RESEARCH ARTICLE

"Cognitive Peer Coaching"- A workplace-based faculty development approach for problem- based learning facilitators: A qualitative study

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Abstract

Objective: To explore the factors affecting the learning process of novice problem-based learning facilitators trained through Cognitive Peer Coaching.

Method: The qualitative study with phenomenological design was conducted at the Islamic International Medical College, Riphah International University, Islamabad, Pakistan, from March to August 2018, and comprised problem-based learning facilitators, experts and novices who were given orientation about cognitive peer coaching through workshops. Novice facilitators were trained by experts through cognitive peer coaching cycle comprising pre-observation, observation and post-observation phases following socio-cognitive apprenticeship theory based on modelling, coaching, scaffolding, articulation, reflection and exploration. Data was collected through an observation checklist and semi-structured interviews which were audio-recorded, transcribed and subjected to thematic analysis manually.

Results: Of the 15 subjects, 10(66.6%) were novice facilitators and 5(33.3%) were experts. Six themes generated and they were mental growth spurred from within, conscientisation, experiential learning, intrinsic motivation, effective body language, and impediment to success. Learning by observation, learning by doing, increased motivation, autonomy, constructive feedback and reflection augmented the facilitation skills, while unawareness about reflective practices and peer coaching were identified as major obstacles in personal and professional growth of faculty.

Conclusion: Cognitive peer coaching was found to be a dynamic, innovative and feasible faculty development approach that contributed to the learning of facilitation skills from psychological, emotional and social perspective.

Keywords: Cognitive peer coaching, PBL facilitation, Faculty development. (JPMA 71: 868; 2021)

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Introduction

In order to meet the educational needs of students of THE 21st century, teachers' needs for personal and professional development should not be overlooked. The expeditious evolution of medical education resulted in a paradigm shift from traditional teaching towards contextual teaching and problem-based learning (PBL).[1] Despite the significance of group dynamic skills in PBL, tutors are often oblivious to their role as a facilitator.[2] The challenges faced by PBL facilitators are diverse and complex.[3] There is a dire need for teachers to ameliorate their skills by adapting various faculty development approaches. These approaches are broadly divided into formal and informal experiences.[4] It is evident from literature that workshops and longitudinal programmes are unable to identify individual needs of developmental areas.[5] Faculty development approaches, such as workplace-based learning (wbl), communities of practice and peer coaching have been used to a much lesser extent.[6] Teachers' behaviour in classroom is based on invisible thought processes, perceptions, decisions and individual cognitive styles.[7] Therefore, in order to be effective learners or problem-solvers, monitoring and directing individual's cognitive processes is of utmost importance.[8] Cognitive style is defined as "the individual's consistent approach of organising and processing of information during thinking." Cognitive Peer Coaching (CPC) is an emerging workplace-based faculty development approach in which the coach acts as a mediator and applies a set of strategies to enhance teachers' perceptions, decisions and intellectual functions, which, in turn, produces greater intellectual achievement in students.[9] In CPC, essential instructional strategies included to enhance cognition are identification of learner's thought processes and preconceptions about a particular strategy, building new knowledge on prior knowledge, providing scaffolding for making improved cognitive schemas and conceptual frameworks, directing thought processes and thought organisations.[10] It comprises pre-observation, observation and post-observation phases.[11] Collins et al. presented socio-cognitive apprenticeship theory which is based on learning through guided experience on cognitive and meta-cognitive processes rather than physical skills. This theory consists of six methods of teaching which are modelling, coaching, scaffolding, articulation, reflection and exploration (Figure 1).[12]

The current study was planned to look at the connection

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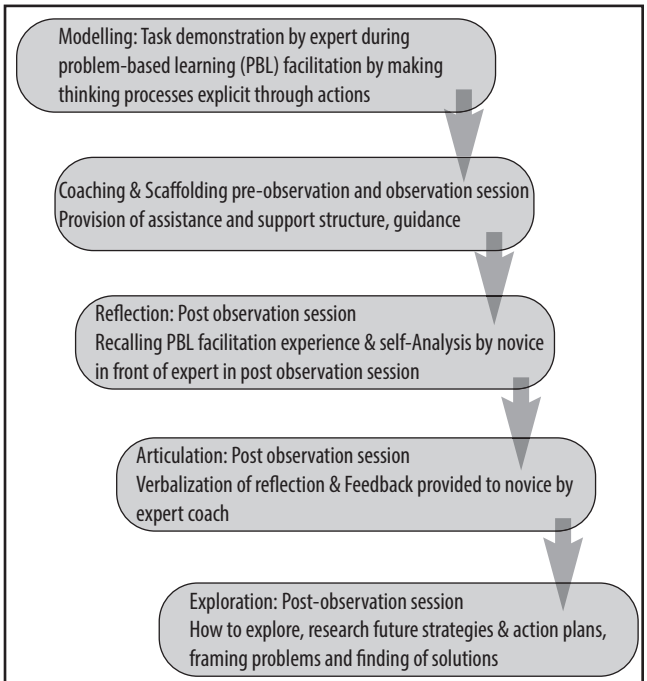

Figure-1: Conceptual framework of the study.

between CPC and PBL facilitation skills, and to explore how CPC affects the feelings and mindsets towards collaboration, reflective practices and facilitation.

Subjects and Methods

The qualitative study with a phenomenological design was conducted at the Islamic International Medical College, Riphah International University, Islamabad, Pakistan, from March to August 2018, after approval from the institutional ethics review committee. This particular study design was the most suitable as it was related to the exploration of factors impacting the learning process of PBL facilitators trained through CPC by understanding their live experiences. In a qualitative study in-depth exploration is required and, therefore, the sample size can range from 1 to 40. Phenomenological studies often involve an in-depth exploration of the experiences of a relatively small number of individuals.[13] Keeping this in view, novices and expert facilitators were selected using purposeful sampling technique. Written informed consent was taken from all participants. The experts were faculty members with >5 years of experience as PBL facilitators who volunteered to participate and were nominated by the head of PBL instructional unit based on their expertise in PBL, their facilitation skills and good feedback from students. Junior faculty members with 6-12 months of PBL facilitation experience were included as the novices. Informed consent ws obtained from all the participants.

Data was collected using a well-designed and validated 6 observation checklist, and through semi-structured interviews. The checklist was used to rate novice facilitators according to their facilitation skills related to group dynamics and to provide them feedback. Six items were considered out of 24 which were constructed with observable behaviours or strategies and explicit performance criteria, as it was easy to observe and assess, and organised according to the main steps of the PBL tutorial. On a four-point Likert scale, the facilitation strategies were rated as optimally promoting = 4, partially = 3, insufficiently = 2, or not promoting student learning = 1. A pilot study was performed initially. A questionnaire based on 6 open-ended questions was developed for semi-structured interviews and to ensure internal validity and reliability. It was validated by 4 medical educationists. Strong conceptual framework comprising socio-cognitive apprenticeship theory and socio-constructivist theory was used for theoretical triangulation. Observation notes, reflective journal, observation checklist, audio recordings of reflections of participants, peer coaching sessions and semi-structured interviews were used to determine methodological triangulation (Table 1).

Table-1: Data-collection sources.

Data sources	Done by	Intent
Observation notes of modelling session, pre-observation and observation session	Researcher	To have documented evidence to increase credibility of research
Observation checklists	Coaches	To give feedback to novices and have descriptive analysis
Written reflections	Novices	Record keeping
Recording audio tape of reflections & peer coaching session	By researches	Record keeping
Notes of peer coaching session	Research assistant	Record keeping
Audio recordings	Researches	Thematic analysis
Semi structured interviews		
Reflective journal	Researcher	Record keeping

Two workshops were conducted to train the novices through CPC. Each expert was assigned two novices. Novice facilitators were provided CPC individually by the respective expert for PBL sessions 1 and 2, following the peer coaching cycle which comprised pre-observation, observation and post-observation phases based on the six-step approach of teaching, which are modelling, coaching, scaffolding, reflection, articulation and exploration. For data triangulation, all the details regarding time, place, persons and schedules were taken into consideration. Peer-assisted data triangulation was done by a fellow researcher. In order to ensure the credibility of the research project, four researchers having more than five years' experience in PBL facilitation and a background in medical education were selected for the role of research assistants to act as non-participatory observers.

In the modelling phase, the novices observed the PBL sessions facilitated by the experts. Observation notes were jotted down by researchers.

In the 2-hour pre-observation session, cognitive autonomy and conceptual mapping was provided to the novices through discussion carried out between the experts and novices under the supervision of the researchers, focussing on the pre-defined goals about PBL dynamics maintenance desired to be achieved by the novices, clinical scenarios of upcoming PBLs, learning outcomes, different strategies of achieving those outcomes, and schedule of PBLs.

In the observation phase, PBL sessions were facilitated by the novices and were observed by respective experts. The novices were rated on validated observation checklists by the experts targeting the facilitation strategies used for group dynamic maintenance. Feedback was given according to the checklist observations.

The post-observation session of one-hour duration comprised scaffolding, coaching, reflection, articulation and exploration. Reflection was scheduled between each observed novice, respective coach and researcher in which novices were encouraged to reflect upon their facilitation skills, review challenges and successes to evaluate their own performances in a secure environment. Five non-judgmental meditational competencies used by experts during CPC were careful questioning, paraphrasing, probing, patient listening and data collection. Basic attributes of the coach, like polite, supportive, respectful attitude and patient listening, were taken into consideration.[11] The expert acted as a mediator between novice thought processes and experiences. Semi-structured interviews of 30-35 minutes' duration were conducted for three consecutive days with all novice participants individually.

All interviews were audio-recorded and transcribed manually. Fifty open codes were interlinked and reduced to six axial codes which were eventually reduced to six themes. The data collected from transcribed interviews was organised according to different categories. Member checking of the transcribed data was done by all the participants to ensure the authenticity of transcriptions. Thematic analysis was done manually. No statistical software package was used. There could be possible potential biases depending upon individual perceptions and beliefs which were prevented by using thorough, systematic and rigorous approach, continuous reflection, triangulation and member checking.

Logical conceptualisation and careful designing were employed during data collection and interpretation of results to enhance dependability. The audiotapes were also scrutinised by a peer co-worker and the participants themselves to ensure credibility.

Results

Of the 15 subjects, 10(66.6%) were novice facilitators and 5(33.3%) were experts. Among the novices, there were 8(80%) females and 2(20%) males. The overall mean age was 30±1.89 years. After thematic analyses of the semi-structured interviews, six themes were generated: mental growth spurred from within, conscientisation, experiential learning, intrinsic motivation, impediments to success, and impact of body language (Table 2).

The first theme, "mental growth spurred from within", signified that during the process of articulation and reflection in peer coaching, novice facilitators became cognizant of loops in their facilitation skills and identified their individual strengths and weaknesses. It elicited thought organisation and self-awareness, thus leading to self-complacency. Stepwise approach to problem-solving during coaching emanated new ideas and alternative pathways to problem-solving and self-regulation strategies, which sparked off their personal growth and continuous professional development. Respondent 5 said: "*When I attended the interactive session about reflective practice and cognitive peer coaching with the researcher, I was surprised to know how feeling and thought processes can affect classroom behaviour. Secondly, I realised that I was reflecting every day on different events, but never used it to improve myself personally and professionally.*" Respondent 7 said: "*During reflection as I was recalling what good I have done, it was boosting my morale and I also identified my mistakes and certain unidentified behaviour and unnoticed events*".

The second theme, "conscientisation", was based on perspective transformation. Observation of modelling session led to perspective transformation of the participants regarding PBL, role of facilitator and facilitation skills. They realised that the facilitator is not a silent observer, but director of learning and that facilitation is not easy but challenging and demands expertise. Respondent 1 remarked: "*Before going through this exercise I thought that as a facilitator I will just be a silent observer, but when I observed modelling I came to know that I can intervene in the discussion by making students participate, by asking them indirect questions and I can keep them on the right track to achieve learning objectives*".

The third theme, "experiential learning", delineated that for perdurable change to occur, individuals must first be provided with experiences through which they develop

Table 2: Thematic analysis

Theme	Axial Code	Open Code	Frequency	Representative quote
Mental growth spurred from within	Self-complacency through reflection	Identification of one's own strengths and weaknesses	80%	F.005 *"Reflection helps me a lot in identifying my own thinking processes and thinking and talking aloud leads to surfacing of strengths and weaknesses"*
		Channelization of feelings and emotions Exploration and clarification of one's own ideas		
		Identification of gaps between desired and actual practices		
	Thought organization	Systematic approach to Recalling following Gibb's cycle		
		Identification of unnoticed events		
		Generation of alternative solutions in stepwise manner		
Conscientisation	Perspective transformation	About PBL From uninteresting to constructive approach	60%	F.008 *"Initially I was of the opinion that PBL is a very boring teaching strategy on part of teacher, you just have to sit and observe"*
		About PBL From student's learning to anticipated reciprocity		
		About Facilitator From Observer to director of learning		
		About Facilitation From easy to challenging		
Experiential learning	Personal development in generic skills	Communication skill	40%	F.002: *"While I was passing through the whole cycle of peer coaching I felt lots of improvement in my communication and listening skills due to repeated interactions with the expert"*
		Listening skill		
		Critical thinking		
		Systematic approach to problem solving		
		Systematic approach to goal setting		
		Patience		
	Group regulation Strategies	Time Management		
		Lesson Planning as learning tool		
		Innovative teaching strategies by comparison with expert		
		Handling of difficult students		

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Table-2 *(Contuniued from previous page)*

Theme	Axial Code	Open Code	Frequency	Representative quote
		Handling of unforeseen situations		
		Task division		
		Value student input		
		Conflict resolution		
		Understanding of team work		
Intrinsic Motivation	Attributes of a coach	Polite	30%	F.001 *"I think that that the most important thing which made me comfortable and I was motivated to learn was caring and polite and cooperative attitude of the researcher and the coach. Otherwise I am a very shy person and cannot be able to discuss so much about my views".* *F.007:* *Peer Coaching on an almost daily basis. Teachers as real peers have control of time, place, and subject. It is used by request to improve teaching, with no 'elite' team, no administrative schedules, and no reporting to administrators. Peers coaching each other works best."*
		Trust worthy		
		Provision of encouragement		
		Non-judgmental		
	Effective coaching strategies	Maintenance of Confidentiality of all data and sessions		
		Known person		
		Same department		
		Open questioning		
		Constructive feed back		
		Timely guidance		
		Active listening		
	Autonomy	Freedom of decision making		
		Freedom of expression		
		Freedom of exchange of ideas		
	Flexibility	No extra preparation		
		No entry of results in annual reports		F:006 *'…. overwhelming response from students increases my motivation"*
		Flexible Scheduling		
	Learners response	Enthusiasm of students		
		Active participation		
Impediments to success	Eyes can't see what mind doesn't know	Unawareness about peer coaching strategy	30%	F:008 *"I have never heard about reflection or mindsets.*
		Unawareness about reflection		

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Table-2 *(Contuniued from previous page)*

Theme	Axial Code	Open Code	Frequency	Representative quote
		Unawareness about application of mind-sets		*Though now I realized that I have been reflecting every-day but due to unaware-ness I never reached on evaluation and action plan stage and thus it was not useful for me, similarly never realized that my thinking processes are ef-fecting my behaviour"*
		Unawareness about relationship between feelings and behaviour		
Impact of body language	Nonverbal communi-cation	Effect of body language of facilitator on students' behaviour	20%	F.003: *"By direct observation of facilitator in modelling session I learned how the body language of facili-tator was effecting the students"*
		Understanding of individual students' mindsets		F.009: *"After knowing about differ-ent mindset, I observed my students' behaviour in class-room and was able to iden-tify individual issues like lack of self- efficacy, lack of flexi-bility, consciousness etc.*

values and beliefs that drive their desired behaviours. The essence of this theme was based on learning by doing. In the observation phase, conducting PBL under supervision of an expert and provision of scaffolding, coaching and reflection, helped in understanding the process of group regulation, surfacing of ideas, exploration of untapped potentials and awareness about the desired level of performance. Respondent 4 remarked: "*When I first observed the expert coach and did it myself, I learned how to observe, how to intervene and I was satisfied that I am under observation and all my mistakes will be pointed out and I will be guided accordingly. It improved my facilitation skills a lot.*" Respondent 2 remarked: *"The best part was that of observing my senior and taking PBL under her supervision. I learnt how she was doing and I compared mine with her and identified my mistakes and weaknesses*".

The fourth theme, "intrinsic motivation", highlighted various factors which contributed to increased self-efficacy and intrinsic motivation of the novice facilitators. Secure and comfortable environment, flexible timings, autonomy, use of effective coaching strategies and encouraging attitude of the coach during modelling, coaching and scaffolding, all increased motivation of novice participants which resulted in augmentation of their learning. Respondent 6 said: "… *No worries, no harassment, and no fatigue made the process of coaching more enjoyable and increased my interest*." Respondent 9 said: *"All the students were motivated and interested to learn. I did not have to put in a lot of effort to make them participate. And one thing I felt was that their participation, in turn, increased my motivation and enthusiasm to facilitate*".

The fifth theme, "impediments to success", indicated that human soul develops existence in the light of knowledge and attains heights. Knowledge is the instrument of dynamism and development which results in the transformation of human psychology and behaviours. Before participating in this study, all the participants were unaware of CPC strategy, reflective practice and its impact on personal and professional development, and this unawareness was a great obstacle in their progression. The participants were of the opinion that network of patronage both cognitively and emotionally resulted in their

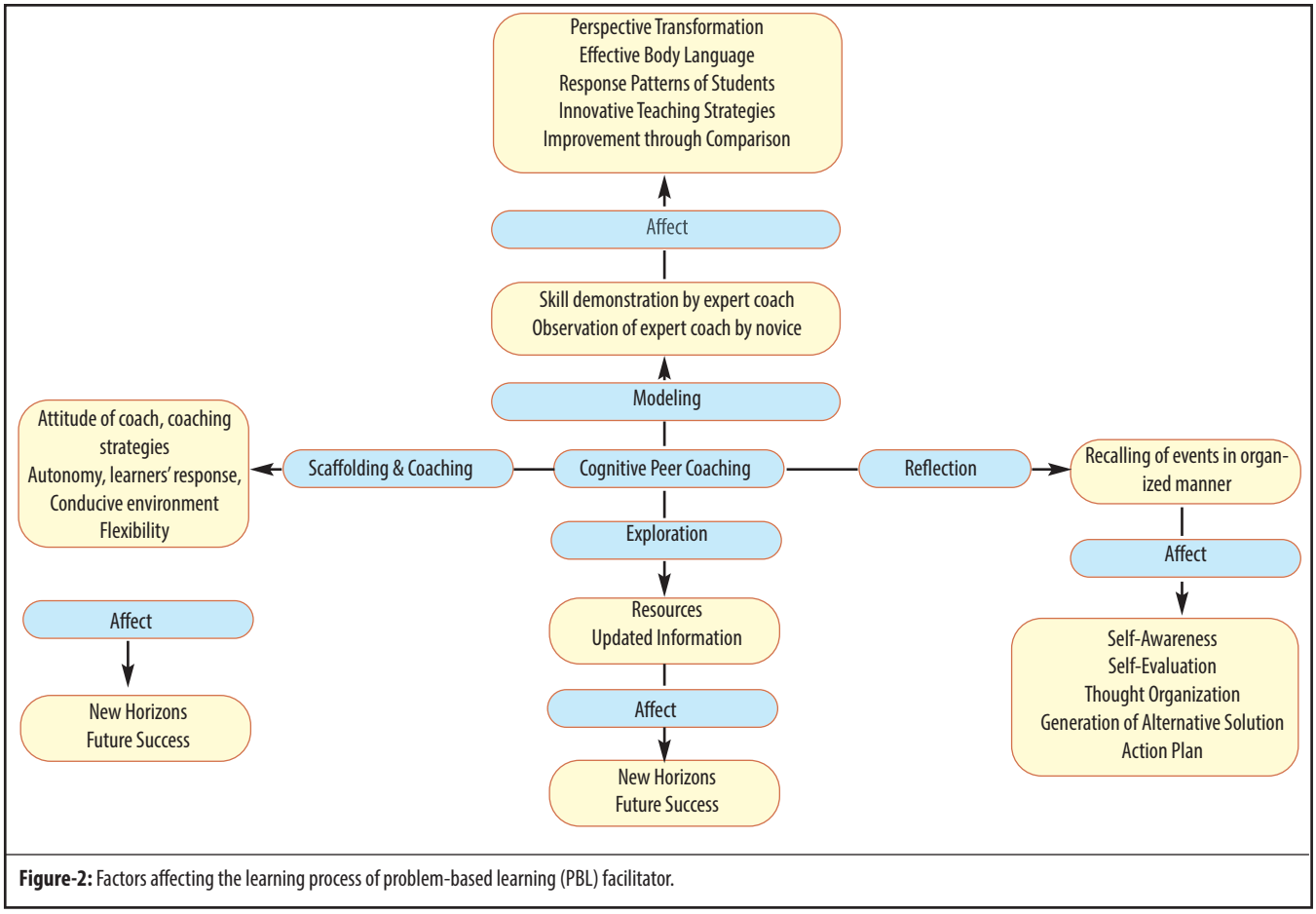

Figure-2: Factors affecting the learning process of problem-based learning (PBL) facilitator.

professional development. After attending coaching sessions, the participants were ecstatic about introducing formal and informal faculty development approaches for novice teachers focussed on their personal and professional needs, individual problems and complexities to modify their practices. Respondent 10 said: "*I found it very interesting to know that medical science is affected by feeling and emotions and it was new to me to realise how significant the impact of our thinking processes on our behaviour is.*" Respondent 3 said: *"Initially I did not have any idea about peer coaching and had never experienced it. But now, as I have gone through the whole process, I found it very beneficial. I think it is the best strategy to learn and refine yourself by identifying your inner thinking processes and altering them through discussions with experts".*

The sixth theme, "impact of body language", indicated how direct observation of the PBL process helped to explore the effect of the facilitator's body language on students' learning, and also the identification of response patterns of students accordingly. Through this observation, novice facilitators learnt to put subconscious mind to work for them in a conscious way for the maintenance of group dynamics by using effective body language. Respondent 9 exclaimed: "*I was happy to know that after attending the session on CPC and passing through the phases of modelling and pre-observation discussion, it was easy for me to interpret different mindsets of students and their behaviours e.g. students with low self- esteem, with non-flexible attitudes, having less social interaction skills etc. I managed them accordingly and the results were wonderful".*

Semantic linkages were formed indicating various factors affecting learning process of PBL facilitators through CPC (Figure 2).

Discussion

High-quality faculty development approach should be sustained, relevant, engaging, and should include standard-based practices which help teachers to learn through their experiences.[14] No previous study has linked the effect of CPC on learning processes of PBL facilitators. This was an interventional and observational study based on actual observations of different phases of the peer coaching cycle and live experiences of the novices.

In a study conducted at the Geneva School of Medicine, it

was concluded that peer coaching is a useful faculty development approach to improve PBL facilitation skills based on both qualitative and quantitative data. In this study, long-term follow-up of the participants was done[6] but there was no written or recorded evidence of reflection and peer coaching sessions. However, in the current study due to limited time availability, long-term follow up was not possible, but written documentation and audio-recordings of whole coaching sessions were carried out which are helpful for the novices to reinforce their learning later. According to another study, with proper guidance and support, teachers become willing to reflect on their practices, which enhances their awareness about individual problems and complexities, resulting in modification of their practices.[15]-- Written reflections were taken from both novices and coaches in the above stuy, while in the current study, reflections were only taken from the novices.

In this study, most of the participants were of the opinion that teaching practices can be improved by consciously and systematically reflecting on day-to-day teaching practices, which is in accordance with an earlier study.[16] According to the literature, PBL facilitators are "shadowy figures" and PBL facilitation in the curriculum has been perceived as student-centred and tutor-inactive curricula.[17]

Participation in this study resulted in the perspective transformation of participants which provided expertise in group process regulation. It is in accordance with the literature which showed that successful transformative learning is based on questions about assumptions, provision of support in a conducive environment, presentation of challenges, generation of alternative perspectives and provision of feedback.[18] Experiencing repeated conversations and discussions with experts enhanced their generic skills and helped them in designing and following a systematic approach to problem-solving. It is supported by literature that developmental strategies of successful facilitator must include experiential learning through small group work, critical reflection, and PBL itself.[19] The significance of non-verbal communication was first highlighted by psychologist Albert Mehrabian in 1970 when he described the rule of 7/38/55 i.e. 7% of messages pertaining to feelings and attitudes are transferred through words we speak, 38% of the message through tone of voice and 55% are transferred through facial expression.[20] Novice participants of the current study were of the opinion that during the modelling phase they observed the effect of experts' body language on students' learning. It helped them to consciously control their subconscious mind to some degree and to produce effective body movements.

According to literature, learning about students' emotional struggles and subsequent empathising results in the personal development of the students as well as the facilitator.[21] The physical learning environment, lack of proper resources and time constraints are few of the barriers to learning at the workplace.[21]

Teachers' motivational states are greatly influenced by the way they experienced the professional development programme.[22] Novice facilitators felt that the freedom of expression, decision-making and asking questions increased their motivation to learn and adapt expertise. Literature reflects that autonomy and relatedness are basic psychological needs which affect motivation and state of well-being of a person.[23]

The current study has some limitations, including the absence of a long-term follow-up, and the fact that it was conducted at a single centre study. Also, interviews with experts were not conducted as it was not the objective of the study.

Conclusion

Change in thought processes is directly related to the change in classroom behaviour of the facilitator. Enhancing the intellectual capacities of novice facilitators through CPC enlightened the meta-cognitive skills, planning and monitoring, in-depth understanding of declarative and procedural knowledge and its practical application. CPC is a powerful faculty development approach and served as a catalyst in the learning of inquiry-oriented and reflective stance for novice PBL facilitators.

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