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RESEARCH ARTICLE

PROBLEM-BASED LEARNING

Health educators' professional agency in negotiating their problem-based learning (PBL) facilitator roles: Q study

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Abstract

Background: University educators are expected to cope with emerging situations and complex issues in teaching and learning, and this requires them to be agentic and proactive. While professional agency of health educators has not been investigated adequately, this study explores health educators' perception of their enactment of professional agency in the PBL facilitation process in a postpandemic context.

Methods: Forty PBL facilitators from medical and dental programs in Qatar University participated in the study during the fall semester of 2021, after resuming in-person PBL sessions. To collect and analyse data both qualitatively and quantitatively, Q methodology was employed. A 33-statement Q-set was established based on a proposed theoretical framework of professional agency in PBL facilitation, which included three dimensions—intrapersonal, action, and environment.

Results: Q factor analysis identified five significantly different viewpoints regarding how PBL facilitators perceive their professional agency sources, namely, (1) institutional resources, (2) policy guideline, (3) making efforts to improve support for students, (4) beliefs on PBL effectiveness, and (5) agentic actions. While four of the viewpoints were positive, participants with the second viewpoint reported negative perceptions and described lack of interest in facilitation work. All three dimensions of the framework were addressed and indicated complexity and interrelatedness of agency enactment. Consensus was observed regarding the need for more professional learning activities for faculty involved in PBL facilitation as source of professional agency.

Discussion: The results revealed a high variation of participants' perceptions of professional agency enactment throughout the three dimensions, indicating the need for establishing a common understanding of PBL facilitation work in a given context. For practical implications, further institutional efforts are required to support professional learning for PBL facilitation in a postpandemic context. Alternate approaches highlighting enforcement of agentic actions in all dimensions of intrapersonal values, stance and action taking, and active interactions with students, colleagues, and

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institutional environments are crucial. Q methodology provides new conceptual and empirical insights to explore the subjectivity of actors in health education.

1 | INTRODUCTION

Academic work at universities, namely, research, teaching, and service, is becoming more complex due to emerging societal and professional demands.¹ In the postpandemic context, university teachers play a critical role promoting student engagement and sustaining learning outcomes, in addition to their preexisting teaching, research, and service workloads. Following major challenges experienced during the COVID pandemic surrounding the effective facilitation of distance learning and collaboration, educators must now manage challenges related to the even more complex teaching practices during the postpandemic era and high uncertainty of educational conditions after resumption to face-to-face teaching. In such a context, university teachers practice in learner-centred methods are influenced by complex factors, including personal factors such as motivation, beliefs about teaching and learning, and institutional aspects such as facilities and policies.^{2,3} To cope with the complex reality, it is essential that university teachers shall be agentic in taking stances and making decisions.⁴

In such a context, university teachers' professional agency, it may be defined as their ability to take actions and make choices and decisions that influence their work.⁴ Although the concept of human agency has been widely explored, the acknowledgement in higher education literature is still at an early stage. From a subject-centred socio-cultural approach to agency,⁵ educators' professional agency is socially constructed and dynamic and closely interwoven with individual subjectivities through practices and negotiation in any given context. Educators' enactment of professional agency is a complex matter involving multiple dimensions that are mutual and interrelated, such as intrapersonal perspectives like motivation, interest, attitude, efficacy, beliefs, knowledge and skills, and modes of interactions with peers, students, and learning environments.⁶

Problem-based learning (PBL) is seen as a learner-centred pedagogy utilising real life problems to trigger the attainment and incorporation of new knowledge through the problem-solving skills and collaborative learning.⁷ In higher education, PBL has observed well-established advantages in student learning that is documented in literature.^{8,9} Recent literature added new insights regarding strategies for the successful implementation of synchronous online PBL.¹⁰ While there is strong agreement in the literature on the characteristics of good facilitators,^{11–14} actual practices of PBL facilitation vary among institutions.¹⁵ In particular, in certain societal and cultural contexts in which teachers are seen as the main source of endorsed knowledge, PBL facilitators may find it challenging to balance student-led learning and expectations to provide direct input.^{15,16} While previous studies have suggested that beliefs promote and constrain the adoption of new ideas and strategies, gaps between university teachers' beliefs and actual practices have been identified.^{17,18}

Qatar University is a national public institution in the state of Qatar, whereby the Colleges of Medicine and Dentistry were recently established 6 and 3 years ago, respectively. In these two colleges, PBL has been adopted as the major learning methodology in the early years to support learner-centeredness; year two and three students attend PBL sessions for 12–14 weeks each semester. PBL facilitators are employed from diverse educational and cultural backgrounds and are mostly new to the institution and are unfamiliar with the societal contexts of the university. Moreover, some of them have limited experience in PBL methodology either as learners or as facilitators. Although professional development activities are provided to support new faculty members in their role as PBL facilitators, it is still a challenge to transform their pedagogical beliefs and practices. Our recent research in the given institutional setting prior to pandemic showed that successful implementation of PBL demands the readiness of faculty not only to adapt their beliefs about teaching and learning but more importantly to take agentic actions sustainably in their actual implementation.¹⁶ Faculty members' pedagogical belief and engagement to the practice of facilitation play an essential role on the effectiveness of PBL implementation and students' learning experiences. During the pandemic, the university experienced emergent shift from face-to-face to full-scale synchronised online teaching and learning, which challenged many educators' teaching efficacy regarding classroom management and motivating students through interactive tasks.¹⁹ Further, university educators are observed to develop diverse approaches to managing marked disruption to education regarding their forms of enacting agency, resilience, emotion management, and renegotiation of their professional identity.²⁰ In response to such challenges professional agency, which is commensurate with their interest, goals, values, choice and decision making, can be an important factor when educators encounter uncertain conditions after returning to face-to-face teaching. Thus, there is a pressing need to explore the ways in which health educators are agented professionals and are able to develop their abilities to cope with the complexity in teaching and learning in a postpandemic context. This study explores how PBL facilitators in the given setting enact their professional agency in a postpandemic context, through exploring the following research question: How do PBL facilitators from medicine and dentistry perceive their professional agency?

2 | THEORETICAL FRAMEWORK

Human agency can be explored in various ways. From a social-cognitive perspective, Bandura²¹ emphasised four primary properties of human agency: (1) intentionality (motivation, interests, beliefs); (2) forethought (setting up goals and targeted outcomes); (3) self-regulation (plans, actions, and implementation monitoring); and

(4) self-evaluation and reflection. Further studies conceptualise enactment of agency through an interaction of personal aptitudes, resources, and social restraints.²² Highlighting the inseparability between individual values, actions and their social contexts, Bandura²³ suggested three significant and interrelated dimensions of agency: intrapersonal aspects such as motivation, affection and cognitions, behaviours and actions, and environmental aspects. Instead of being static, teacher agency is also undergoing changes through the teachers' interaction with others and the environment.⁵ As suggested by Archer,²² agentic choices are connected with the past (personal value), present (how they implement and act in practice), and future (how they engage to prospective development). Taking these three dimensions as a theoretical base, a framework of PBL facilitators' professional agency (Figure 1) is proposed in the current study, serving as a conceptual base that drives the study design, data collection, and analysis.

The intrapersonal dimension emphasises individual beliefs, which is the fundamental source of agency for individual growth regarding positive and negative perceptions towards certain roles (e.g., PBL facilitator).^{1,6} University teachers' pedagogical beliefs, in turn, defines their interests, motivations, attitude, intention, enjoyment, appreciation, and engagement with the targeted tasks.⁴ It is important for a PBL facilitator to develop a constructivist and student-centred learning pedagogical belief rather than providing direct instruction for knowledge reproduction.¹⁷

The action dimension, significantly influenced by the intrapersonal dimension, enhances how individuals self-organise in complex situations and make choices for appropriate actions.⁵ Well-organised individuals are proactive in setting goals, making plans, organising multiple tasks, monitoring the process, adapting to new situations, self-reflecting and evaluating, and seeking diverse strategies to improve their work.²³ In a PBL setting, agentic facilitators should actively participate in preparation and interact with others, for example, students, peer colleagues, and administrators to seek help and feedback.^{6,9}

The environmental dimension highlights the interaction between individuals and their settings, which includes facilities, policies, institutional conditions, and other societal and cultural aspects.⁴ Institutional

settings are often an important factor for university teachers' enactment of professional agency as it determines ways they are supported, which in turn affects their proactivity.³ Simultaneously, agentic professionals actively participate in extending their individual experiences to achieve large-scale benefits and sustainable development at the institutional level.^{3,24}

Guided by this three-dimensional framework, this study examines PBL facilitators' perceptions and experiences of their role and focuses on which factors are considered most important to their agency.

3 | METHODOLOGY

3.1 | Participants

The study received ethical approval by the University Institutional Review Board (IRB) with the file number QU-IRB 1603-EA/21 October 2021. Among the 50 faculty members in the two colleges, 42 have served as PBL facilitators either prior to or at the time of the study. All of the 42 faculty members were invited to participate in this study. The invites were accompanied by participant information sheets explaining research aims, scope of study, and potential contribution by the participants. In total, 41 responses were received in the first 3 weeks of November 2021.

3.2 | Research design and process

A mixed-methods design utilising Q methodology^{25,26} was used for data collection and analysis. Q methodology is a method that explores insights of participants' subjective and often less-accessible perceptions via small-scale approaches integrating qualitative and quantitative characteristics.²⁷ In particular, this method is considered useful to explore not only individual aspects but also collective aspects of the complexity of belief systems, relating individuals to each other, exploring shared thoughts within a particular group and contrasting patterns.^{25,26} In comparison to other methods, Q methodology helps

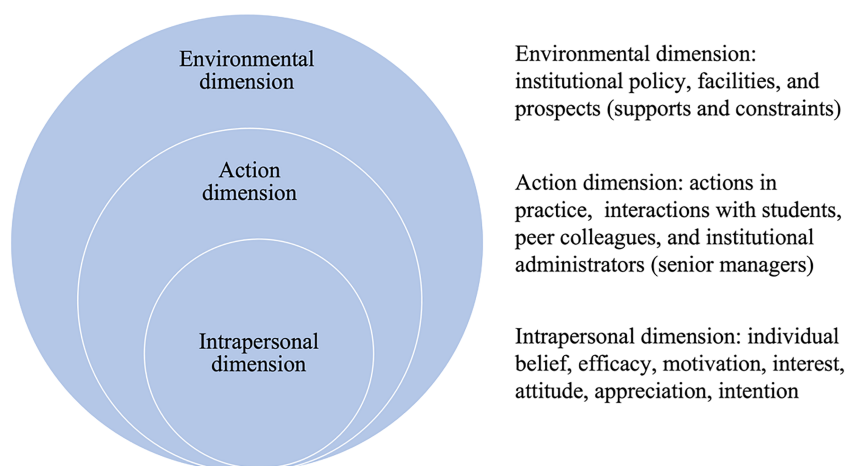


FIGURE 1 A framework of PBL facilitator professional agency [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

minimise the pitfalls of social desirability bias as often criticised in qualitative research,²⁸ and it does not impose categorisations as often done in Likert-scale survey studies.²⁹

Within health professions research, Q methodology remains a novel approach and is gaining increased attention.³⁰ Only a handful of studies have adopted Q methodology as a mixed method in health education literature. It has mainly been used to explore motivational factors for residents to teach,³¹ medical students' self-perceived self-regulated learning in a clinical setting,³² medical students' preferences of small-group active learning,³³ career orientations of medical students,³⁴ and students' perceptions of interprofessional anatomy education.³⁵ In the present study, Q was designated to explore various aspects of professional agency sources perceived by health educators working as PBL facilitators.

In practice, the study was conducted following a six-step procedure synergised in a systematic review of usage of Q methodology within education research.³⁶ In Step 1, the volume of possible assertions surrounded the topic was developed through listing relevant ideas guided by the theoretical framework and literature study. Authors' rich experiences in PBL also contributed.

In Step 2, the framework of professional agency in PBL (Figure 1) was used for organising and selecting statements. On an intrapersonal dimension, the PBL facilitators' roles shall be supported with their beliefs and efficacy about pedagogy, motivation, interest, attitudes, personal values, and intentions.^{2-6,10,11,14,17} On an action dimension, the PBL facilitators may source their agency through actions in practice, such as activating one's own prior experiences and engaging to diverse activities to learn more about PBL,^{16,18} actively participating in PBL development activities such as designing cases and organising collaborative work,^{16,18} and engaging to professional learning activities.^{2,3} The facilitators not only follow instructions on characteristics of good facilitators following health education literature regarding tips and techniques^{8,9,11-14} but also devote to interactions with their students and peer colleagues to constantly improve their facilitation competence.^{16,18} Finally, the facilitation work, on an environmental dimension, is supported or constrained by institutional conditions, facilities, and policy requirements.¹⁴⁻¹⁸ At the same time, as agentic professionals, they shall take actions contributing to the institutional prospective development regarding how to extend the benefits of PBL in a long term.^{16,18}

Following a few steps of review work as illustrated in Figure 2, followed by expert validation and pilot feedback, a total of

33 statements were finally agreed upon by the research team constructing the final Q statement. Table 1 presents the connection between the framework and the statements.

In Step 3, the participants carried out Q sorting, using online Q Method Software ranking the 33 statements by order. Participants were asked to drag each statement and drop in a grid ranking from *least important* (−4) to *most important* (+4) (see Figure S1). Through the forced-choice process, each participant created a holistic assembling of his or her viewpoints.

In Step 4, postsorting activity collected qualitative information about participants' ranking decisions through three open-ended questions: (1) Could you please elaborate why you ranked these particular two statements as the most important and the two as the least important aspects? (2) Are there any missing aspects you would like to address regarding your PBL facilitation experiences? Please elaborate. (3) What would be your suggestions on professional development activities to support your work as a PBL facilitator that can be provided by the college? During the process of step 3 and 4, the researcher team provided individual support to the participants explaining the procedure and answering questions.

Step 5 focused on factor analysis, which included Q-sort correlations and reversed factor analysis. After data collection via Q Method Software, raw data were exported into a Q analysis tool, KADE.³⁷ Among the 41 Q-sorting response, 40 (30 from medicine and 10 from dentistry) were completed and valid for analysis. To decide on the number of factors, a PCA scree test was conducted (see Figure 3), providing a first indication of the right number of factors to be extracted "by the point at which the line changes slope" (p. 108), according to Watts and Stenner.²⁷ Following this principle, a six-factor solution was suggested as an initial analysis result. Data were then condensed through centroid analysis and Varimax rotation before further analysis following general statistical criteria of an eigenvalue greater than 1.00 for explained variance, and each factor shall have minimal two significantly loading participants.^{25,27} In addition to these statistical decision-making criteria, the researchers qualitatively discussed the participants' responses and compared among different solutions until a final agreement was reached that led to the most informative factor solution. No significant factor inter-correlations were identified, consistent with the choice of the five-factor solution; 26 out of 40 participants appreciably loaded on one of the five factors (20 from medicine and six from dentistry). Table S1 presents factor loadings with defining sorts flagged. Among 14 excluded Q sorts,

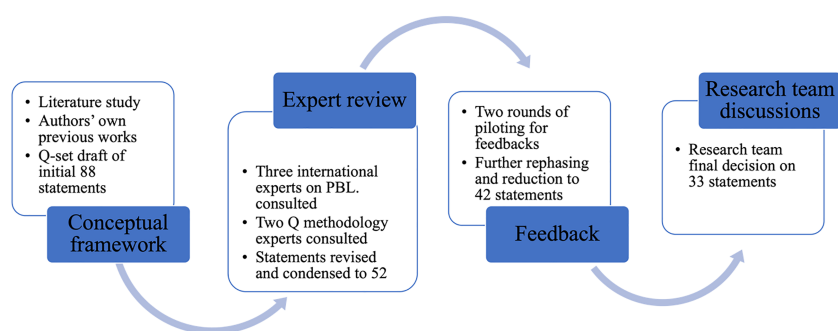


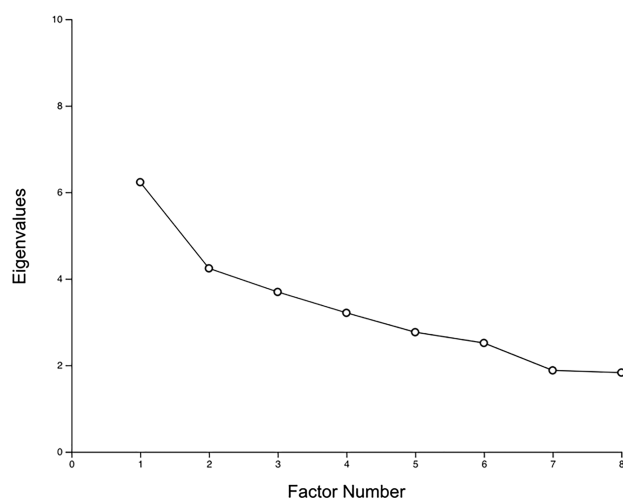
FIGURE 2 Q-set development process Color figure can be viewed at wileyonlinelibrary.com

TABLE 1 From concourse development to Q set

Dimensions and subthemes of professional agency as a PBL facilitator		Statement number	N = 33
Intrapersonal dimension	Belief and efficacy	10, 22, 30	7
	Motivation, interest, attitude	4, 5	
	Value	2, 6	
Action dimension	Actions in practice	8, 12, 14, 15, 17, 18, 23	15
	Interactions with students	7, 13, 21,	
	Interaction with peer colleagues	1, 16, 20, 24, 25	
Environmental dimension:	Institutional conditions (facilities)	11, 28, 29, 31, 33	11
	Institutional policy	19, 32	
	Contributing to institutional development	3, 27	
	Institutional prospects	9	
	Societal values	26	

Note: PBL = problem-based learning.

Scree Plot

**FIGURE 3** Scree plot for factors rotations

there were eight nonsignificantly loading sorts, five confounded ones and one (participant 40) that loaded negatively significantly on Factor 4 which was excluded as it was the only one.

In Step 6, the results and data from the previous steps were interpreted qualitatively, integrating factor arrays (a weighted average of values for each statement within one factor) and participants' demographic and postsorting data. The abductive and iterative process commencing with an intra-factor interpretation linking factor analysis results to participants' demographic and postsorting information. An across-factor interpretation is also included to clarify differences between factors. In the following section, analysis results are presented in a holistic form of narratives for each factor, integrating descriptions of characteristics of each factor, participants' demographic data, and postsorting survey information. Postsorting information was mainly used to confirm, explain, or further elaborate the overall narratives.

4 | RESULTS

Table 2 provides an overview of the values ascribed to statements each factor, listing those with the lowest Z-score variance, suggesting the most consensus, to those with the highest Z-score variance, suggesting the most disagreement.

In reporting the results, *viewpoints* are used to highlight their subjective character of participants' own perceptions of professional agency sources per factor.³⁶ Each viewpoint is presented in a form of narrative description including quantitative attributes and qualitative interpretation. Statement numbers and values are reported in brackets, for example, “#12/4” refers to statement 12 with the value of 4. “D” refers to “distinguishing statements” ($p < 0.05$) and D* represents “significantly distinguishing statements” ($p < 0.01$), underlining statements in which the viewpoints significantly differed.

Table 3 provides an overview of results revealing participants' demographic information such as gender, academic titles, and prior PBL experience, related to their highest and lowest ranked statements.

Results of each viewpoint are reported in the following sections, related to the theoretical framework of professional agency in PBL.

4.1 | Viewpoint 1: Institutional resources

Viewpoint 1, ($n = 7$, two female and five male) with explained variance 9%, included one professor, one associate professor and five assistant professors, all from medicine, with six of them having prior experiences of working as PBL facilitators for 2–4 years and one without any prior experience. In general, Viewpoint 1 participants enjoyed working as facilitators and held a positive attitude towards their work as facilitators. They focused on a supportive institutional environment as the major source of their agency. Additionally, they relied on interactions for student feedback and learning from other faculty members. Due to being new to PBL, they have not yet participated in case design and PBL research, which limited their views on long-term PBL benefits.

TABLE 2 Factor Q values for statements sorted by level of consensus (from most disagreement to most consensus)

Statement	D	F1	F2	F3	F4	F5	Z-score variance
2. I care how to best support my students' learning during the PBL sessions.	I	-1	-3	4	-2	3	1.89
27. My PBL experience has improved my leadership skills.	E	2	0	-4	-4	1	1.83
1. I consulted an experienced colleague when I encountered challenges in early stage of my PBL facilitation.	A	2	-4	2	-4	-2	1.49
9. PBL is effective for developing the expected professional competences for medical/dental graduates.	E	-3	-1	-2	1	4	1.24
15. I participate in designing the PBL cases.	A	-4	0	1	0	4	1.19
23. I conduct research on PBL.	A	-4	-1	-4	-3	2	1.07
21. I provide direct instructions to my students in their PBL sessions.	E	-3	1	0	1	-4	1.05
7. I use students' feedback to improve my work as a PBL facilitator.	A	3	-2	3	-1	1	0.94
24. I learn from other faculty members' experiences with PBL.	A	3	1	3	-1	-3	0.92
32. My PBL facilitator role has a positive impact on my performance evaluation.	E	3	4	-1	-2	0	0.87
22. Compared to a lecture-based curriculum, PBL is more effective to help students achieve their learning objectives.	I	1	3	-2	4	3	0.76
11. I have autonomy in my role as a PBL facilitator.	E	2	-1	-3	1	2	0.74
25. I encourage other colleagues to serve as PBL facilitators.	A	0	-1	-1	3	-2	0.73
4. I enjoy my role as a PBL facilitator.	I	2	-2	2	2	2	0.7
16. Peer communication is essential for PBL facilitators.	A	-2	2	4	-1	-1	0.7
19. I was asked to serve as a PBL facilitator by the senior management.	E	0	1	-1	1	-3	0.63
10. Working as a PBL facilitator is beneficial for my career development.	I	1	0	-3	-3	0	0.54
6. Despite the time and effort, I value my personal learning gains from the PBL sessions.	I	1	-4	1	-2	0	0.52
28. My institute encourages the development of pedagogical competence for all faculty members.	E	1	4	0	3	-1	0.43
18. I engage with professional learning activities to improve my role as a PBL facilitator.	A	-1	3	1	0	-1	0.42
17. I utilise my previous learning experiences to support my role as a PBL facilitator.	A	-1	1	-2	1	1	0.42
20. I have someone to share my experiences as a PBL facilitator.	A	-2	0	0	-2	-4	0.39
26. Implementing PBL helps me reflect on the value of education.	E	0	3	-2	2	1	0.37
29. There is constructive alignment between overall program learning outcomes, PBL and assessments.	E	4	2	2	4	3	0.31
33. My institute provides the required resources for PBL facilitators.	E	4	2	3	3	1	0.28
5. I like new challenges as a PBL facilitator	I	-2	-3	1	-1	-2	0.25
13. I have benefitted by observing students' experiences with PBL in other groups.	A	-3	0	-1	-1	-3	0.24
8. I self-reflect on my role as a PBL facilitator.	A	-1	-2	0	-3	0	0.22
14. I participate in co-ordination of PBL cases.	A	0	-2	1	0	-1	0.21
3. I discuss with senior management how to improve PBL from an institutional perspective.	E	-2	-3	-1	0	-1	0.19
	I	0	1	0	2	0	0.18

TABLE 2 (Continued)

Statement	D	F1	F2	F3	F4	F5	Z-score variance
30. Through my PBL experience, I realise that I am not the major source of authorised knowledge.							
12. I read literature on PBL.	A	-1	-1	-3	0	-2	0.09
31. My institute provides professional learning activities to support my role as a PBL facilitator.	E	1	2	2	2	2	0.01

Note: F = Factor, D = Dimensions E = Environmental dimension, A = Action dimension, I = Intrapersonal dimension.

In particular, for Viewpoint 1, the institutional resources (environmental dimensions) were considered highest important, emphasising institute providing the required resources for PBL facilitation (#33/4D*) and enhancing general constructive alignment between learning objectives, activities and assessment method within the college (#29/4). These participants also underlined certain actions, including using students' feedback to improve their teaching (#7/3), learning from other faculty members (#24/3), and consulting experienced colleagues in the process of PBL facilitation (#1/2). Additionally, Viewpoint 1 also appreciated an intrapersonal statement on enjoying my role as a PBL facilitator (#4/2). These opinions were further endorsed in their postsorting responses, as described by one participant, "Student feedback is always the best tool to evaluate and alignment with assessment and learning outcomes is crucial to benefit the most of PBL sessions."

On the other side, these participants considered it least important to participate in PBL case design (#23/-4D*), to conduct PBL research (#24/-4), and to observe other PBL student groups (#13/-3). As explained in the postsorting response, these were mainly related to lack of time time to conduct such actions being new to the college and to PBL facilitation. Although six of them have prior experiences of being facilitators, their limited experience may be insufficient to develop strong belief in PBL's effectiveness for graduate competences (#9/-3) yet. Postsorting responses provided explanations of their concerns on time constraints of being a new faculty member trying to figure out how to become good facilitators. Most of them expressed the need for more professional learning activities.

4.2 | Viewpoint 2: Policy guideline

Viewpoint 2 ($n = 7$, two female and five male) with explained variance 13%, included two professors, one associate professor and four assistant professors, five from medicine and one from dentistry, with all of them having prior experiences of working as PBL facilitators for 2–6 years. Generally, Viewpoint 2 participants underlined the importance of institutional aspects such as guideline from policy. In addition, unlike Viewpoint 1, these participants, had high negative intrapersonal aspects towards their work as PBL facilitators. They took the facilitation tasks mostly because of institutional request. Such passive and negative attitudes may be related to their pedagogical beliefs, which did not align to PBL and their priorities such as conducting research.

Differing from Viewpoint 1, Viewpoint 2 participants appeared not to have a personal appreciation of PBL. They neither enjoyed working as PBL facilitators (#4/-2D*), nor valued personal learning gains from working in PBL (#6/-4D) or enjoyed the challenge of being PBL facilitators (#5/-3). Supporting student learning was not considered important working as a PBL facilitator (#2/-3). Following these, they did not find it important to consult experienced colleagues to learn more about PBL facilitation (#1/-4).

Due to this lack of personal interest, Viewpoint 2 participants stressed the importance of environmental and policy aspects. It was important for them to work as facilitators when there is an overall institutional encouragement of pedagogical competence development (#28/4), and policy support that PBL facilitator role has a positive impact on performance evaluation (#32/4). In their postsorting survey responses, the institutional policy was further emphasised in their intentions to work as facilitators, as most of them explained, they served as facilitators on request by the college. As one expressed, "I don't know why I am chosen to be a facilitator, but I just do as I am asked to. It takes lots of time and maybe we should focus more on research work." Another participant wrote "The college should provide us clearly defined guideline on roles of what facilitators should do and what students should do at the beginning of PBL sessions so we can save our time."

Despite their unwillingness, the participants also considered important to engage oneself to professional learning to become better PBL facilitators (#18/3). As one participant elaborated, "although it took lots of time, I did learn how to be better from those development activities, and there should be more to support all."

4.3 | Viewpoint 3: Efforts to improve due to care for students

Viewpoint 3 ($n = 4$, three female and one male) with explained variance 8%, included one professor and three assistant professors, two from medicine and two from dentistry, with two of them having prior experiences of working as PBL facilitators for 2 and 10 years respectively, and two without prior experience. Viewpoint 3 participants, aligned with Viewpoint 1 participants regarding their enjoyment of working as PBL facilitators, highlighted their care for students and efforts to improve their facilitation skills through improvement values on becoming a good PBL facilitator. Unlike Viewpoint 1 and

TABLE 3 Summary of viewpoint results

V	N	Expl. variance	College	Academic title	Prior experience as a PBL facilitator	Highest ranked #	Lowest ranked #
V1	7 (2F + 5M)	13%	All medicine	1 Professor 1 associate professor 5 assistant professor	Yes: 6 No: 1	33D* (Environmental) 29 (Environmental)	23 (Action) 15D* (Action)
V2	7 (2F + 5M)	9%	6 medicine 1 dentistry	2 Professor 1 associate professor 4 assistant professor	Yes: 7 No: 1	28 (Action) 32 (Environmental)	6D (Intrapersonal) 1 (Action)
V3	4 (3F + 1M)	8%	2 medicine 2 dentistry	1 Professor 3 assistant professor	Yes: 2 No: 2	2D* (Intrapersonal) 16 (Action)	27 (Environmental) 23 (Action)
V4	3 (1F + 2M)	7%	2 medicine 1 dentistry	2 Professor 1 associate professor	Yes: 3	29 (Environmental) 22 (Intrapersonal)	1 (Action) 27 (Environmental)
V5	5 (2F + 3M)	6%	3 medicine 2 dentistry	2 Professor 2 associate professor 1 assistant professor	Yes: 5	9D* (Environmental) 15D* (Action)	20D (Action) 2D (Action)

Note: V = Viewpoint, N = Number of sig. Loading sorts, F = female, M = male, Expl variance = Explained variance, # = Number of statement, D = Distinguishing statement at $p < 0.05$, D* = Distinguishing statement at $p < 0.01$, E = Environmental dimension, A = Action dimension, I = Intrapersonal dimension.

2, institutional aspects were not considered important for working as PBL facilitators by Viewpoint 3.

In particular, the participants prioritised the importance intrapersonal aspects regarding caring of students (#2/4D*) and enjoying PBL facilitator's role (#4/2) (similar to Viewpoint 1). They further engaged to actions of self-improvement in their facilitators' work, such as consulting experienced colleagues to learn from their experiences (#1/2) (in line with Viewpoint 1 but unlike Viewpoint 2), learning from peer experience (#24/3), communicating with peer facilitators (#16/4), and using student feedback to further improve teaching (#7/3). The postsorting analysis confirmed their opinions, as one participant stated, "It is important that the facilitator not only cares students but also enjoys his role in PBL. However, the PBL objectives have to match the learning objectives of the curriculum."

On the negative side, these participants did not see leadership skill development was important in PBL facilitation (#27/-4), nor was autonomy (#11/-3D). They did not engage to research on PBL (#23/-4) (aligning Viewpoint 1) or reading literature on PBL (#12/-3) (similar to all other Viewpoints). As they explained that these were not yet directly relevant to their current work, because their work was mainly to support students. Further, on a personal value perspective, they did not see working as a PBL facilitator would benefit them on career development (#10/-3D), and they could yet not see the effectiveness of PBL over lecture-based curriculum (#22/-2D). In their postsorting responses, one explained that "The PBL sessions more support students to develop leadership than facilitators."

4.4 | Viewpoint 4: Belief on PBL effectiveness

Viewpoint 4 ($n = 3$, one female and two male) with explained variance 7%, included two professors and one associate professor, two from

medicine and one from dentistry, with all of them having prior experiences of working as PBL facilitators for 8 to 10 years. In general, the most important sources of agency for Viewpoint 4 were their pedagogical beliefs aligning with PBL, changing roles from a lecturer to being a PBL facilitator, and their value of an institutional environment in which constructive alignment is supported overall.

In particular, they valued institutional environment in which there is overall constructive alignment between learning objectives, activities and assessment methods (#29/4) (aligning Viewpoint 1). These participants also cherished their active engagement to encouraging other colleagues (#25/3D*). On the intrapersonal aspect, contrasting Viewpoint 3, these participants enjoyed their facilitators' roles (#4/2); this may be related to their belief that PBL is more effective than a lecture-based curriculum (#22/4), which is in line with their changed belief that they are not the primary source of authorised knowledge (#30/2). As one wrote, "It is important for facilitators to realize that their role is not to teach students and that they should not be the source of knowledge."

Similar to Viewpoint 3, they did not think it was important for them to develop leadership skill in PBL facilitation (#27/-4). They also viewed performance evaluation of their work as facilitators as less important (#32/-2). Unlike Viewpoint 3 but similar to Viewpoint 2, they did not consider consulting experienced colleagues to learn was important (#1/-4). These choices may be related to the reason that they were the most experienced faculty members in the college, as explained in the postsorting responses.

4.5 | Viewpoint 5: Agentic actions

Viewpoint 5 ($n = 5$, two female and three male) with explained variance 6%, included two professors, two associate professors and one

assistant professor, three from medicine and two from dentistry with all of them having prior experiences of working as PBL facilitators ranging from 3 to 20 years. Four of them serving as PBL session coordinators, these participants proactively enact their agency not only through one's own autonomy, but also on overall PBL session structure, design and research.

In particular, driven by their beliefs on effectiveness of PBL on professional competence (#9/4D*) and the importance of autonomy as a PBL facilitator (#4/2), enjoying my role as a PBL facilitator (#4/2) (aligning Viewpoints 1, 3 and 4 but contrasting Viewpoint 2). Further, they engaged to actions such as participation in designing PBL cases (#15/4D*), conducting PBL research (#23/2D*) (unlike Viewpoints 1 and 3), and utilising their own previous experiences (#17/1). Unlike Viewpoint 2, these participants hold a strong pedagogical belief that aligns with PBL, as a participant wrote: "I believe it will produce well-educated, open-minded students that will positively affect their future career. On the other hand, improvement in my career development is also beneficial."

Following such belief, they considered least important to provide direct instruction to students (#21/-4D), which was opposite to what a facilitator's role should be, as they explained. Neither did they consider as important to have someone to share experiences in PBL facilitation work (#20/-4D) or to learn from other faculty members experiences (#24/-3D*), or to observe from other student groups (#19/-3D*). Similar to Viewpoint 4, these choices may be related to the reason that they are the most experienced PBL facilitators in the given context. Further they did not think it important to be asked to serve as a PBL facilitator (#19/-3D*) or encourage colleagues to work as PBL facilitators (#13/-3), because they believed that this (serving as a PBL facilitator) is an important professional responsibility working in an institute where PBL is implemented.

4.6 | Consensus statement

Despite the heterogeneity in the four Viewpoints, two statements were identified as achieving significant consensus, statement 31 "My institute provides professional learning activities to support my role as a PBL facilitator" was viewed as highly important and Statement 12 "I read literature on PBL" as less important. In addition, several statements had common themes and ideas despite not achieving significance. For example, statement 3 "I discuss with senior management how to improve PBL from an institutional perspective" was valued low in general indicating a lack of engagement and institutional improvement of PBL facilitation.

Professional learning activities for PBL facilitators, although not highlighted in viewpoints' choices, was frequently noted as a challenge by most of the participants. A particular need cited was support with facilitating students, who were unfamiliar with PBL, and knowledge on how to manage situations where they felt unable to provide subject matter expertise to students.

5 | DISCUSSION

Results of the Q methodology analysis identified five significantly different viewpoints among PBL facilitators regarding what was most important for them to enact their professional agency in a postpandemic context, namely, (1) institutional resources, (2) policy guideline, (3) making efforts to improve support for students, (4) beliefs on PBL effectiveness, and (5) agentic actions. While four of the viewpoints were positive, participants the second viewpoint reported negative perceptions and described lack of interest in PBL facilitation. Viewpoints 4 and 5 demonstrated high levels of agency in their facilitation work. Viewpoints 1 and 3, with limited experiences in PBL, demonstrated uncertainty regarding how to better play a facilitator's role but also eagerness to improve. Comparatively, Viewpoint 2 appeared to be less agentic regarding their PBL roles, which may be connected to their intrapersonal traits such as lacking interest in teaching and learning and holding pedagogical beliefs that were not aligned with PBL and student-centred learning. This suggests that individual beliefs may act as a source of reservation and resistance to change.^{14,17} This result highlights the importance and need for the institution to address such resistance of individual educators and support their training towards new teaching strategies that may change their original beliefs and mindset. Interestingly, lack of belief in PBL or student-centred learning among university educators has been highlighted previously² and is not related to the pandemic per se. The varied viewpoints reported in this study also suggest differences in individual approaches to coping with the multiple roles of being university educators following the pandemic.²⁰ Most participants in this study relied on diverse sources for their professional agency and demonstrated resilience by renegotiating their professional identities.^{1,4}

The study identified no difference related to gender and college (medicine vs. dentistry). It was expected that medicine (established 6 years ago) participants may express agentic sources for their facilitation roles than those from dentistry (established 3 years ago). The result may be related to the fact that medicine participants were mostly loaded on Viewpoint 1 (with limited facilitation experience) and Viewpoint 2 (lacking interesting in working as facilitators). While previous experiences did not significantly reveal participants' opinions, it was clear that Viewpoints 4 and 5 all had previous PBL experience ranging from 5 to 20 years. More research is needed to further identify the impact of demographic characteristics of PBL facilitators.

All three dimensions from the proposed conceptual framework for professional agency in PBL were addressed both as most important and least important by most viewpoints. This indicates that individual educator's agency is complex and is shaped by the interplay of personal traits and capacities, interactions with others, resources, and sociocultural conditions.^{4-6,21,22} Outcome of the study poses new questions to health professionals' education regarding the characteristics and competences educators require and how can they renegotiate and balance their multiple professional identities.

On reflection, this study has a few practical implications. First, although most of the participants reported prior experiences of PBL

facilitation, their pedagogical beliefs appeared to be diverse, with Viewpoint 2 participants holding misaligned beliefs towards PBL. This result may be partly due to individual approaches to facilitation, which can be related to the diverse PBL practices in their previous institutions. This result also suggests that gaps may exist between facilitators' practices and pedagogical beliefs, which supports previous conclusions that university teachers' pedagogical beliefs take a long time to change.^{14,17} Therefore, it is highly important to build common understanding and consistency of PBL facilitation practices, particularly in a new institution.

Secondly, reinforcement of professional learning activities for PBL facilitation is highly recommended in a systematic and regular manner to support all faculty regardless of their experience level. Regarding the format, a community of practice approach is more useful than the knowledge transmission method, involving health educators who can share experiences and explore effective practices collaboratively.^{3,24,38} This collaborative approach may be a way to enhance their professional agency enactment. First-hand experience of PBL as a learner is also recommended as an effective way for university teachers to change their beliefs and practices towards PBL.¹⁸

Finally, involving all facilitators in the decision-making process of PBL design, delivery and evaluation will further enhance their development of agency and pedagogical leadership sustainably, which is essential for establishing an institutional culture that maximises teaching and learning efficiency.

5.1 | Limitations and future perspectives

This study has a few limitations. First, while professional agency was highlighted, professional identity, a concept that is closely associated with agency, was not explored in this study due to the limited scope. Playing an essential role in the process of professional agency enactment, exploration of professional identity should be a focus of future studies. Second, although professional agency is dynamic and not static, the study was mainly explorative and diagnostic. Longitudinal studies are recommended to identify modes of change and the development of university teachers' beliefs and opinions over time. In particular, all participants were recruited from one institution, limiting the external applicability of the study, especially as institutional context forms a large part of the underlying framework. Future research may further examine the experiences of educators in other sociocultural contexts, exploring the effectiveness of the Q-set from this study. Third, five significantly different Viewpoints were identified from Q analysis, including 26 participants, nevertheless opinions from the remaining 14 participants, although not included from the outcome of the study due to the choice of a 5-factor solution in Q analysis, also deserved attention. Future research may explore their individual opinions through interviews. Fourth, although the postsorting responses did not suggest new statements, additional aspects reflecting on professional agency may exist and can be further explored. Last, the software employed in the current study had a downside of setting

“neutral” as a given description (Figure 3). Although it was explained during the Q-sorting activities that it should be less or more important rather than “neutral,” it may have potentially enforced the participants in the sorting process. This issue shall be revisited when updating the software for future studies.

6 | CONCLUSIONS

The present study explored how health educators perceive what is most imperative to their enactment of professional agency in an ongoing pandemic context. A conceptual framework was proposed, enabling the understanding and analysis of how professional agency is perceived and enacted by PBL facilitators from medicine and dentistry in Qatar through three interrelated dimensions: intra-personal, action, and environment. Q methodology was employed to collect and analyse data qualitatively and quantitatively. Five viewpoints were identified representing a wide range of opinions. Outcomes of the study revealed the importance of institutional support for individual educators to enact their professional agency, and the importance of reinforcement of professional learning through a community of practice approach. Generally, Q methodology provides new insights to health educational research both theoretically and empirically, focusing on the exploration of subjectivity.

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CONFLICTS OF INTEREST

None.

AUTHOR CONTRIBUTION

XD devised the project strategy, performed data analysis, and prepared the first draft of the manuscript. MN collected the data and revised the manuscript. KA collected the data and revised the manuscript. AL performed data analysis and revised the manuscript. MFA devised the project strategy and revised the manuscript. All authors revised and approved the final draft of the manuscript.

ETHICS STATEMENT

QU-IRB approval has been granted for this study.

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