Industry Mentoring Program: Empowering External Degree Students for Career Success: Case Study from University of Moratuwa, Sri Lanka

Sumudu Jayathissa, Vishaka Nanayakkara, Buddhika Karunarathna, Niranjan Gunawardena, Malik Ranasinghe, B. H. Sudantha and Roshan Sawanawadu
University of Moratuwa, Katubedda, Sri Lanka

chathuranij@uom.lk
vishaka@cse.mrt.ac.lk
buddhika@cse.mrt.ac.lk
ndg@uom.lk
malikr.uom@gmail.com
bh.sudantha@gmail.com
ar-codl@bit.mrt.ac.lk

Abstract: In today's interconnected world, open distance education has become widespread, granting students the flexibility and accessibility to pursue higher education through external degree programmes. Despite the increasing feasibility of delivering knowledge and skills online, a significant hurdle remains in ensuring that participants are adequately equipped for the demands of the professional world of work. Traditionally, exposure to industry standards and practical experiences is gained through activities like industry visits, guest talks, meetups, and workshops, which are often absent in online distance education programs due to their remote nature. This dearth of industry-preparedness and practical skills presents a formidable obstacle for graduates as they transition into the workforce. Thus, bridging the gap between academic learning and industry expectations becomes imperative to enhance students' employability and career readiness, ultimately fostering their success in the workforce. This case study delves into the solution to this challenge through a meticulously crafted programme aimed at cultivating industry-ready graduates. Leveraging available technology, the program provides immersive experiences within the online learning environment. The paper details the Industry Mentoring Program (IMP), which employs technology to simulate real-world experiences, assesses stakeholder perceptions of the programme's value, and offers insights for future enhancements. This programme was conducted targeting the final year students of the Bachelor of Information Technology (BIT) External Degree programme of the University of Moratuwa. This study investigates the experiences and viewpoints of students taking part in the IMP using surveys, interviews, and focus group discussions. Four student cohorts who have undergone the programme have provided their feedback both quantitatively and qualitatively. Across all groups the student satisfaction was totally positive with over 80% of the participants indicating their satisfaction at 4 or 5 on a Lickert Scale of 5 indicating very satisfied. Students' perception of their preparedness for the workforce after participating in the IMP also is extremely positive. The findings indicates that the IMP significantly improves the career opportunities of BIT students. Feedback obtained from other stakeholders such as potential employers, resource persons and administrators also validate the effectiveness of the programme. The feedback and suggestions are incorporated to enhance the programme. University has decided to incorporate this programme into the curriculum with the 2024 curriculum revision of this open distance degree programme of BIT.

Keywords: Industry ready graduate, Skills enhancement, Industry mentoring programme, Future workforce

1. Introduction

The distance education programs enable students to pursue education in a flexible and accessible manner, allowing them to continue their education regardless of geographic location or time constraints. Students can use online platforms to access lecture videos, lecture notes, assignments, and other materials, as well as interact with instructors and peers, from anywhere with an internet connection. This flexibility is especially useful for people who have family responsibilities, or who may not have access to traditional educational institutions. However, distance education can be challenging due to several factors that impact both students and educators. Distance education often struggles to replicate the hands-on, practical experiences that are crucial in many fields, leaving students less prepared for real-world applications. Lack of interaction with other students and feelings of isolation of these students can negatively impact student motivation and engagement, leading to higher dropout rates compared to traditional education settings. These challenges together with other technical and social issues make distance education a demanding endeavour for many learners.

It is also important that the students are given an opportunity to acquire and enhance the skills that their chosen field of work requires upon graduation. In synchronous face to face learning programmes these are achieved through various physical sessions and carefully crafted internship programmes. Providing opportunities for

distance mode students to acquire these skills are challenging due the nature of the curriculum and may be due to the size of the cohorts. The pseudo-synchronised nature of many open distance courses with no time-tabled slots for each class makes it a real challenge to provide interaction with the industry professionals who are willing to share their experiences and advice with the undergraduate students.

Understanding the value of this exchange of knowledge and experience, the Centre for Open and Distance Learning (CODL) at the University of Moratuwa introduced the industry mentoring program to address the evolving needs of students and enhance their preparedness for the professional world. Industry mentoring programs play a vital role in preparing the workforce of tomorrow, ensuring that graduates are well-equipped to thrive in their chosen fields. Recognizing the significant gap between academic education and industry demands, the IMP aims to provide students with practical insights, guidance, and support from experienced professionals in relevant fields. By partnering with industry experts through mentoring, the university seeks to supplement theoretical knowledge with real-world experiences, ensuring that students acquire the skills, knowledge, and confidence needed to succeed in their chosen careers. Moreover, the IMP serves as a platform for students to establish valuable connections with professionals in their respective industries, expanding their professional networks and enhancing their career prospects. This initiative will be providing holistic education that not only equips students with academic excellence but also prepares them for the challenges and opportunities of the professional world, ultimately contributing to their overall success and employability.

The IMP serves to bridge the gap between academic learning and practical workplace requirements. A carefully crafted program is used to provide students with invaluable insights, guidance, and support from expert industry professionals. Industry experts offer first-hand knowledge of industry trends, best practices, and real-world challenges, supplementing theoretical education with practical know-how. Moreover, mentoring fosters the development of essential soft skills, such as communication, teamwork, and problem-solving, which are often overlooked in traditional academic settings but are crucial for success in the workplace. Additionally, these resource persons from the industry serve as valuable role models and sources of inspiration, helping mentees navigate their career paths, set meaningful goals, and build professional networks.

This paper presents and shares the good practices of this program that lead to enhanced career readiness in the workforce for the graduates of an open distance mode Information Technology degree program. The Industry Mentoring Programme [IMP] was introduced in BIT (external) degree programme in 2020. Four programs were successfully introduced to students with the improving the activities in each programme. This program was conducted online every Tuesday from 19:00 – 20:00hrs for 15 weeks period. By matching students with experienced experts in their respective professions, the program provides targeted assistance and guidance, improves students' employability skills, and build a culture of lifelong learning and professional progress. Through this effort, the Centre for Open and Distance Learning, University of Moratuwa (UoM) seeks to provide its students with the knowledge, skills, and networks they require to succeed in the ever-changing workforce landscape.

The below table (Table 1) illustrates the evolution of the program over different cohorts, showcasing the growth in the number of students, the expansion of tools and resources used, and the introduction of new features to enhance the learning experience. Each row represents a different cohort, denoted by the semester code (e.g. 20S1, 21S2 etc.).

Table 1: Evolution of IMP in BIT Curriculum

Semester	Student Nos	Tools Used	Newly Added Feature(s)
20S2	117	Zoom Sessions	
21S2	179	Zoom Sessions	Mock Interviews
22S2	230	Zoom Sessions + Mock interviews	Panel Discussion
23S1	189	Zoom Sessions + Mock Interviews + Panel Discussion	Industry Visits

This research paper outlines the implementation of the IMP, which leverages technology to replicate authentic industry experiences, evaluates stakeholder perceptions of the program's efficacy, and provides recommendations for its improvement.

1.1 Aim of the Study

The study reported on in this paper is aimed at investigating good practices and perceptions of IMP by seeking to answer the following research questions:

- What are the perceptions of students, potential employers, stakeholders regarding the value and effectiveness of the IMP?
- What are the findings regarding the impact of the IMP on enhancing students' career opportunities?
- What specific feedback and suggestions have been provided by stakeholders to enhance the IMP?
- How the programme can be improved based on the feedback?

2. Literature Review

Universities have the responsibility of assisting the students' soft skills development during their degree programmes and graduates perceive that obtaining a degree it will enable them to secure good positions in the workforce and thus have bright careers ahead (Noah and Abdul Aziz, 2020). Thus, it is essential and important even for the distance mode external degree programmes to pay attention to enhance students' skills development. Singh Dubey, R., Paul, J. and Tewari, V. (2022) identified critical soft skills in IT sector and the perception gap between professionals and students regarding the importance of soft skills. The study suggested how the partnership between educational institutions and the IT industry can address the gap benefitting all stakeholders. Cimatti (2016) also suggested that universities can partner with industries to provide students with direct exposure to the professional environment. Activities such as visits, internships, and joint programs can help students understand the significance of skills for their careers, which may in turn motivate them to continually enhance these essential skills.

Juneby (2008) indicated that online degree programmes have a higher attrition rate and explained how attrition in distance education can be reduced through carefully crafted mentoring programs. Pradhan and Kreglicki (2020) discussed the use of mentoring as a tool to bridge the gap between industry and academia for undergraduate students. The study further identified how mentorship is an effective way for undergraduate students to learn new skills, with access to industry mentors to enhance classroom activities and providing valuable industry experience. They further described how industry mentors provide undergraduate students with professional insights and real-world workplace understanding, bridging the knowledge gap between academia and industry. Allen et al. (2004) conducted a comprehensive meta-analysis examining the career benefits associated with mentoring for protégés. Their findings highlighted the significant positive impact of mentoring programs on various aspects of protégés' careers. Specifically, they found that individuals who participate in mentoring relationships experience greater career success, including higher job satisfaction, organizational commitment, and salary growth, compared to those who do not have mentors. Mentoring offers students customized direction, advice, and encouragement from experienced professionals, assisting them in navigating career paths, setting objectives, and building important skills and abilities. According to Allen et al.(2006) formal mentoring programs continue to gain popularity within organizations despite limited empirical research regarding how these programs should be designed to achieve maximum effectiveness. The recent studies such as Hong V and Glass C (2024) highlights the importance of Industry Mentor Programs in related degree programs.

With the evolution of ICT based tools in education many studies have shown that such tools can be used to enhance the soft skills of the students. Caeiro-Rodríguez et al (2021) discussed the ICT-based services that have been developed to support the teaching of soft skills in higher education. Cherbonnier et al. (2024) analysed 18 studies on the development of collaborative skills using digital tools. This systematic review highlighted the need for further research on the use of digital tools and the functionalities they offer. The study further indicated that future studies should focus on the impact of automatic feedback on self-assessment and the use of instruments to develop collaborative skills. Weng, C. et al. (2024) analysed 31 papers from the Web of Science database to examine the impact of online learning environments (OLE) on acquiring transferable skills (TS). The study indicated that Learning Management Systems (LMS) and online platforms are widely used for teaching TS, impacting TS development, contributing to a more knowledgeable society, improved education, lifelong learning, personal empowerment, enhanced employee skills, and entrepreneurial outcomes fostering economic development. The negative aspects of using OLEs such as challenges in communication skill development, prolonged adjustment periods, and increased challenge for learners are indicated in the study with recommendations to teachers, educators, curriculum designers, and researchers obtain the effective use of OLEs.

The key learnings from literature on importance of soft (or transferable) skills and impact of digital tools in assisting the enhancement of such skills were considered in the design of IMP. The value addition that will be brought in by using industry professionals as resource persons as well as enhanced outcomes due to close industry rapport in designing and developing a program also contributed immensely to the improvement of IMP.

3. Methodology

To share the best practices of crafting a useful programme to expose distance mode learners in a three-year Information Technology degree programme this paper will outline the programme and then delve into analysing the perceptions of the outcome of the programme.

3.1 Programme Design

The programme was designed to provide the learner the exposure to the world of work they will be stepping into with the help of industry professionals. The degree programme students were following was delivered in a pseudo-synchronised manner with all the content required for a given week been made available via the LMS with no time-tabled class hours for any synchronized interaction. Students can use forums or emails to interact with their module coordinators. In designing the IMP, the importance of the need for a synchronized session was emphasized and it was agreed to have these sessions as online webinars with prior registrations, However, to provide more regularity and continuity it was decided to use one regular time slot which was deemed feasible for both the learners and resources persons. A mid-week (Tuesday) 19:00 – 20:00 hrs local time was selected for the sessions to facilitate most of the participants. Even though a specific time slot has been allocated for this programme to make it beneficial to the students who may have challenges of network connectivity and inability to attend due to other commitments students requested the recording of the sessions. Therefore, all recordings have been uploaded to the LMS course the student cohorts were using.

The programme was originally aimed for third (final) year students; however, it was subsequently made available for all students as this will give students the opportunity to enhance their skills from the time they start the degree programme. Every week the session details were displayed as a poster with a registration link enabling students to participate in the sessions via the Zoom meetings/webinar.

The original version of the programme was designed to highlight the need for enhancing soft skills. A list of topics and resource persons were identified with support from the local industry and industry consortia. During the sessions and subsequent feedback sessions with the learners, it was identified that the learners would benefit from exposure to the different types of industries and job roles available for them to work in. This led to programme been modified to add sessions on different categories of companies, and different job categories and roles. Resources persons from large scale international level companies present in the country to startups were invited while sessions on multiple job roles such as software engineers, quality assurance professionals, web developers, network engineers, and security professionals were added. Outside of the programme the CODL was conducting weekly 30-minute segments with the National Television Network which included few sessions on showcasing the work environment of local IT companies and the participants of the IMP programme were encouraged to watch the relevant episodes of the TV series. Participants while appreciating the exposure were requesting to incorporate the physical visits to some companies to gain firsthand experience of the world of work. While the feasibility of such visits needs to be evaluated for long-term sustainability few visits are incorporated in the latest version of the IMP programme. While the students were given instructions on how to prepare an effective curriculum vita, the need for giving them an opportunity to face an interview was highlighted by both the learners and the industry resource personnel. The students who participated in sessions were given the opportunity to face a mock interview conducted by professionals from the local IT industry. It is encouraging to see the successful conduct of the interviews and feedback sessions happening entirely online. A sample listing of the sessions conducted are given below in Table 2.

Table 2: Sessions of the IMP

Week No	Session Description
1	Introduction of the programme
2	Industry Expectations of a New Graduate
3	Attitude + Skills + Mind: The Motivational Training
4	Navigating the Ocean of Information
5	How to join a small-Scale IT company
6	How to become a professional in a large IT Company
7	How to ensure IT undergraduates are industry-ready?
8	Wake the Business Analyst in you

Week No	Session Description
9	How to identify your passion for becoming a Quality Assurance engineer?
10	Discussion about computer networking career advancement
11	Introduction to Career Paths in Web Development
12	The day in life of a Software Engineer
13	How to write an Effective CV?
14	Delivering business value through good project Management
15	Your Success as an IT Professional: Do Ethics Matter?
16	How to find a good internship as an intern
17	Mock Interviews and Closing Remarks

3.2 Research Design

This study conducted a survey that enabled the collection of both qualitative and quantitative data. These methods were selected with the purpose to answer the identified research questions.

This initiative specifically targeted final-year students enrolled in the Bachelor of Information Technology (BIT) External Degree program at the University of Moratuwa. The four successive student cohorts who registered for the IMP programme were invited to participate in this study. The total of four student cohorts were 715 students and 173 respondents participated in this study.

3.3 Data Collection Process

The primary data were collected through various methods, including questionnaires, focus-group discussions, and interviews. Questionnaires provided a structured format for gathering quantitative data, allowing participants to respond to standardized questions. Focus-group discussions offered a dynamic environment for exploring shared experiences and opinions among small groups of participants, fostering in-depth conversations, and uncovering nuanced perspectives. Interviews provided a more individualized approach, allowing researchers to delve deeper into participants' thoughts, experiences, and insights, there by enriching the qualitative data collected. By employing this multi-faceted approach, the study obtained a comprehensive understanding of the participants' viewpoints and experiences within the context of the IMP. The duration of the data collection was one to two months' period.

To obtain more personalized insights on how the participants perceived the outcomes of the program, online interviews were conducted with the students. These interviews provided an opportunity for students to share their experiences, feedback, and perspectives in a detailed and personal manner. These structured interviews were conducted using the following question categories; Introduction, Program Experience, Skills Development, Impact on Career Readiness, Program Enhancement, Future Engagement, and Conclusions. Table 3 provides the details of the questions used in the interviews for one such category.

Table 3: Questions used for the interviews in the Programme Experience category.

Category	Question
Program Experience	What specific aspects of the IMP did you find most beneficial or valuable?
	Can you elaborate on any challenges or obstacles you encountered while participating in the program?
	How did the program contribute to your understanding of industry standards and practical skills relevant to your study?

4. Analysis of Result

Overall satisfaction of the IMP as answered by the students are depicted in Figure 1 for the four different cohorts. It is encouraging to notice the higher percentages of satisfaction with the perceived satisfaction increasing with the newer cohorts. This increase in positive perception could be linked to improvements in many aspects of the IMP.

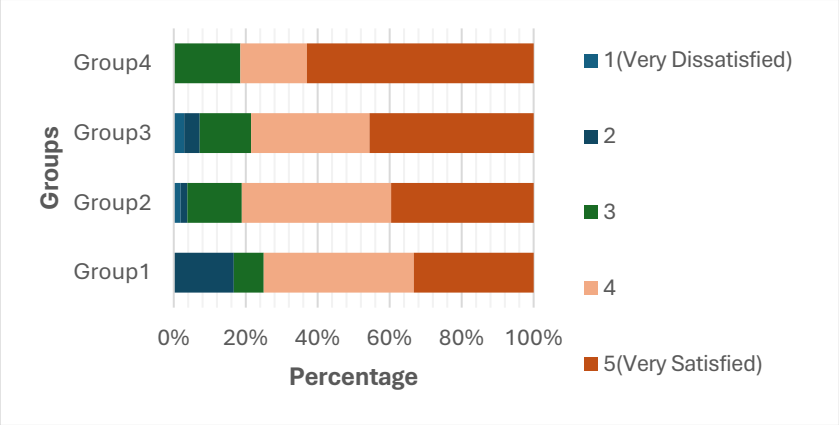

Figure 1: Overall Satisfaction of IMP

The overall responses on how the IMP has helped in developing transferable skills and preparedness for the workforce are summarised in Figure 2. Their answers to the questions; Q1: Rate to what extent do you believe the IMP has helped you develop industry-relevant skills and Q2: Rate how confident do you feel about preparedness for the workforce after participating in the IMP? are shown below in Figure 2.

It is encouraging to see most students have rated the 4 and 5 which depicts they have gained the skills that are required to face the workforce by participating in the programme. This positive feedback suggests that the program is effective in enhancing students' readiness for their professional careers.

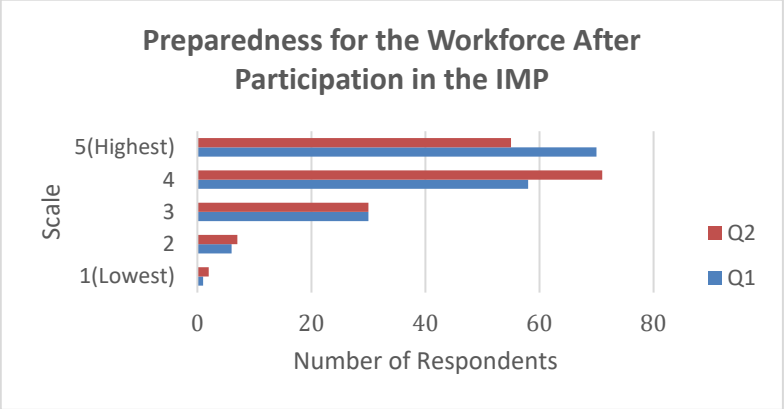

Figure 2: Preparedness for the Workforce After Participation in the IMP

Majority of the students perceived that IMP would greatly improve their employment prospects. Figure 3: Rating of the Career Prospects of the students depicts an overwhelming higher percentage of positive responses. IMP provides opportunities for gaining practical experience, developing industry-relevant skills, and building a professional network with the industry. Building upon these skills led to finding of placement in the industry.

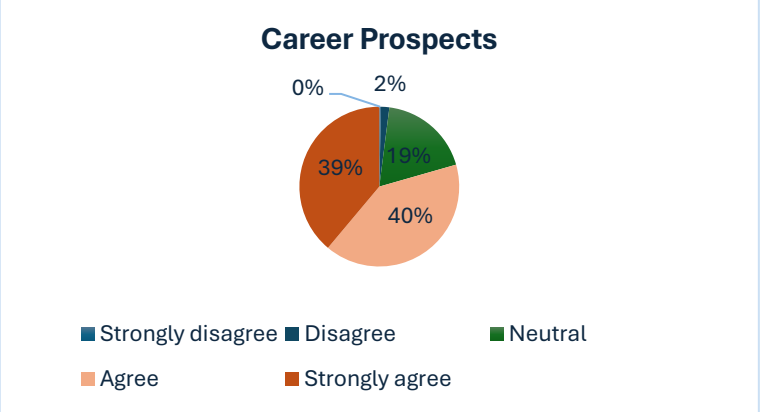

Figure 3: Rating of the Career Prospects of the students

IMP was aimed at assisting students improving their soft skills as well. The survey carried a question asking students about the improvement of their soft skills such as communication skills, self-confidence, problem-solving skills, real-world exposure, and teamwork, etc. Figure 4 indicates that the program is effective across all evaluated attributes, with many students experiencing substantial improvement. As shown in figure 4 students perceive a significant positive impact across all aspects of soft skills from the program.

Attributes such as communication skills and exposure to the real-world stand out with particularly high ratings, indicating these areas may be the most impactful elements of the program. The relatively low number of responses in the lower scales (1 and 2) further emphasizes the program's effectiveness, as only a small fraction of students reported minimal improvement.

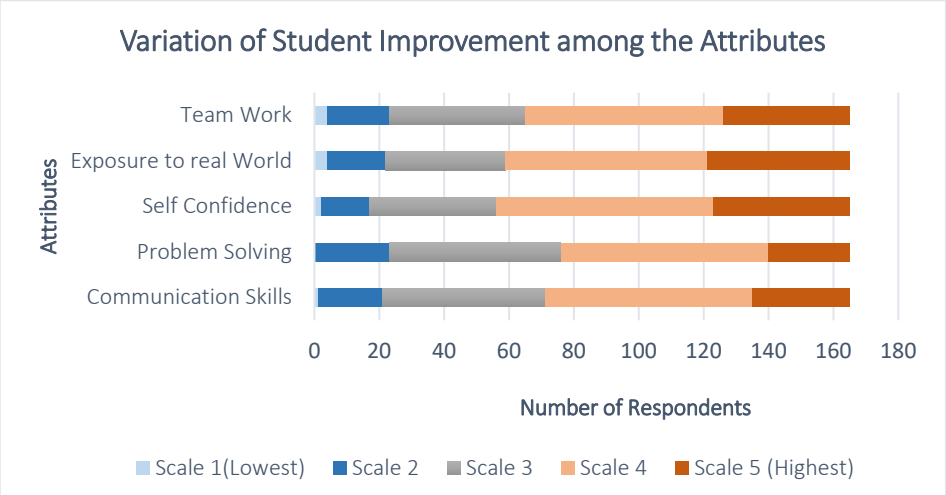

Figure 4: Variation of the student improvement among the attributes

Apart from the questionnaire, the data were gathered using the in-person interviews. The interviews facilitated a relaxed environment, enabling participants to express their thoughts and feelings in a way that might not be captured through a structured questionnaire alone.

During interviews participants indicated the most beneficial session for them. Figure 5 displays the popularity of various topics covered in the program based on student interest. Finding that different students valued different topics highlighted the value of topic selection for the entire population. The participants being non-native English speakers found the session on “How to write an effective CV” as most beneficial. The CVs prepared after this session were subsequently used in the session for mock interviews.

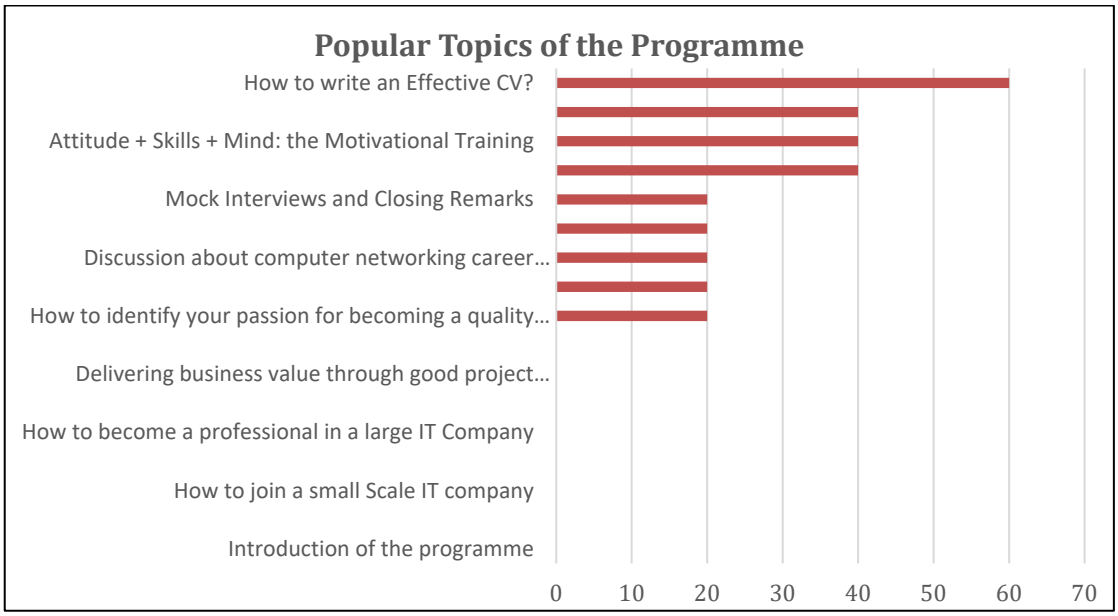

Figure 5: The popular topics of the programme

A sample answer from an interview respondent is summarized in Table 4 to illustrate the importance of "Programme Experience".

Table 4: Summarized answer of a respondent on "Programme Experience"

Answer to Question 1 (Table 3):	Created awareness of the job roles in the industry and understood the importance of soft skills
Answer to Question 2 (Table 3):	The timing of the session was the only difficult thing to manage
Answer to Question 3 (Table 3):	The programme helped to identify the preferred job role and required skills

Similarly, most respondents provided positive comments on the programme which highlighted the importance to them. The feedback received from resource persons who contributed to various sessions were encouraging. They appreciated the opportunity to directly interact with the students via an online platform and many of them invited students for further collaborations by sharing their contact details and social media contacts. Many of the invited resource persons encouraged by the active student participation offered to do more sessions if needed. The IMP was planned to be an entirely online programme, however as the resource persons were willing to give a face to face exposure to the students of their companies, multiple industry visits could be arranged to give students personal exposure to a real-world work environment, which improves their understanding of industry expectations and procedures.

The initiative not only encourages students but also enhances the connection between academia and the industry, encouraging a mutually beneficial collaboration. Dean of the faculty responsible for the BIT degree program who is a strong proponent of IMP often took time out of his busy schedule to be part of the programme even by participating in industry visits. His feedback on the impact that this programme has in naturing the undergraduates to be industry-ready professionals has impacted in including the programme into the curriculum in 2024 curriculum revision.

5. Discussion and Conclusion

Students, potential employers, and stakeholders usually believe that an industry mentoring program is valuable and beneficial, although their opinions differ depending on their own experiences and expectations. Students often believe industry mentorship programs as valuable for career development and insights into company processes, and they value the opportunity to learn from experienced experts. This program is seen as critical for creating professional networks, which can help with future job chances.

All stakeholders believe that this initiative considerably improves the overall educational experience by combining practical industry insights with academic knowledge, resulting in a more comprehensive learning environment. Furthermore, at the end of every session, there is a question-and-answer session which creates a feedback loop that creates a bond between the resource person and the student. Industry resource persons were very appreciative of the opportunity given to obtain feedback and opportunities for developing better industry connections.

Overall students' experiences and viewpoints of the IMP do not vary significantly across different cohorts as they generally hold positive perceptions about the program. However, individual expectations do vary with the type of sessions conducted. Interviewed participants mentioned various session types they found most beneficial, reflecting diverse preferences and needs. This depicts that it is of importance to address topics from multiple areas to help the entire group as the diversity of interests and backgrounds vary. Despite these individual differences, the overall design of the mentoring programs has been successful and well-aligned with students' expectations, ensuring that the sessions cater to a wide range of interests and professional development goals. This specific planning improves program effectiveness and assures overall student satisfaction.

Industry resource persons have provided several specific feedback and suggestions to enhance the program. They recommend initiating a pool of mentors and assigning a few students to one mentor. Initially, such a program should be designed with clearly stated objectives and outcomes for both mentors and mentees. Further, it was also suggested that the mentor pool be expanded to cover more sectors and career phases. CODL already provides an industry supervisor for the capstone project done by the students and perhaps the same can be combined for mentoring.

Stakeholders emphasized the need to offer a variety of session types, including personalized one-on-one mentoring, group sessions, practical workshops at the companies, and industry visits or shadowing opportunities. Some of these may be bit challenging in an online environment. However, with the experience of running the IMP programme a hybrid mechanism may be used to facilitate all the requirements of making industry ready graduates.

Regular feedback systems and long-term follow-up were recommended for tracking progress and making required adjustments. Other suggestions included establishing networking events and incorporating career days or career fairs to improve interactions.

Preliminary findings regarding the impact of the IMP on students' career opportunities indicate a significant positive influence. Students participating in the program have reported enhanced employability skills, including improved communication, problem-solving, and industry-specific technical abilities. Further, the program provided valuable networking opportunities, leading to increased access to internships, job placements, and professional connections. Many students have noted an improvement in their confidence and clarity by participating to the programme. Additionally, the real-world exposure and practical insights gained through the program have helped students better align their academic pursuits with industry demands, making them more competitive candidates in the job market. Overall, the IMP has been instrumental in bridging the gap between academic learning and professional practice, thereby substantially improving students' career prospects.

The university has decided to incorporate a new course module on Industry Mentoring into the curriculum as part of the 2024 curriculum revision for BIT. This will make it mandatory for all students to participate in the programme which will enable them to understand and evaluate the necessary skills and attitudes. The new module will be based on the IMP which had voluntary participation from the students. The lessons learnt by conducting four successful programmes will be incorporated to strengthen the new module.

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