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TEACHING AND LEARNING THROUGH INNOVATIVE APPROACHES IN ENGINEERING CLASSROOM SETTING IN BHUTAN

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Abstract

Teaching and learning activities in a classroom setting have been enhanced in current times where more participatory approaches are followed from pre-primary to tertiary level of education. While thinking participatory approaches, innovative approaches are always essential to be device so that maximum can be derived from classroom activities. The approaches may vary from different aspects but the objectives are mostly to garner focus, creativity, concentration and participation in the classroom activities which will enhance the overall grasp of the teaching and learning activities.

This study through the primary sources is intended towards exploring three innovative approaches in classroom activities with the assessment of the same at the end of the semester (i.e. Syllabus). The qualitative data obtained through survey questionnaires shows that the three innovative approaches in the form of meditation, review and question-and-answer sessions show that there is promising potential in the enhancement of focus, concentration, creativity and participation in students.

***Keywords**: activities, focus, innovation approaches, participation, teaching and learning*

Introduction

Innovative approaches in academic activities are key pillars of teaching and learning. The key innovative approaches for this study as reflected below are meditation, review and question-and-answer sessions. Mata (2012), Moree (1992), Aqliulova and Pnyagin (2021) shared the essence of meditation in religion, as well as other aspects, is known to be gaining popularity. Similarly, Baesler (2015) reflected that classroom meditation and directed meditation are being recommended for a better outcome from class activities. Farb. et.al. (2009) further shared that mindfulness and creativity are two critical aspects that are also discussed in an academic font for bridging the better linkages of these two.

The other aspects of attention in class as Nayir (2017) are through participatory approaches as student engagement is crucial in achieving teaching and learning. Maher (2013), Biech (2015) found out that the thirst is always looking for strategies for making the classroom more engaging so that the actual intentions of subject delivery as well as retention can be achieved. Some approaches can be like a review of the completed class lecture and associated questions and answers sessions within the class hours.

In this study, the innovation in classroom teaching and learning has been approached through three modes of interventions after realizing the need for innovative approaches in the middle of the autumn semester 2021 (i.e., the semester is of 16 weeks classes where the approaches initiated after 8 weeks of classes). The approaches incorporated were the mix of the following:

Figure 1. Three innovative interventions in the classroom

The meditation session was devised in such a way that each student in a class was asked to come up with FIVE expectations that they want to derive from this session before the starting of the first session of meditation. Students were also asked to read the reference literature on understanding meditation including its requirements before starting the first

session. There on in each class at the beginning of the class, FIVE minutes of the meditation session was conducted. Similarly, the students were engaged in the review of the class activities at the mid and end of the class along with a question-and-answer (QA) session. The review has to be done by random students picked through the ballot and has to make a presentation/lecture of whatever is covered in that particular class followed by question and answer. Peer marking was also done for the review and QA sessions. The overall objectives for initiating these activities were to enhance focus as well as class participation with effective engagement strategies in classroom settings.

Method

This is qualitative research where the primary data is used as the main component of the research findings. The secondary data from the relevant literature are referred to have more insight into the research work.

The primary data for this research is collected from a class of 24 students studying in the final year (7th semester), undergraduate, engineering program. The study is for one of the core engineering subjects that students were taking in the semester. At the beginning of this approach, students were introduced to three innovative approaches planned and were asked to do a prior literature review to understand and list five expectations each for all three innovative approaches.

At the end of the semester, the survey questionaries were circulated for an individual rating on the three innovative approaches implemented. Each approach was measured through sets of structured questions. The overall evaluation carried out in eight weeks of the class was reported in this research and the result was presented with discussion and the conclusion as derived.

The evaluation received from each student through structured survey questionnaires is presented in the form of graphs and charts for analysis, discussion as well as conclusion.

Results and Discussions

A couple of relevant questionaries were circulated at the end of the semester to find out the overall outcome that has been achieved from the three approaches incorporated in the classroom.

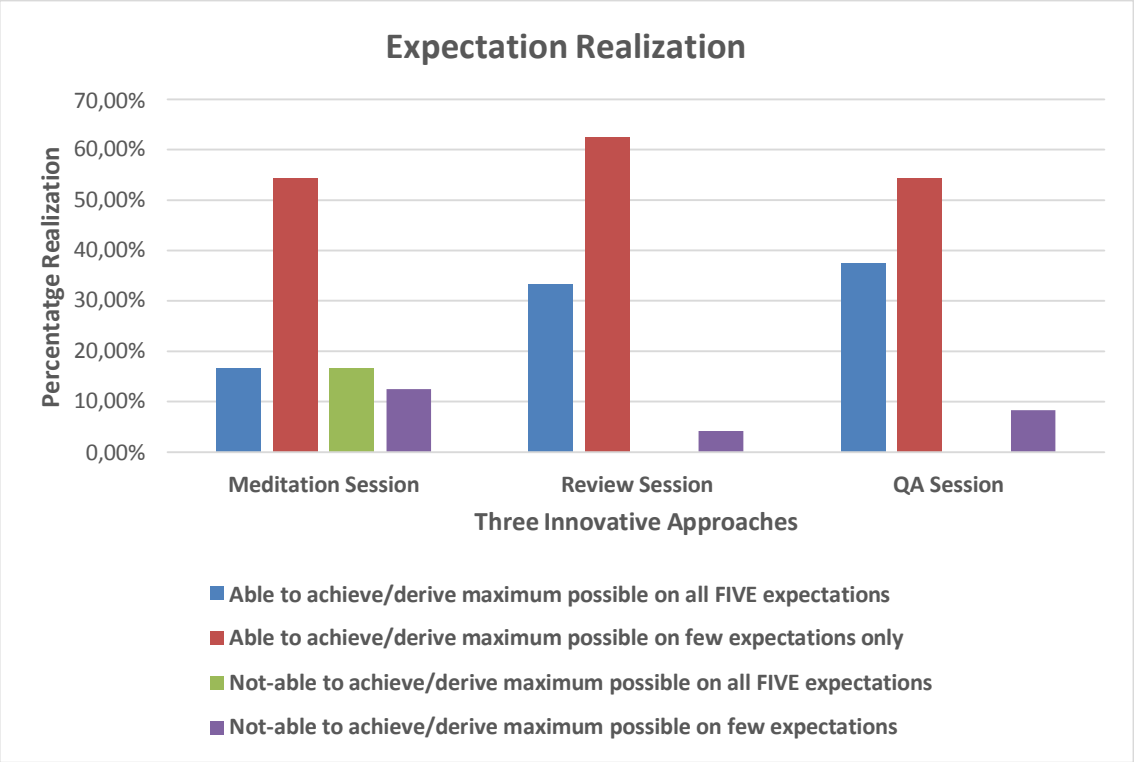

Figure 2. Realizing the FIVE expectations listed before such innovative sessions

Each student has listed their five expectations (i.e., each student with five expectations each for all three innovative approaches) before starting these three innovative approaches in the classroom and later evaluated. The expectations on each innovative approach are kept open so that each student can pen down their expectations against each innovative approach in teaching and learning activities in the classroom. The graphs as shown in figure 2 highlighted that there is a high level of expatiation realization for a few of the expectations listed by individuals, followed by the good number of students meeting/deriving maximum expectation in all three innovative approaches.

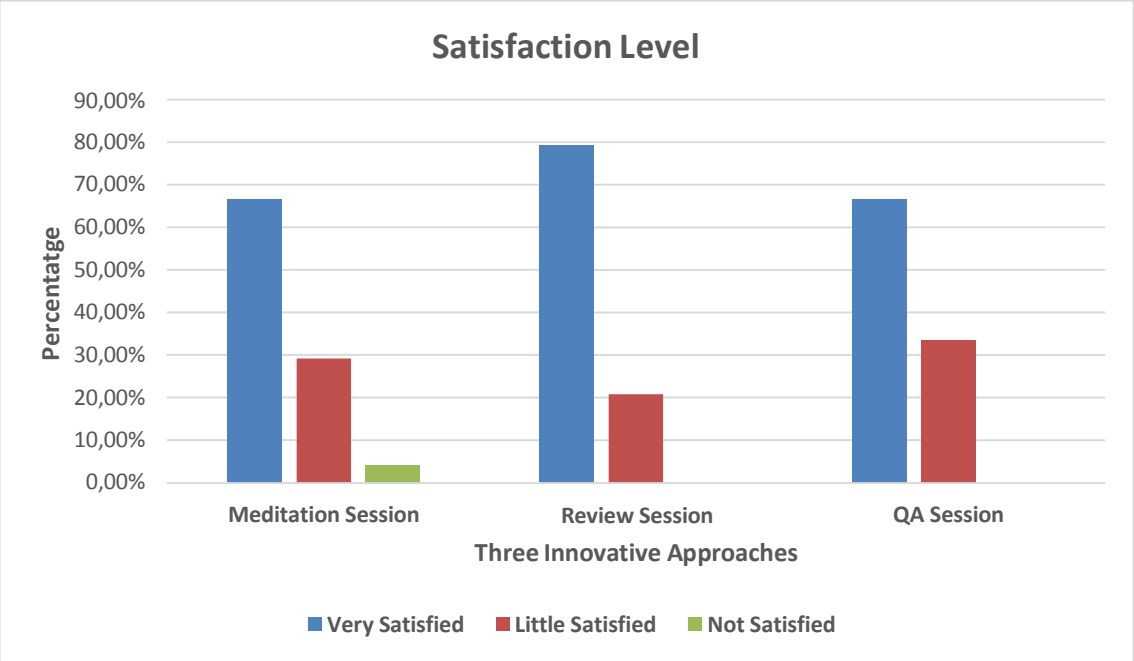

Figure 3. Level of satisfaction from such innovative sessions

Figure 3 above reflects the level of satisfaction each student has derived in each of the innovative approaches that have been incorporated. It is promising to note that a very high level of students is very satisfied with the innovative sessions. There is a minimum number of little satisfied students and almost no one who is not satisfied.

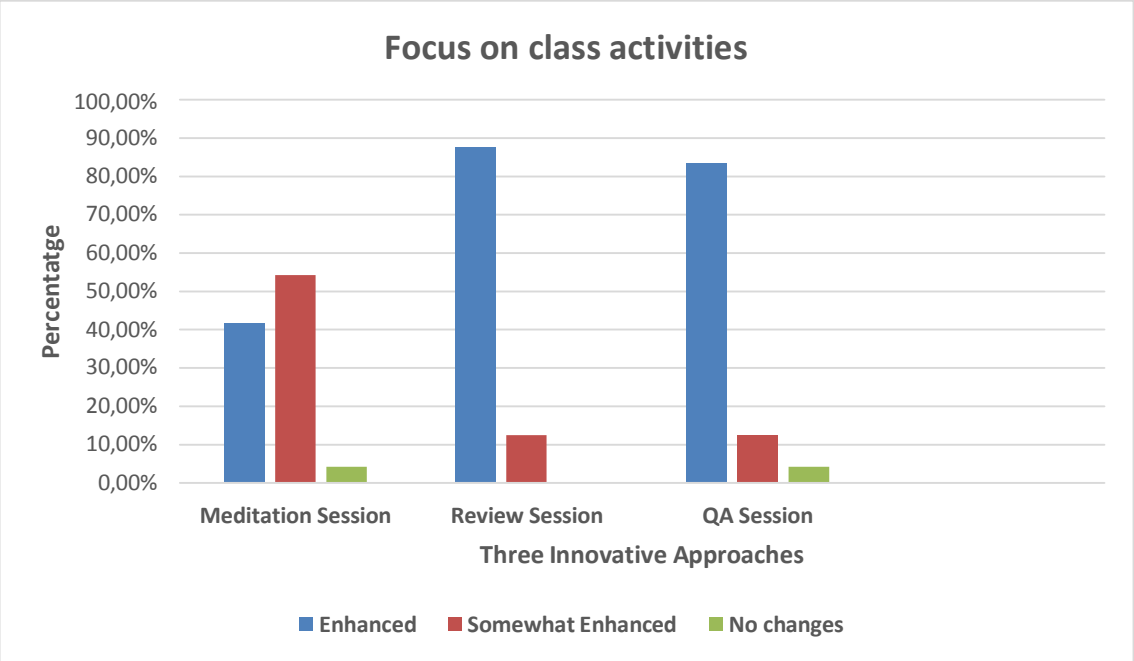

Figure 4. Level of focus enhanced through such innovative sessions

The focus in classroom activities needs to be enhanced so that maximum can be derived from the teaching and learning activities. It is evident from figure 4 above that the approaches like review sessions and QA sessions have substantially enhanced the focus of majorities of the student. Whereas in the case of approaches like meditation, it is somewhat balanced. Overall, the three innovative approaches are seen as impactful in enhancing focus in the class activities.

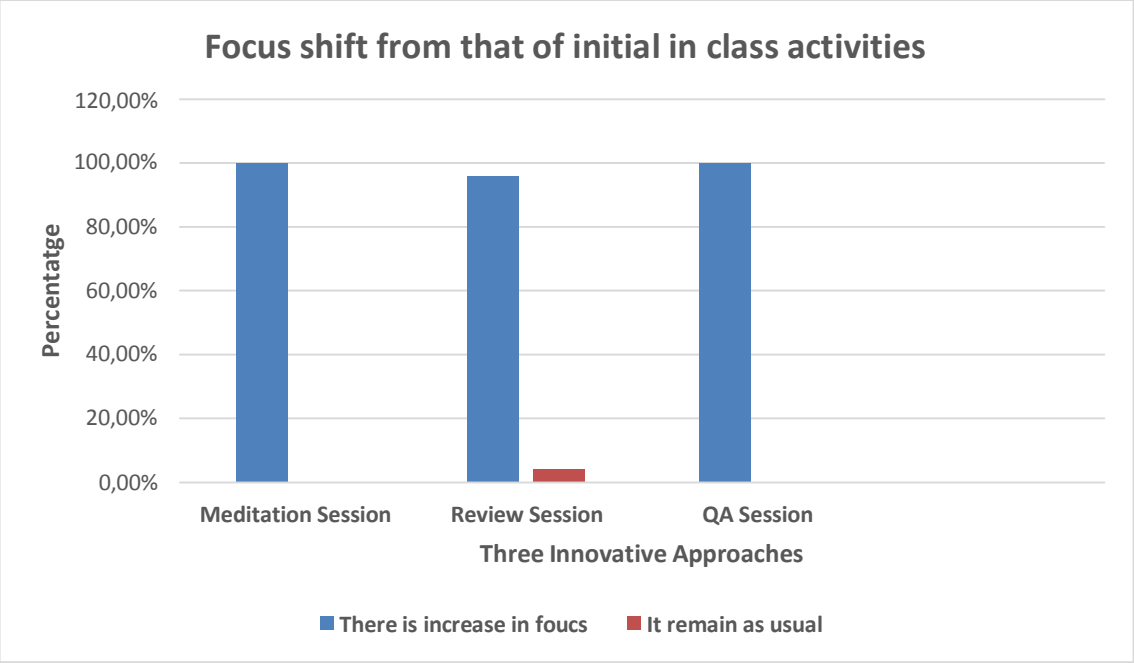

Figure 5. Level of focus enhanced through such innovative sessions

The classroom concentrations and focus have much to do in the grab of class activities. The above figure 5 is a comparison of focus changes that has been noticed after the initiations of the three innovative approaches. Almost all students have rated each of the approaches very high indicating that there is an increase in focus being realized in their class activities when such innovative approaches are incorporated.

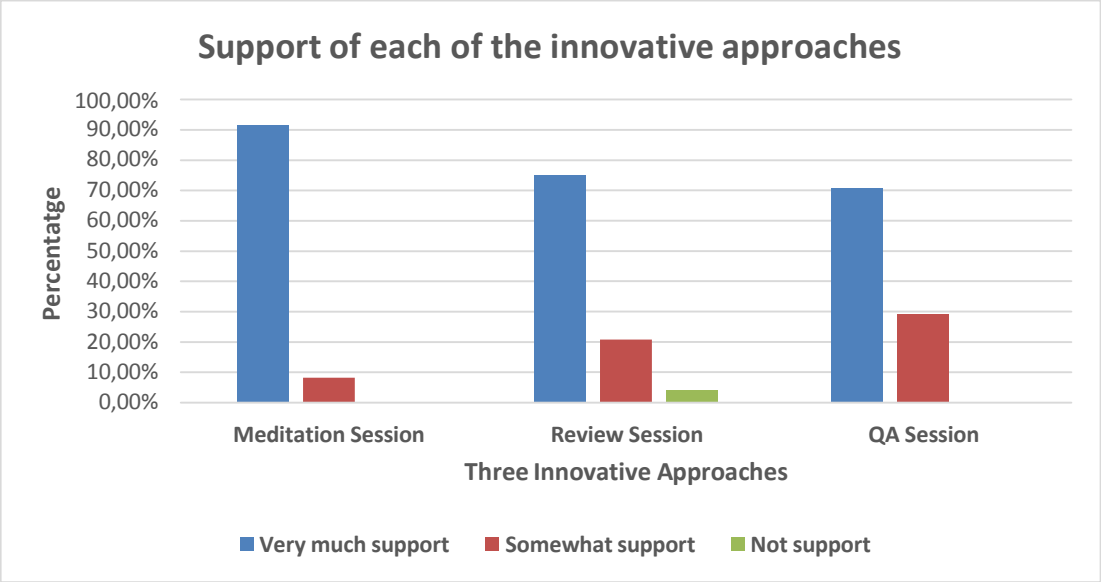

Figure 6. Support of such innovative sessions

The study is also targeted to find out from the experiences of students on supporting such innovative approaches in the classroom. Majorities of students have rated their feeling as shown in figure 6 above to include all such approaches to enhance the classroom activities and their essential grasp.

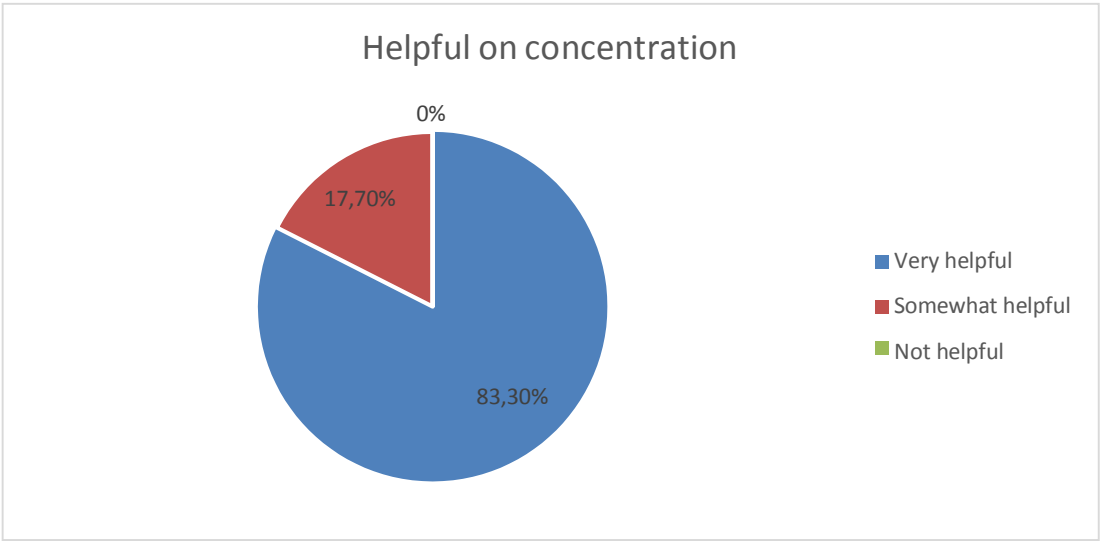

Figure 7. Review and QA sessions helpfulness on concentration in the class activities

Two of the critical approaches incorporated were reviewed in the middle and end of each class where the selected student needs to come in front and do a re-cap of the contents

covered along with peer marking. Le (2021) found out that concentration in the classroom play important role in deriving a maximum grasp of the activities in the class. The session is followed by relevant QA. Such approaches seem to fit well in deriving more concentrations in the classroom activities as reported in above figure 7.

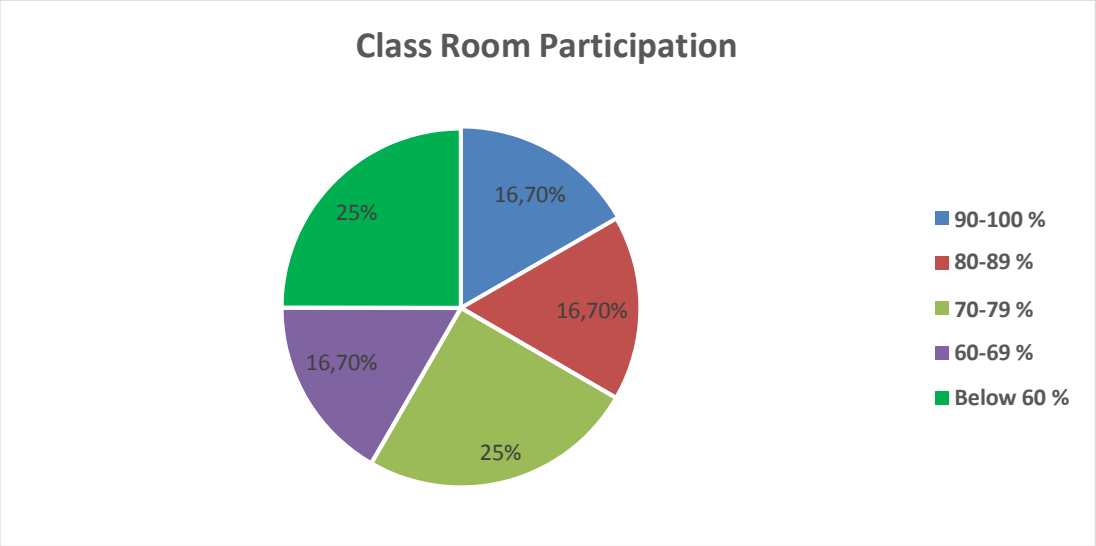

Figure 8. Class participation rating before such innovative activities

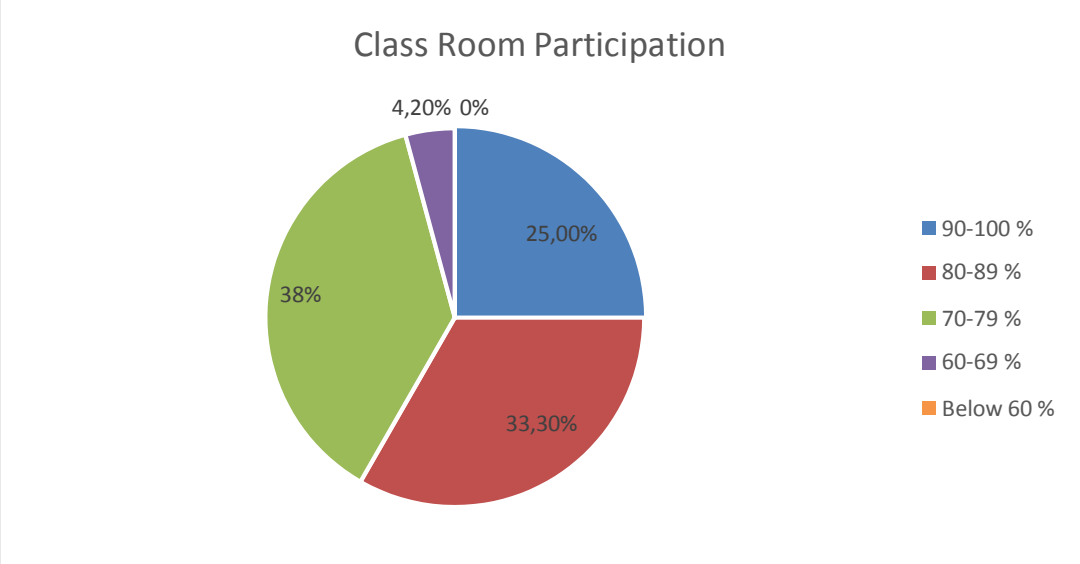

Figure 9. Class participation rating after initiation of such innovative activities

Researchers Boud (1995), Tiew (2010), Bozkurt (2020) in different times have stated that classroom participation and peer engagement are seen as effective measures in teaching

and learning. Finally, the participation level of students was evaluated. Figure 8 highlighted the class participation before the initiation of such innovative approaches and figure 9 is about the participation in the class after the initiation of three critical innovative approaches. Certain changes are being noticed from the result as figured out above. There are no students in concentration level below 60% after initiation of the three innovative approaches whereas before it there were 25% students in this range. Moreover, there is an increase in-class participation in the ranges of 70% and above after incorporating the innovative approaches.

Conclusion and Recommendation

It is observed from the result presented above that the innovative approaches in the form of short meditation session, review session in middle and end of class activities followed by question-and-answer (QA) session has proved to be benefitting student in terms of their concentration, focus, creativity, and understanding. Though the study is restricted to one class of 24 students at the undergraduate engineering program and also limited to half of the semester (i.e. 8 weeks), the overall reflection and satisfaction level shown was encouraging as well as promising. The result also highlighted almost all of them are of an opinion that all the three innovative approaches are worth following in future classes too.

This is a clear indication that the three innovative approaches namely meditation, review, and QA sessions can be well applied in the classroom setting and it has the potential to make teaching and learning more conducive and effective. It is also to appreciate from the finding that such innovative approaches in teaching and learning always inclined the conceptual grasp of the student along with probable increase level of participation with focus and creativity which are always fundamental requirements in academic learning sessions.

Several other engaging activities can further be found out that can increase the level of active participation of students in the class and also make teaching and learning more of participatory approaches. One can very well devise as well as test multiple best-suited approaches which can enhance overall objectives of teaching and learning which are always open for innovation as practices.

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