, they can help determine reasons for not meeting quality standards, the curriculum's weaknesses, and their causes.



Further studies can pair questionnaires measuring curriculum standards (e.g. DREEM, Assessment Implementation Measure (AIM), HELES, or JHLES) with teacher and student curriculum viability questionnaires to determine curriculum viability (Roff, 2005; Rusticus et al., 2019; Sajjad et al., 2018).

In conclusion, teacher and student questionnaires can determine viability inhibitors and perception variations in a medical curriculum. Further exploring the divergence through qualitative inquiry can help to reduce the friction between teacher and student perceptions and help find approaches to reduce them and improve curriculum.

## Acknowledgments

The authors thank all the students, teachers, and experts for their valuable time. We are thankful to Ms. Pamela Walter from Scott Memorial library, Jefferson University, Philadelphia, USA for her comments on the academic writing that helped in improving the manuscript.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Notes on contributor

*Rehan Ahmed Khan* is an Assistant Dean Medical Education and Professor of Surgery at Riphah International University, Pakistan.

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## Availability of data and material

The data generated and analysed during the study are available on request.

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## Annexure A

- (1) What do you understand by curriculum viability and curriculum viability inhibitors?
- (2) What is your understanding of irrelevant curriculum content and low-quality assessment?
- (3) What are the reasons for difference in perceptions of teachers and students regarding it and how can we bridge this gap?
- (4) What do you think is the reason for difference in perceptions regarding the quality of assessment and how can we reduce this gap?