



## **Using the Potential of the Part-Time Students in Engineering Higher Education Sector: Pedagogy and Innovation**

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**Abstract** - Field training is a composite part of student learning while studying at professional institutions. Students learn theoretical concepts in traditional classroom settings and for practical hands-on experience, higher educational institutions have to arrange on-campus laboratories, expert talks, meet and greet events, exhibitions, alumni interactions, industry interactions and off-campus industry visits, internships, and mentorship programs with sponsored industries. For all these activities, higher educational institutes have to make necessary arrangements, and most of the time, the arrangement of industry mentors is costly and a difficult process. Students enroll in the course of their study either in full-time mode or in part-time mode. Part-time students usually work in some organizations and in most cases related to their field of study. This research article aims at investigating the scope of using the industry experience of part-time students for the learning of full-time students as a supplementary instructional method in a structured way. A case study was conducted on electronics and telecommunication engineering students to train full-time students with necessary industry knowledge and standards with the help of part-time students while working in groups. Results show the effectiveness of the strategy adopted and proposes how part-time students working in engineering fields having practical hands-on experience can share their experience with full-time students through various activities. The paper also describes how the higher educational institutions can train their course offering departments, registration departments, and student success centers to design properly-structured activities to utilize the potential of their part-time students for the learning of their full-time students.

**Keywords:** Industry experience, mentorship, part-time students, full-time students, structured activities

### **INTRODUCTION**

Modern-day Engineering Higher Educational Institutes (HEIs) aim at achieving academic excellence by providing multi-faceted education to its students and encourage them to reach the pinnacle of success. The authors working in engineering HEIs have vast experience in designing, managing, and teaching various engineering programs of study. They have designed policies, procedures, and action strategies related to teaching and learning to provide a coherent institutional framework encompassing teaching philosophy and beliefs while enabling program offering departments to adopt discipline-specific methods of delivery. The focus remained to recognize students experience and the effectiveness of learning in which students are active participants. The focus remained to provide opportunities to the students to build their learning based on their prior knowledge and life experiences, identifying clear connections among their previous knowledge as an active process of engagement in learning knowledge and skills. While working on the employability of the strategy of HEIs, the focus remained to take all necessary short term and long term skill development activities and developing a systematic engagement of students with industry which proved as one of the most effective ways of educating students in the field of engineering and technology since there is no substitute for experience.

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In line with the student-centric approach of teaching and learning, that is followed across various activities undertaken in HEIs, module delivery ensures that diversity in the learning styles of the student population is taken care of (Green, 2011). Engaging students with field training as a part of student learning while studying at professional institutions is one major task at HEIs. The on-campus laboratories, expert talks, meet and greet events, exhibitions, alumni interactions, industry interactions and off-campus industry visits, internships, and industry mentorship programs where an expert is attached to a student for a period usually in sponsored industries are usual means of learning at HEIs. For all these activities, higher educational institutes have to make necessary arrangements, and most of the time, the arrangement of industry mentors is costly and a difficult process. Students in HEIs enroll in the course of their study either in full-time mode or in part-time mode. The part-time students usually work in some organizations and most of the cases related to their field of study.

It is understood from previous studies that in a 21st-century learning environment, teaching, and learning must be based around the innovative use of both current and new technologies (Cardoso, 2020). Thus, it is important for building a 21st-century learning environment to reflect on teaching and learning practices by taking students' opinions and feedback (Cardoso, 2020). In bachelor degree continuing studies, there is always a big portion of students who register themselves as part-time here in HEIs (Davies P. , 1999). Part-time students attend the HEI studying modules of their specialization on a reduced load basis along with their regular work in the industry. HEIs ensure their commitment to teaching and learning excellence and inputting best efforts to bring a continuous improvement (Boulter, 2000) using all possible tools.

Radar Theory and Satellite Communication is one module which is offered in the final year of the Electronics and Telecommunication Engineering degree programs across the globe which has the potential that while studying it, students can relate their learning easily to their field of specialization since it involves major subjects of electronics and communication engineering. Mostly, the module is delivered in an activity-based active learning environment. This module not only relates all the modules of students' course plan studied but also gives students a glimpse into the future practical field. This module provides insight into various aspects of radar communication, radar systems, satellite access techniques and applications of communication satellite systems. The teaching and learning approach employed for this module ensures that the activities are student-centric and instill the necessary skills needed for their lifelong learning. Along with assuring adequate teaching and learning support, student effort is equally emphasized and it is the responsibility of the student to attempt and complete the related tasks and activities that are assigned to them within the specified time limit to have complete learning (Young, 2003). Over the semesters as the student work is collected from the students of module Radar Theory and Satellite Communication, it is noticed that a few part-time students do produce a masterpiece of case studies related to the advanced topics of their modules. On discussion, it is learned that these students are already working in the radar and satellite communication field and are well versed with high-level training through their organizations and are having good hands-on experience of various aspects of the topics of the module.

Looking at this potential of the part-time students initially, few activities were arranged for the whole class since many students were not working in the same fields. These activities were conducted very professionally by the selected part-time students and were well appreciated by the other students. Then these activities were enhanced to the workshop levels where full-time students of the same module were invited to attend and learn the practical aspects of the topics of the module. This innovative practice to utilize the practical hands-on experience of part-time students as mentors since they have got the relevant experience for the benefit of other part-time students who are working in different fields and for the full-time students proved a great success as a supplementary instructional technique (Rutherford, Learning from fellow engineering students who have current professional experience, 2012). It indicated that these part-time cohorts can be a good source of learning especially in modules like Radar Theory and Satellite Communication (Lamb, 2010). After using these techniques for repeated semesters, it was decided to extend the implementation of this approach on other modules and reflect on the study that what is the impact of this practice on learning of the students who don't get a chance to get practical detailed know-how of the equipment which they study in theory.

To implement and to study the impact of the technique of using practical skills of versed part-time students for the benefit of other students, two sessions of the module Radar Theory and Satellite Communication were selected for two semesters. One of the summative assessments of the module Radar Theory and Satellite Communication is a case study presentation. Students have to go through details of the technical case study scenarios of advanced topics, write a report on them and present in front of the examiners. This type of practice provides students with challenges that build lifetime skills (Chaney, 2020). We used the case study presentation assessment of the module as a platform to practice the identified mentorship approach. Students with required knowledge and skills were identified and they were grouped in such a fashion that one part-time student with industry experience acts as a mentor with two mentees (Davies J. , 2008). The impact on learning of full-time students was examined in two studies using samples of students enrolled in the last two semesters. The aim was to do practice, gather data, and do a consultation to draw concrete results from the

experience. Main intention from this practice was to utilize the relevant knowledge and experience of the industry experienced part-time students for the benefit of other students of the same module (Davies J. , 2008). This innovative practice shows the potential of being used as the component of a blended learning experience. While working on the case study objectives, both mentors and mentees of the group were guided on how to effectively utilize the practice for the benefit of all.

Specific aims from this innovation were:

- Developing Student's technical and soft skills like teamwork, leadership, resource sharing, and knowledge sharing, etc.;
- Developing and practicing a supplementary instructional method where part-time students act as mentors to their full-time classmates to share their experiences and knowledge of the industry in a structured way; and
- Evaluating student's experience in this methodology and conclude.

## METHODOLOGY

This study as a supplementary instructional method has chosen a high-level module (Radar Theory and Satellite Communication) of the electronics and telecommunication engineering program offered in the final year in two sessions for two consecutive semesters, followed by a middle-level module (Antennas and Wave Propagation) offered at mid of the course plan and then an entry-level module (Communication Systems) in two sessions in two semesters each. This was done to thoroughly study and compare the results. The group work assessment for each module was selected and students were grouped to work on them and at the same time implementing and analyzing the case study. For the chosen objectives of the study, means to what extent, the students involved feel that their technical learning and skills like problem solving, inquiry, teamwork and resource sharing has improved. The questionnaires designed included questions with one to five scale to choose from and space for specific comments. These questionnaires were handed over and collected after the first half and in the last week of the semester for all modules and all students in both semesters while implementing and analyzing the case study.

In the first phase selected the module Radar Theory and Satellite Communication which is a level 3 and semester 8 module, with 15 credit points. This module has three assessments, one of which is the Case Study Presentation. During teaching this module, examples from real life are discussed in class. Topics with related practical scenarios are discussed in class in connection with their prior knowledge which is necessary to understand the new topic. Students are given a chance to ask more questions which are then discussed in class. As part of the summative assessments, a group work case study scenario is given to students to work on, research, visit the real-time field, and learn from the practitioners. Every semester many part-time students of this module come from the police department, telecom field, and department of defense where they work hands-on on similar equipment. Most of those part-time students have good industry experience of working on the equipment which they do study in theory class. The primary aim was to provide an opportunity for full-time students in a structured way to get practical aspects of the technology. The mechanism followed was to make groups among full-time students and part-time students so that they can learn from each other especially full-time students who have less exposure to the practical fields.

In the second phase selected the module Antennas and Wave Propagation which is a level 2 and semester 5 module, with 15 credit points. This module has three assessments, one of them is the Mini Project Presentation. During teaching this module, examples from real life are discussed in class. As part of the summative assessments, a group work Mini Project Scenario is given to students to work on, research, visit the real-time field, and learn from the practitioners. Every semester many part-time students of this module come from the TV and Radio department, telecom field, and department of defense where they work hands-on on similar equipment. The mechanism that we followed was to make groups among full-time students and part-time students so that they can learn from each other. For the third phase, the selected module was Communication System which is a level 1 and semester 3 module, with 15 credit points. This module has three assessments, one of them is the Mini Project Presentation. As part of the summative assessments, a group work Mini Project Scenario is given to students to work on, research, work in the laboratory, and then present the designed circuit and report in front of examiners.

The process for this innovative practice can be divided into different stages as:

- (1) Study of student's background.
- (2) Mentoring the groups;
- (3) Mentoring one to one;
- (4) Mentoring in the project perspectives;
- (5) Implementing, analyzing, and researching the impact of the mentorship practice and developing it for next level implementation.

In the phase 1 module, the potential cohorts of the students of the module were identified during the know-your-students phase during the module registration before the start of the semester. On interview during the first week of the semester, out of 33 students in the first semester, 6 students were working in similar fields of the module and could serve as a mentor. In the second semester, out of a total of 29 students, 8 students were from the desired field. Students were briefed that as a requirement of the module, they have to work on one case study, and the scope and scheme of the case study were discussed in detail. Since it is a group work task, students were guided on how to make a group. Criteria for the group were at least one part-time student with related experience. Student consent was collected towards the intended mentorship case study.

Students were briefed on various activities and they were assured that the legal and ethical aspects of the study will be taken care of. During the first semester, seven groups could be formed with a focus on mentorship while in the second semester 8 groups were formed based on of potential students' availability. Groups of the students were mentored on how to make this scheme workable. The progress for the research topic was monitored throughout the semester and students were mentored one on one basis both technically and related to the study objectives. Various questionnaires were prepared and were discussed with participants and feedback was collected. This framework was utilized over two semesters to check for the usefulness of the practice. This research was carried out not only on student feedback but also a wide range of literature was reviewed from various resources. The keywords searched were part-time students, learning, career guidance, and mentoring.

These tasks were repeated for the phase 2 and phase 3 modules. In this later phase modules, another questionnaire was developed for the teachers involved in teaching and guiding and practicing the mentorship case study as well. For phase two module, in the first semester, out of 34 students, 12 students were identified and who agreed to participate as a mentor and work with other students as per guidelines while in the second semester, out of 29 students, 11 students were identified and who agreed to participate as a mentor and work with other students as per guidelines. For phase three-module out of 18 students, there were 3 students identified and who agreed to work on the guided schemes in the first semester while in the second semester out of a total of 22 students, 5 students were identified to act as a mentor in the said scheme.

## RESULTS

### Student Performance

The analysis of the case study starts with students' views that lead to the further developments of the scheme. Feedback was gathered about the effectiveness of this practice among the targeted groups of students using the Small-Group Analysis (SGA) method of gathering feedback from students about what is helping them in learning and what is not. It is based on the answers to questions from focus groups and types of students under two categories and the staff involved in teaching and practicing the mentorship case study. For the analysis, survey data about different cohorts over the two semesters of each phase was collected (Nobuo Tanaka, 2005). At an evaluation stage, the part-time students and full-time students were given separate questionnaires to check for different aspects of this practice. The next step in the investigation of the effectiveness of the case study is the comparison of the results for various modules in various semesters.

To obtain a general view of the case study implementation, we used a qualitative method using questionnaires to students either mentors or mentees and the staff involved in the practice. 107 students out of a total of 135 students (79%) returned the filled questionnaire with scales and comments which is a good number to draw an overall picture of the participating students' attitudes. Few comments are mentioned in the following sections while the results of the questions in various slots are represented as graphs in the following section. The questionnaire was designed on a scale of five, to gather feedback from the fulltime students included the following questions:

1. While researching the topic of my case study, getting the help of my part-time student peer with industry experience was useful.
2. The part-time student of my group helped me to get better knowledge and skills in the case study scope.
3. This way of teaching and learning is suitable for my learning style.
4. The guidance provided by the teacher in learning from my group fellows while working on the case study was very good.
5. I feel that this practice should be continued in this module and other modules of my specialization.
6. Any specific comment?

Similarly, another questionnaire was designed on a scale of five, to gather feedback from the part-time students included the following questions:

1. Helping and mentoring my full-time group fellow students was a good experience.
2. My full-time group fellows' attitude while working on a case study remained positive.

3. This way of teaching and learning is suitable for my learning style.
4. The guidance provided by the teacher in learning from my group fellows while working on the case study was very good.
5. I feel that this practice should be continued in this module and other modules of my specialization.
6. Any specific comment?

For the three phases, the outcomes from the feedback from different sessions are summarized below in figures 1-3 as:

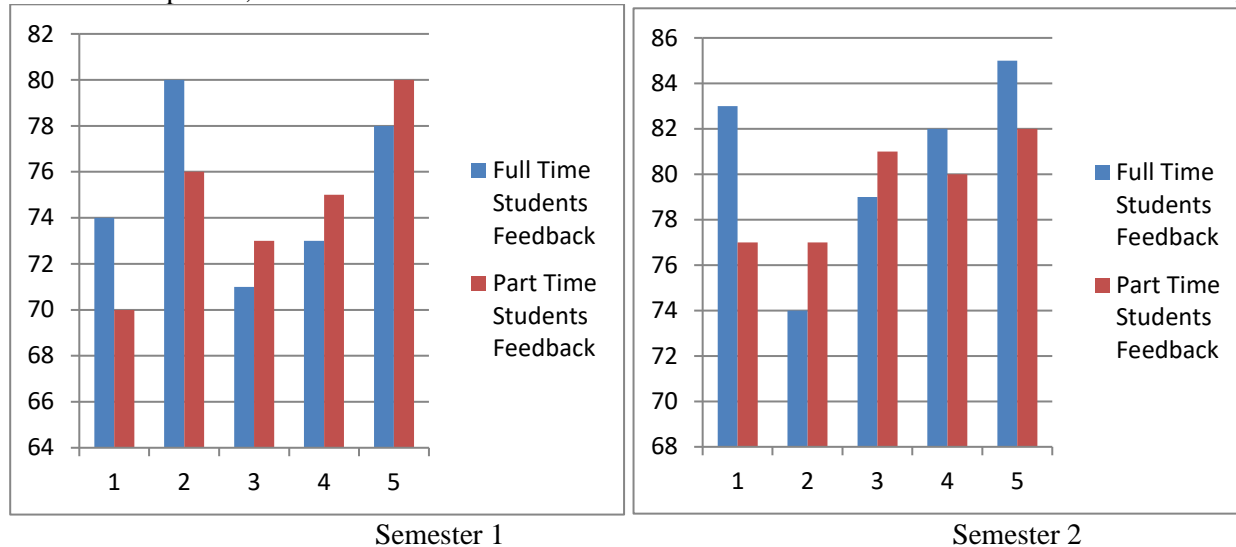


Figure 1: Student Response to Questions of Phase 1 Module

As demonstrated in figure 1, in the phase 1, 78.5 % mentees found that getting the help of their part-time student peers with industry experience was useful while researching the topic of their case study. 77% of the mentees found that the part-time mentors helped them to get better knowledge and skills on the case study scope. 75% of the mentees found that this way of teaching and learning is suitable for their learning style. 77.5% of the mentees of the groups were satisfied with the guidance provided by their teachers in learning from their group fellows while working on their case study while 81.5% of the mentees felt that this way of learning should be continued in this module and other modules of their specialization.

On the other hand, 73.5% of the mentoring students of the groups while working with their fellow students as per guidelines provided to them, found that helping and mentoring their full-time group of fellow students was a good experience. 76.25% of the mentors found that their full-time group fellows' attitude while working on mentorship case study remained positive. 77% of the mentors found that this way of teaching and learning is suitable to their learning style. 77.5% of the part-time mentors with industry experience found that the guidance provided by their teacher in learning from their group fellows while working on a case study was very good while 81% of students felt that this practice should be continued in this module and other modules of their specialization.

The feedback of mentees proved positive, where the majority of the students showed their enthusiasm about the practice. The majority of the students agreed that this technique helped them in a better understanding of the topics and should be continued. Few comments are:

- "It really helped me".
- "Teacher did a good job".
- "Good learning style".
- "It was difficult to get information about what I needed".

Many mentees students agreed that this technique is good for their learning. Few comments are:

- "I enjoyed it".
- "Sometimes it is difficult to share information".
- "It was a burden on me".

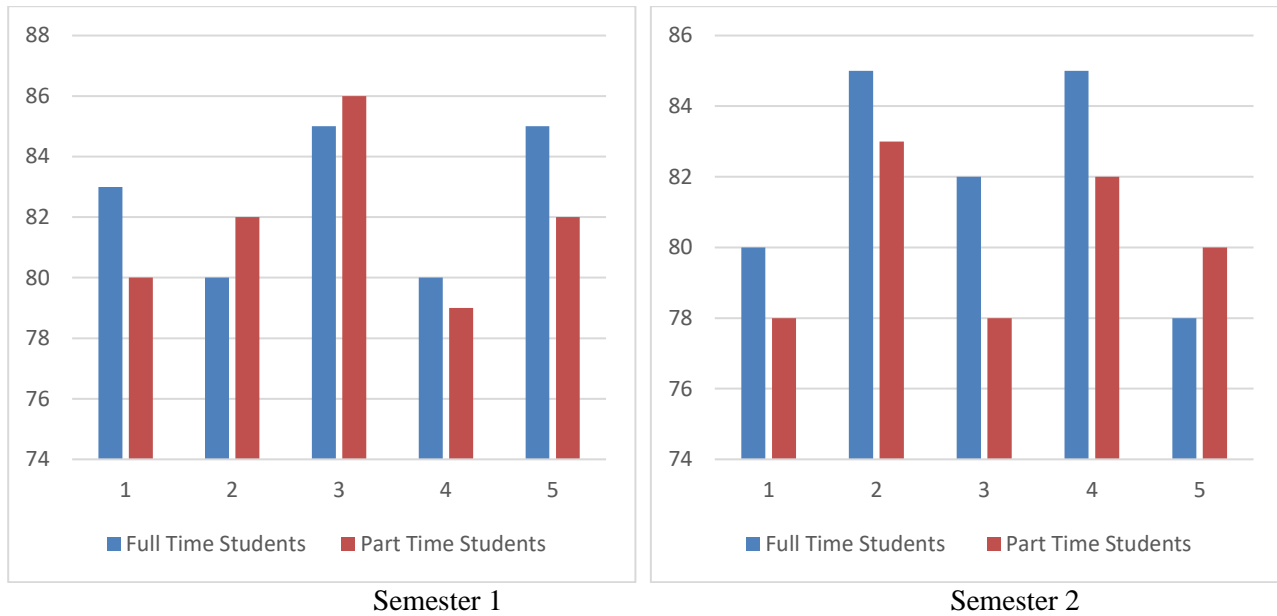


Figure 2: Student Response to Questions of Phase 2 Module

As demonstrated in figure 2, in phase 2, 81.5 % of the mentees found that getting help of their part-time student peers with industry experience was useful while researching the topic of their case study. 82.5% of the mentees found that the part-time mentors helped them to get better knowledge and skills on the case study scope. 83.5% of the mentees found that this way of teaching and learning is suitable for their learning style. 82.5% of the mentees of the groups were satisfied with the guidance provided by their teacher in learning from their group fellows while working on their case study while 81.5% of the mentees felt that this way of learning should be continued in this module and other modules of their specialization.

Similarly, 79% of the mentoring students of the groups while working with their fellow students as per guidelines provided to them, found that helping and mentoring their full-time group fellow students was a good experience. 82.5% of mentors found that their full-time group fellows' attitude while working on their case study remained positive. 82% of mentors found that this way of teaching and learning is suitable for their learning style. 80.5% of the part-time mentors with industry experience found that the guidance provided by their teacher in learning from their group fellows while working on a case study was very good while 81% of students felt that this practice should be continued in this module and other modules of their specialization.

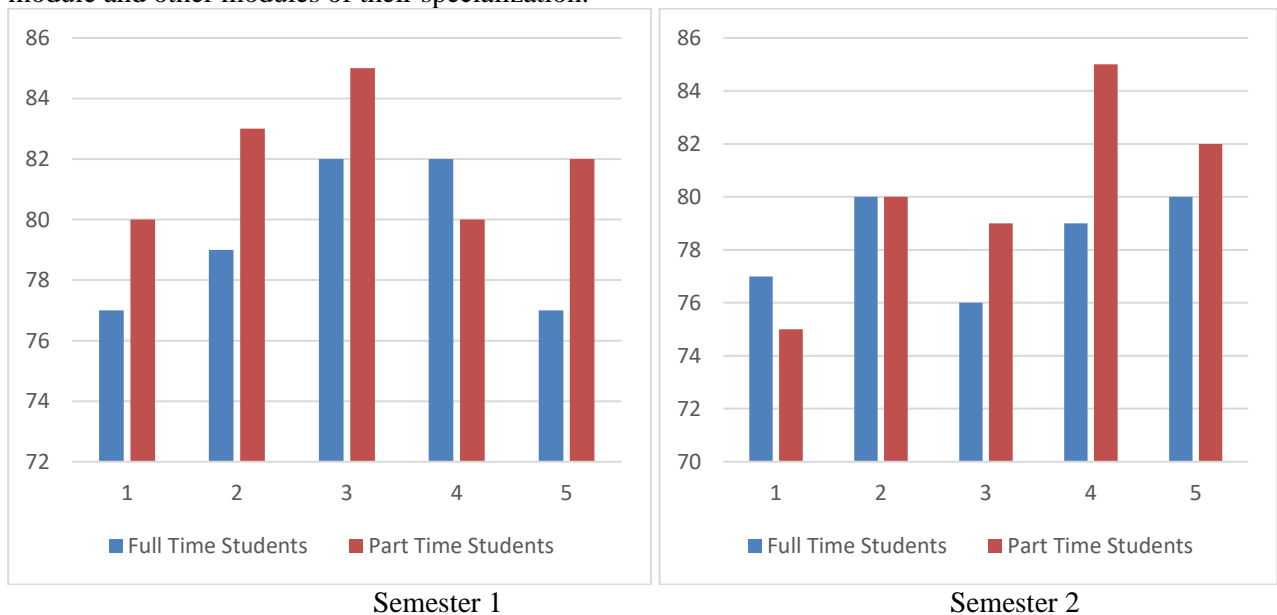


Figure 3: Student Response to Questions of Phase 3 Module

As demonstrated in figure 3, in phase 3, 77 % of the mentees found that getting help of their part-time student peers with industry experience was useful while researching the topic of my case study. 79.5% of the mentees found that the part-time mentors helped them to get better knowledge and skills on their case study scope. 79% of the mentees found that this way of teaching and learning is suitable for their learning style. 81.5% of the mentees of the groups were satisfied with the guidance provided by their teachers in learning from their group fellows while working on their case study while 78.5% of the mentees felt that this way of learning should be continued in this module and other modules of their specialization.

Similarly, 77.5% of the mentoring students of the groups while working with their fellow students as per guidelines provided to them, found that helping and mentoring their full-time group fellow students was a good experience. 81.5% of mentors found that their full-time group fellows' attitude while working on the case study remained positive. 82% of mentors found that this way of teaching and learning is suitable for their learning style. 82.5% of the part-time mentors with industry experience found that the guidance provided by their teacher in learning from their group fellows while working on a case study was very good while 82% of students felt that this practice should be continued in this module and other modules of their specialization.

### Views of the Staff on Case Study:

The questionnaire designed on a scale of five, to gather feedback from the staff practicing the mentoring case study, included the following questions:

1. It was easy to find appropriate mentors and making groups with mentees and taking their consent for the case study.
2. Mentors helped share their technical knowledge and practical skills with their peers.
3. Mentees were satisfied with the learning and showed a positive attitude while working on the case study remained positive.
4. The guidance provided by the teacher was well responded by the groups while working on group tasks and following the instructions.
5. This practice should be continued in all suitable modules of the specializations.
6. Any specific comment?

For phase 2-3, the outcomes from the feedback from different sessions are summarized below in figure 4 as:

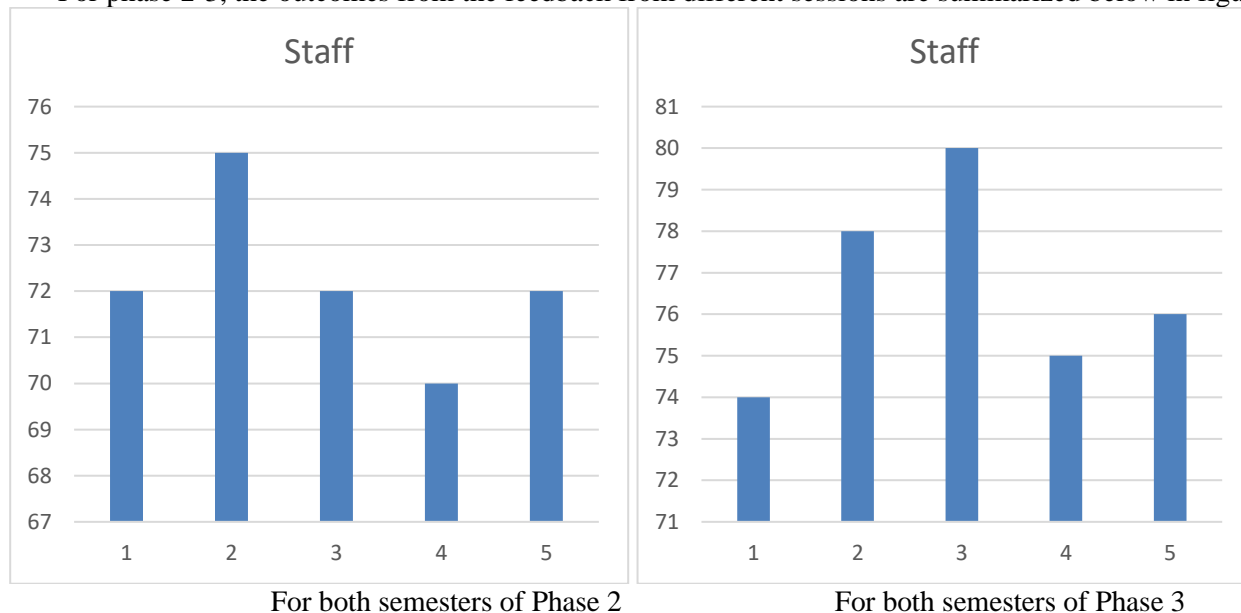


Figure 4: Staff Response to Questions of Phase 2 and Phase 3 Modules

As demonstrated in figure 4, for both semesters of phase 2 and phase 3 of practicing the mentoring case study by eight teachers, response to the questions was collected. 73% of teachers agreed that it was easy to find appropriate mentors and making groups with mentees and taking their consent for the group work. 76.5% of teachers mentioned that the mentors were helpful in sharing their technical knowledge and practical skills with their peers while working in groups. 76% of teachers reported that the mentees were satisfied with the learning and showed a positive attitude in groups.

while working on the case study remained positive. 72.5% of teachers stated that the guidance provided by them was well responded by the groups while working on group tasks and students were following the instructions. 74% of staff members indicated that this practice should be continued in all suitable modules of the specializations.

Mostly teachers were talking high about the scheme and appreciated its usage. Few comments are as:

- “Good approach, need to train the mentors and mentees more”.
- “Wonderful results were observed”
- “At times it was difficult to trigger students to keep working on tasks”
- “Poor responsiveness skills of few students barred the progress of the case study”
- “Few mentors could not help properly due to lack of experience even they were working in the field of specialization”

## DISCUSSION

It is rewarding to conclude that the chosen mentorship program as a supplementary instructional yielded positive results from both students and the faculty members. To estimate the implications of innovation on overall operations of the HEI, a dynamic panel approach was required. We had to use rich data for various modules where this practice is carried out for a longer period of time so that we could unfold the heterogeneity among our students (Blundell, 1998). Since HEIs are committed to research and leadership in human resource development and this practice could be a part of this commitment.

The current HEI teaching and learning framework may induce this practice, where at the time of enrollment part-time students may be interviewed and the department committee can assign selected part-time students a particular stream group. By the time in their degree course plan as they do arrive at a particular module that is relevant to their industrial experience, these students may be utilized for the mentorship of their fellow full-time students. In this way, the teaching and learning can find a place in this new landscape of mentored learning. The mentorship case study provided a sense of satisfaction since helped in improving students’ satisfaction level (Claire Callender, 2009). This approach may be employed as an extra support mechanism using the existing infrastructure of the HEI with minimal additional resources needed. The framework can be polished by establishing a think tank. Registration department, student success center, and program offering department representatives can be assigned this research work. This way the departmental course team may continue to develop approaches to allow full-time students to benefit from contact with their part-time fellow students (Rutherford, Learning from fellow engineering students who have current professional experience, 2012), so that studentship experience could be enhanced.

The framework of the practice exhibits the potential that it can be replicated in other suitable modules of different specializations as well as there are many positive benefits for both mentors and mentees (Marra, 1997). Further study of the impact of this practice can however be refined by collecting reflections of the concerned teachers and students over a while. Once it is proved that this promising practice is having a positive impact on students learning, teaching, and learning frameworks can add it as a must for the selected modules. A database with the help of the registration department, student success center, and the engineering department can be formed and utilized during the study.

Many benefits from this practice were identified as:

- Enhanced learning;
- It provided students, a chance to learn the technology from a different perspective;
- This practice provided students, a scope of discussion with the teacher and within their groups;
- Full-time students were exposed to the working conditions and work type meant to them shortly. They gained insight into life at work within their profession. They came across real-time projects; and
- It proved to be a way to develop contact with industry which can help students in their careers.

The technique was highly appreciated by the participants. Their level of satisfaction towards the effectiveness of the case study indicates that this method may be utilized in all possible modules of their course plan.

## CONCLUSION

At the start of the practice, few things were not clear and many concerns were there but once the study got started, it went very well. Feedback proved to be positive, and in most of the group's potential of the scheme was evident from the feedback. This practice proved an enhancement in the learning of full-time students in the form of their personal and professional development. The role of the part-time students is well appreciated here as they did coordinate on a very positive note and remained available and guided their fellow full-time students. Most of the selected part-time students were enthusiastic and did their job very satisfactorily. Most of the full-time students were also enthusiastic and



showed eagerness to process in a specific way. Few of them, however, exhibited little less interest and even after using motivating tactics, could not perform up to mark.

In general participant's feedback was encouraging and appreciating. For students, this practice not only opened a window of opportunity for learning but also developed the potential to work in groups and to learn from each other. Even part-time students were enthusiastic and they mentioned that it was a good experience to mentor their fellow students; teaching them different aspects of technology and refreshing their own knowledge. This practice proved useful to the faculty members as well to implement the HEI vision, mission, and values and learner attributes in students. Managing the time constraints proved to be a major challenge in implementing this practice especially when dealing with few students who were not enthusiastic about practicing this mode of learning which needs to research further (Saunders, 2011).

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## BIBLIOGRAPHY

- Blundell, R. a. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87, 115-143.
- Boulter, C. J. (2000). Challenges and opportunities of developing models in science education. *Developing Models in Science Education*, 343-362.
- Cardoso, L. M. (2020). Education, Communication and Literacy: Pedagogy and innovation in Higher Education in Portugal and Spain. *Educația Plus*, 26(1), 100-109.
- Chaney, B. H. (2020). *Best Practices in Honors Pedagogy: Teaching Innovation and Community Engagement through Design Thinking*. Lincoln: National Collegiate Honors Council .
- Claire Callender, R. F. (2009). *Part-time undergraduates in higher education: a literature review*. Birkbeck, University of London: HECSU to inform Futuretrack: Part-time students. .
- Davies, J. (2008). Part-time undergraduate study in civil engineering – students from the workplace. . *Engineering Education*, 3 (1), 21–29.
- Davies, P. (1999). Half full, not half empty: a positive look at part-time higher education. *Higher Education Quarterly*, 53:2, 141–155.
- Green, A. (2011, May 20). *Peer assisted learning: Empowering first year engagement with a formal curriculum through the educative* . Retrieved from pal.bournemouth.ac.uk: pal.bournemouth.ac.uk
- Lamb, F. (2010, Feb). *Engineering graduates for industry*. London: Royal Academy of Engineering.
- Marra, R. a. (1997). *A model for implementing "Supplemental Instruction"* . Pittsburgh, USA.: Frontiers in Education.
- Nobuo Tanaka. (2005). *OECD and Eurostat (2005) Oslo Manual. Guidelines for collecting and interpreting innovation data. 3rd edition*. . Oslo: OECD.
- Rutherford, J. D. (2012). Learning from fellow engineering students who have current professional experience. *European Journal of Engineering Education*, Vol. 37, No. 4, August 2012, 354–365.
- Rutherford, J. D. (2012). Learning from fellow engineering students who have current professional experience. *European Journal of Engineering Education*, Vol. 37, No. 4, August 2012, 354–365.
- Saunders, J. (2011). *Teaching Stream Positions: Some Implications*. . Toronto: Council of Ontario Universities.
- Young, M. R. (2003). Enhancing Learning Outcomes: The Effects of Instructional Technology, Learning Styles, Instructional Methods, and Student Behavior. *Journal of Marketing Education*, 25: 2, pp. 130-142.