

Mentoring as a Tool: To Bridge the gap between industry and academia for undergraduate students

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CONTEXT

Mentorship is an effective way to learn new skills in both education and the workplace. Having access to industry mentors while learning or conducting a project is helpful for undergraduate students. This type of engagement supplements and enhances classroom activities with the richness of industry experience. It is also an avenue for mentors to give back to the community.

PURPOSE OR GOAL

The purpose of this study is to investigate how mentoring can be used to bridge the gap between industry and academia. A large number of industry mentors participated in the mentoring program in an undergraduate IT subject for four weeks and interacted with students during that duration to support their group projects (one industry mentor per group). This study is conducted to understand the mentors' perspective and experience of participating in this program.

APPROACH OR METHODOLOGY/METHODS

The mentoring program is embedded in the subject design to establish an interaction between students and industry mentors. The program was started from Autumn 2017 and continued until Spring 2019. We conducted extensive interviews with five mentors to understand their experiences.

ACTUAL OR ANTICIPATED OUTCOMES

In the three years of conducting the mentoring program for undergraduate IT students, more than fifty mentors participated in the program. Five mentors shared their experiences. The majority believed that their contribution helped to shape the quality of the student project. Two of them expressed that students showed entrepreneurial skills from the project. One of them explicitly mentioned that this program gave students an opportunity to network with industry professionals and this is in agreement with previous findings from a study conducted with students.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Having an opportunity to connect with industry mentors and access to professional insights, undergraduate students from the class gained a better understanding of the real-world view of the workplace while working on their own group projects. Mentoring can be used as an effective tool to help bridge the knowledge gap between the industry and academia.

KEYWORDS

Mentoring, industry mentors, undergraduate students

Introduction

The gap between industry and academia is well known and has been discussed for more than two decades (Beckman et al. 1997; Muller 2005; Pavon-Marino & Izquierdo-Zaragoza 2015; Farooq 2019). Academics are called upon to make changes, however, there remains a disconnect between the training demands made by industry and what students are capable of after graduation (Johnson et al. 2016).

Mentoring is defined as the process of providing support to an individual (mentee) by a more experienced person (a mentor) in either academic, professional or personal development (Bozeman & Feeney 2007; Retallick & Pate 2009; Gannon & Maher 2012). One of the ways to bridge the gap between the industry and academia is through meaningful involvement of industry professionals as mentors in the classroom activities to support and encourage students' learning. Students' awareness of the skills required for career progression during their university years is limited, and this is where the mentors can help connect the dots from the university to the real world of business (D'Abate & Eddy 2008).

With a view to supplement and enhance classroom learning, we introduced the mentoring program for one of the second year undergraduate IT subjects. The subject focused on learning business processes and quality improvement and we integrated entrepreneurial concepts such as prototyping. At the end of the semester, groups of students pitch their ideas with prototypes to a panel of industry professionals. During the group project, we facilitated one industry mentor per group for four weeks. Up to 28 industry professionals were present in the classroom to interact with students.

Our previous study (Pradhan & Kreglicki 2018) evaluated students' learning experience as recipients of mentoring. In this paper, we aim to understand mentors' perspectives and have analysed data from interviews with five mentors who participated in those sessions.

Background

Mentoring

Mentoring is recognised as a nurturing process (Masango 2011) which fosters a learning environment for students. As a tool, mentoring has an ability to connect a student's network to industry professionals (D'Abate & Eddy 2008) while they are still working towards their degree.

Mentoring helps students to think about how they can apply theoretical concepts to solve real-world problems. Alongside these, they develop soft skills like management and presentation, which equips them to be on-par with the industry trends (El Hallam & St-Jean 2016).

Knowledge transfer from Industry Mentors

The complex nature of mentoring (Brondyk & Searby 2013) supports the development of autonomous skills in addition to the traditional viewpoint of providing directions and recommendations (Hamburg 2013). Being engaged in the professional working environment, the industry mentors have greater know-how of the industry and are able to articulate and share their personal experiences, challenges they faced, ways they learned to overcome it, current industry practices and emerging trends. In their review of mentoring and storytelling literature, Swap et al. (2001) argue that the knowledge transfer that occurs in the mentoring process can be hampered by the gap in prior knowledge between the mentor and mentee. The success of the mentoring relationship is also reliant on the context and the people involved (Hamburg 2013).

Industry mentors coordination

For the last three years Autumn 2017 to Spring 2019 (six semesters), industry mentors spent four weeks with undergraduate students in the class. Regular class sizes in Autumn and Spring semesters are approximately 90 and 180 respectively. Since the collaborative classrooms are fitted with pods (desks) with six chairs, the recommended number of students per group was six. We organised up to 15 industry mentors in Autumn and 28 in Spring semester each year as shown in Table 1 below. Matching the exact number of volunteering industry mentors to the class is challenging. Usually, one of the authors contacted the potential industry mentors via email with a possible list of student project titles. They were followed up with another email and phone calls to confirm their commitment for the semester. Sometimes, industry mentors withdraw due to other commitments. In those cases, other mentors were asked to look after an additional group.

Table 1: No of students and Mentors for 3 years

Year	Semesters	No. of Students	No. of Industry Mentors
2017	Autumn	64	14
	Spring	170	27
2018	Autumn	84	15
	Spring	182	28
2019	Autumn	89	13
	Spring	171	27

These industry mentors came from diverse backgrounds and a variety of industries to support students' group projects. They brought a broad range of knowledge and expertise, with distinct skill-sets ranging from young entrepreneurs in technology to senior management like CIOs.

This type of informal transfer of knowledge opens a unique window of learning for students who often feel they may not be learning the most cutting-edge industry knowledge in their university courses.

Research Approach

The purpose of this study is to investigate the experience of industry mentors in an undergraduate IT subject. In addition to the data collected for a previous study from students to evaluate their learning from industry mentors (Pradhan & Kreglicki 2018), we have collected interview data from five industry mentors.

Process in the class

In a regular semester of 12 weeks, in the first 7 weeks, students completed two assignments individually: First to find evidence of a problem in the given theme of 'sustainable futures' and second to propose a solution to the problem. For the last four weeks, students formed groups and chose one topic to collaborate on. Once students chose the topic for the group project, the list of topics was circulated to the potential industry mentors who were willing to help the students. Leveraging the personal and professional network, the subject co-ordinator organised up to 28 industry mentors (one mentor per group) for four weeks to assist students in their group project. Industry mentors were paired with the group of students and interacted with them for four weeks.

In the last week, all groups presented their solutions and prototypes to both a panel of industry professionals and the class. The panel consisted of a different set of eight to twelve industry professionals and on rare occasions included the same industry mentors who had been involved for the four weeks.

Interviews with industry mentors

A list of industry mentors was randomly selected and contacted for their availability to be interviewed about their involvement in the mentoring sessions. Five of them were available at that time. A summary of the interviewees and their professional background is shown in Table 2 below. Four mentors had experienced the mentoring program for a second time when these interviews were conducted.

Table 2: A summary of the interviewees

Interviewee Code	Position	Experience in Industry
Mentor 1	Entrepreneur	IT
Mentor 2	Entrepreneur	Banking and IT
Mentor 3	Entrepreneur	IT
Mentor 4	Consultant with Big Four	IT
Mentor 5	Sustainability Manager	Education

A third-party interviewer, who was not involved in the class, conducted the semi-structured interviews with them. They were asked to provide their account of the mentoring program. Open ended questions like ‘describe your interaction between you and your assigned group’ and ‘what is your experience of mentoring overall?’ were asked during the interview. The interviews went for approximately 30 minutes. All the interviews were recorded and transcribed.

Content Analysis

Transcriptions of the interviews were analysed and themes arising from the data were organised into categories. A summary of the coded themes is presented in Table 3 below.

Table 3: A list of themes from the interviews

Theme	# of Interviewees Discussing	Theme	# of Interviewees Discussing
Group Dynamics	3	Commercial Thinking	2
Language Barriers	1	Mentors as Coaches	3
Convenience	4	Bridging the Gap	5
Narrowing Down Ideas	1	Sense of Giving	4
Presentation Rehearsal	2	Facilitation Skills	4
Prototyping	2	Industry Trends	2

Findings and Discussion

Interviews with Students

Students in our previous study (Pradhan & Kreglicki 2018) reported that they had improved their professional skills due to the mentoring program. They also reported increased enthusiasm for the project. As one of them stated:

“...when you’re getting it from the perspective of someone who only works in the university, it’s hard to really encourage yourself... when you see someone who can actually apply it to a

real world situation, then it will encourage you to go 'actually, this kind of work actually makes a difference, or is actually used in the real world.', and so you get that level of enthusiasm..."

Other students in the study illustrated that they were learning other skills such as writing and presentation skills from the mentors.

In regards to professional skills, students reported that they were motivated to become a bit more professional to interact with industry mentors. One of the students in the study expressed, "...I would have definitely tried to take the approach of being a little bit more professional." Other professional skills students mentioned were the opportunity to mingle and network with industry professionals and using some project management tools.

Interviews with Industry Mentors

Five of the common themes from the mentor interviews are discussed below:

Motivation for mentors

Industry mentors volunteered time out of their busy schedule to assist students in our classes for four weeks in the semester. One of the main reasons for their commitment was the sense of 'giving back' to the community and self-satisfaction by contributing to the future professionals and leaders. Mentor 3 expressed his satisfaction of getting involved in the program and said "...[the student] sent a message saying that "One day I hope to be like you,"... that is quite satisfying.". Mentor 1 asserted the similar feeling by expressing "It feels like a good way of giving back through that [mentoring program]". This is consistent with Cramer (2016) who stated that one would remember those who went out of their way to help and provide advice to them when facing uncertainty in a higher education setting.

Mentors as coaches

Involving industry mentors in the group projects of undergraduate students brought a lot of excitement to the classroom. They came to the class to give another perspective of students' work. As one of the interviewees Mentor 2 rightly pointed out "Certainly not solving the problems for them but just discussing approaches or how they could solve problems but also highlighting versions or factors that they didn't consider or didn't mention at this stage..."

Another interviewee Mentor 3 also mentioned the similar point "... what I was trying to do is to summarise everything, to not tell them how to do it but just ask them the right questions to force them to do it themselves,..."

These points highlight the fact that the industry mentors were devoted to enhancing students' interest in completing their tasks. In our previous study, students expressed that they learnt better ways of finding information and writing skills through the interaction with industry mentors, showing that the mentoring program is helpful.

Professional skills

This mentoring program provides some level of opportunities for students to mingle with industry professionals both during the mentoring program in the class and the final pitch with the panel of industry professionals. This was also brought up in the interviews. Mentor 1 mentioned that "...Good for networking and making those connections. Staying connected to the industry as well..." As an undergraduate student, ready to be going out and working in the real world, networking with industry professionals is a really important skill (Taneja et al. 2018).

Entrepreneurial Skills

In this subject, we introduced entrepreneurial concepts and modified assessments so that students would gain entrepreneurial skills. Although the interviewee industry mentors were not directly asked the questions related to this skill, they pointed out that the students have

built entrepreneurial skills. Mentor 5 quoted “...they got it to a point where you could potentially take it out to a funding partner and say, this is our concept, and this is how it would look and work”

Similarly, Mentor 3 noted a similar experience “ I think that [assignment] has [a] direct link to the entrepreneurial world, where people have different ideas and try to make them work. I think it is relevant outside of the university walls”

Bridging the gap

Almost all of the interviewees brought up the issue of the gap between industry and academia. Some of the quotes from interviewees are:

Mentor 4 said “...there's definitely a gap between academia and actually what happens in industries. I think it's good to bring them that perspective as well. ...to have an opinion from someone who's actually working and in industry... definitely practical experience helps with that...” Mentor 2 added “... the way academics approach some of these things is very different from people in the industry”

Mentor 3 expressed “...somebody from the industry actually gives a bit of a real sense to it. It's not just an exercise, it's actually how it happens...” Similarly Mentor 1 stated “...Having someone from outside challenging them, so having that input was really helpful... it feels like it's not just an academic saying, "This is how it's done," but actually it's people out in the corporate world saying, "No, this is actually how it's applied." I think it takes it to that next level...”

The gap between industry and academia has been criticised for a long time (Beckman et al. 1997; Pavon-Marino & Izquierdo-Zaragoza 2015; Farooq 2019). The statements from mentors interviewed in this study are consistent with this perspective, and see their interaction with students as one method of bridging this gap.

Limitations and Future Research

The study presented in this paper has limited generalisability:

- Only five industry mentors were available for the interviews.
- The interviewed mentors came from similar backgrounds and experiences - mentors from other industries might view these interactions differently.
- Topics for the group project were chosen by the students, and they are not similar to one another, so the outcomes of mentoring in each group are difficult to compare.

This study indicates some directions for future research. Understanding mentor motivations in greater depth would assist instructors in finding potential mentors for the classroom who are interested in getting involved. The more tangible professional skill transfer indicated by mentors could be studied with a quantitative approach.

Suggestions to Practitioners

This program was facilitated by one of the authors (subject co-ordinator) by utilising the personal and professional network of voluntary industry mentors. To bring in a large number of voluntary mentors, maintaining and growing one's professional network is important. This entails keeping an eye on who would be a potential fit when attending various events, and run-ins with alumni can be seen as opportunities. Additionally, rather than focusing on a very narrow subject matter, having a variety of student projects to choose from is attractive to potential mentors.

Keeping the mentoring programme informal, and thus flexible, is something mentors respond to positively. To this end, one should resist the urge to formalise the activity with superfluous paperwork, etc. Running the activity within the classroom and in groups of students mitigates potential risks that might arise in one-on-one mentoring situations.

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