

CONTINUING PROFESSIONAL DEVELOPMENT AND INTERNSHIPS AS INFLUENTIAL FACTORS IN DEVELOPING STUDENTS

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INTRODUCTION

Change is a constant in today's society, and as it occurs rapidly and at times is unavoidable, work becomes more important, lives become more stressful, and commitment to professional development becomes crucial. Continuing Professional Development (CPD) includes the development of professional theoretical skills in addition to the practical work functions — i.e. a combination of continuing engineering education along with productive engineering [1]. This commitment has become apparent among the student population, and it has started reflecting upon the concept of internships. Internships are short-term working experiences set up in a company environment, which aim to enrich the students' knowledge and thus bridge the gap between universities and companies [6]. They offer students unique opportunities which university education can not serve specifically. They have become a subpart of a degree programme, a stepping stone from a programme to a job, or a part of a student's continuing professional development.

The Board of European Students of Technology (BEST) perceives students as one of the major actors in the development of Engineering Education and has been striving

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to bring the development of European Engineering Education (EEE) closer to students for more than 10 years. Its Educational Involvement Department works to increase the students' awareness and involvement in EEE. For this purpose, it has been establishing different methods to collect input from STEM students regarding relevant and important topics. The students' input is afterward disseminated among relevant stakeholders through public reports or presentations at international conferences.

This paper aims to introduce the students' input on their future Continuing Professional Development via their progress and skills development through internships. The need for strengthening the presence of internships in the curricula was noticed, not only to bridge the gap between university and business but as a way to introduce students to the concept of CPD.

1. METHODOLOGY

Events on Education (EoEs) were created by BEST in order to raise awareness and involve students in the process of education improvement. EoEs aim to bring together students, professors and company representatives in order to discuss relevant educational topics. In order to obtain diverse results, more than 20 technology students from different countries, cultural and educational backgrounds, participate in each event. Gender, study year, study field and origin are among the factors that we take into account to ensure the diversity of the participants and therefore reach a broader understanding of our topics. During the sessions at EoEs Ankara (2015) [2], Riga (2015) [3], Gdansk (2014) [4] Aveiro (2013) [7], Zagreb (2005) [8] and Cluj-Napoca (2014) [9], several facilitation methods were used in order to gather the students' input: brainstorming, panel discussions, sharing sessions, fishbone diagram, SWOT and TOWS analysis, learning café [8][9] and other discussion group techniques. The input from the activities mentioned above was collected in the form of minutes, statements and visual materials and was analysed in the events' reports.

During EoE Riga [3] the focus was on analysing the gap between the teaching profile and professional skills by considering CPD, skills and learning objectives to be a solution to the mentioned gap. On some of the sessions, students approached the topic through a case study or discussion groups. One example and a valuable asset to this research is the session that tackled what kind of mindset a new graduate engineer should have in order to successfully enter the workforce. Kirill Linnik opened the session with a 30 minutes presentation about his experience as a recruiter for a new division in Latvia for Kuehne+Nagel and how important the mindset is when hiring new engineers. Participants were then divided into five groups, first discussing how this mindset can be developed and how the universities support this development, followed by how companies could support it [3].

"Profile of a modern engineer" was one of the subtopics in EoE Cluj-Napoca [9]. The main purpose of the session was to complete the list of requirements for modern engineers as a consequence for challenges which they face nowadays and reasons behind these challenges. The methods that were used for this session were discussion groups and learning café. Participants were divided into four groups (each for software, civil, power and mechanical engineers). At first, they wrote down the list of challenges faced by the engineers of a certain branch with the next group completing this list with the skills required to overcome challenges mentioned by the first group. Through this, participants were made to think of the job requirements from

a different perspective and to understand the tasks which they would need to solve as engineers, as well as the skill needed to succeed. [9]

The approaches for the accreditation of soft skills were analysed during EoE Aveiro [7]. In order to look at the problem from different angles and cover the entire field, certain subtopics were developed and discussed, among them was "Ideal state of the system". This was done in a form of a TOWS analysis. Participants analysed the flaws of the system and they were building the TOWS on the outcomes of their own previous SWOT. The output was a set of strategies on how to make the best of the current conditions. The need for companies to assess graduate students on their soft skills was pointed out as important, not just in the context of internships [7].

Through an "Open Discussion" during EoE Gdansk [4] the approached question was "Why would participants be attracted to attend an internship?" Therefore, they were asked what were the benefits of doing an internship. Participants could get a job out of it, as well as get a clearer idea of what to do next in their career. It was also agreed that they could get more teamwork experience, gain more independence and more knowledge while doing an internship. Also, internships improve their CV as it offers students the opportunity to develop different skills through their experience.

2. RESULTS

Throughout the years, BEST has followed the students' opinion on the development of EEE and on the relation between university and companies. Students have identified various ways of overcoming this gap, and most common are internships. Internships are seen as a way of development that complements the mindset of constant work on oneself and improvement, that is CPD. The outcomes of the above stated EoEs have provided BEST with the students' perspective on the topics.

The engineering and technology sectors have long recognised the importance of soft skills for successful career development. The students' awareness of soft skills is encouraged by the support they get from higher education programmes regarding their personal and professional development. During EoE Aveiro [7] students identified that by having the soft skills in addition to the hard skills, the employability of students is increased. Moreover, employers are looking for soft skills in addition to the standard requirements [7]. In order to bridge this employability gap and obtain the needed soft skills, internships are seen as a way to ensure the interaction between companies and universities [2]. An internship exposes the student to the interpersonal relationships a job requires, both with co-workers and supervisors that are essential in obtaining a successful, satisfying career. Internships enable employers to assist the universities in preparing students for work in today's business environment. The aim of an internship is to help students acquire a clear view of their field of studies. It prepares them for the real life experience and gives them further motivation for the continuation of their studies [8].

Internships are already viewed as a "touch with the working reality" and an opportunity to progress from student life to professional life [4]. However, internship offers aren't equally accessible throughout Europe, thus not ensuring CPD equally. Moreover, students still identify many problems in the balance between university and internships [9]. Some problems address the quality of the internships, but also the fact that either internships are not a part of the curriculum or they are not recognised by the university [9].

Having an internship has always been a great way to put yourself ahead of the competition when applying for entry-level jobs; an added bonus on one's CV.

However, as the job market becomes more competitive, taking on internships will become more important than ever. A lot of internships take place in larger cities and are offered only over the summer break, making them inaccessible for many college students [4].

When asking students how internships should be provided, 30% of the participants of EoE Ankara [2] thought that internships should be provided by the university and 70% thought that internships should be mandatory within the curriculum, offering a solution to the high skill requirements of modern society [4]. Having a mandatory internship can increase the quality of internships and also the quality of engineering education. Another reason behind the motivation for applying for internships is firstly personal development, but also the establishment of personal contacts since that may lead to easier employment later [8]. For an internship, the expectations of both sides must be defined; a common interest must be found by students and companies [8]. In addition, the companies need assessment regarding the soft skills of the graduate students, was pointed out as important [7].

Many professions define CPD as a structured approach to learning how to ensure competence to practice, taking in knowledge, skills and practical experience [3]. Students have related CPD with the high skill requirements of modern society, identifying successfully employed graduate students as someone who owns professional experience, but also works on professional development. Moreover, a successful graduate was defined as a person who has taken a number of internships [3]. In fact, as the practical knowledge acquired in university is still considered an advantage over extracurricular activities, students have reinforced the need for internships as the tool to develop the professional experience and as an introduction to the CPD mindset [3].

Fig. 1 shows a diagram of the flow of our results. The starting point of our research is CPD which through the skills needed in one's professional life, is associated with the skills of the successful graduate. One of the main focus points is that the successful graduate is someone who has completed a number of internships. This is further connected to the students' needs, progress and developing mindset.

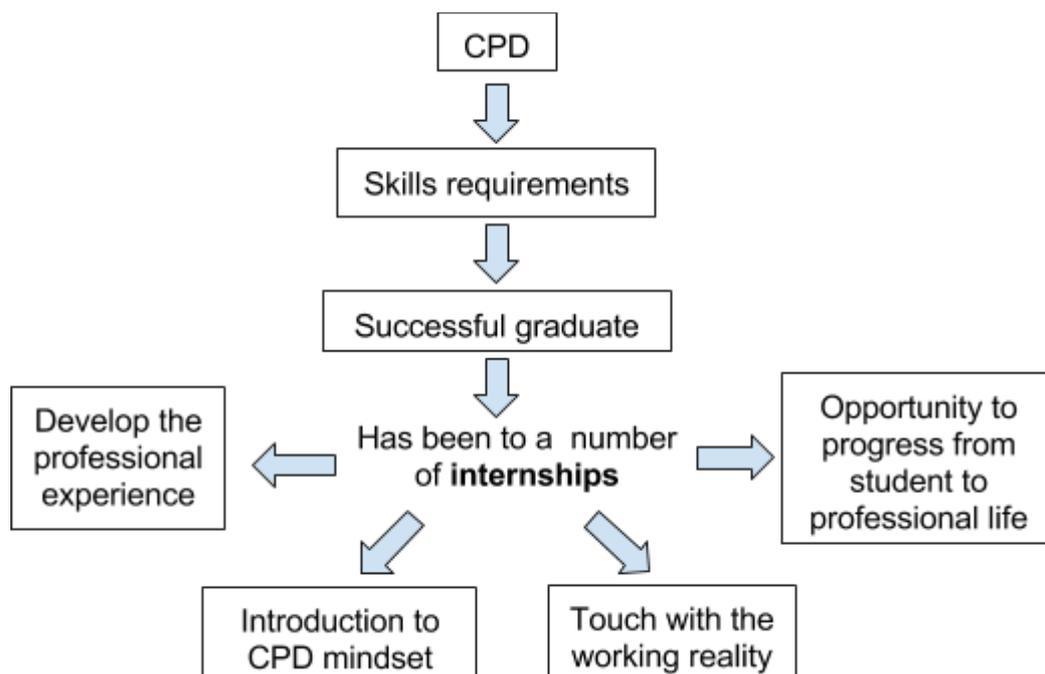


Fig. 1 Diagram of the results

A case study was given to students in order to tackle the question: “Can soft skills be the bridge between university and profession?”. The most notable outcome was that the soft skills courses are scarce and do not suffice the needs for the students’ future professional development. Whereas, most of the skills that were highlighted as important, students identify they can get them by attending an internship. Some of these skills include: communication and presentation skills, teamwork, proactivity and management [2]. Furthermore, the profile of the modern engineer requires a set of specific project-oriented skills and a corresponding mindset. Students concluded that one of the ways to develop the mindset of the new graduate is to participate in internships, preferably abroad. What companies can do regarding this goal, is to increase the number of offered internships, but also to ensure their quality [3].

The connection between internships and the development of the students’ mindset, thus the mindset of students in regard to CPD, is explained by connecting the benefits of the internships with the mindset of the newly and successful graduate they develop as shown in *Table 1* [2][3]. A clear connection can be seen between the skills and knowledge gained by doing an internship, and how they influence the future development of the graduate student.

Table 1. How the benefits of an internship develop the mindset of a graduate

Benefits of internships [2]	Mindset of a newly graduated engineer/ successful graduate [3]
Real life work experience	Solution oriented; Able to give and receive feedback appropriately; Has professional experience for specific job
Hands-on/practical experience	Solution oriented; Able to give and receive feedback appropriately; Has professional experience for specific job
Teamwork	Solution oriented; Able to give and receive feedback appropriately; Has at least basic set of soft-skills: time management, communication, working in team
Motivation boost for university /to study	Is passionate about their job and their technical field; Is an active learner and continues to develop themselves as well after studies; Has extensive engineering knowledge in the field
Self-evaluation (realising your strengths and weaknesses)	Is confident in their own skills; Has realistic expectations

Possibility of success in a challenging environment that leads to a raise of self-confidence	Is confident in their own skills
Self-development & growth	Is an active learner and continues to develop themselves as well after studies; Has realistic expectations; Works on their continuous development
Knowledge gain	Is an active learner and continues to develop themselves as well after studies; Has realistic expectations; Works on their continuous development
Creating working habits	Is an active learner and continues to develop themselves as well after studies; Solution oriented; Works on their continuous development
Passion for work	Is passionate about their job and their technical field; Is an active learner and continues to develop themselves as well after studies
Travelling	Is exposed to different cultures and has an international mindset; Has experienced different cultures
Time management	Has at least basic set of soft-skills: time management, communication, working in team etc.

3. CONCLUSION

The main conclusion BEST achieved by gathering the students' input is that internships can be tailored in such a way to both satisfy the quality needs and requirements by all three stakeholders of BEST (students, universities, and companies), but also to develop the mindset of a new graduate towards CPD.

In order to assess which practical knowledge should be obtained during the course of studies or how to make an appropriate balance between theoretical knowledge, practical work and skills; students emphasise the need of internships and continuing professional development. Both CPD methodologies and internships are closely connected in terms of the key benefits. Successfully employed graduates should have professional experience but should also dedicate themselves to continuous professional development. Thus we reinforce the need for internships to become a subpart of study programmes across Europe guaranteeing a stepping stone from university to a job, and the trigger for a student's continuing professional

development. The necessity of implementing the mentioned improvements in areas of internships and continuing professional development is recognised by students as fundamental for their future professional development as engineers.

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REFERENCES

- [1] Flemming K. Fink, "Modelling Continuing Professional Development in an Innovative Context" *Journal of Computing and Information Technology - CIT* 9, 2001, 3, 167–175
- [2] N. Cristofi, A. Balcázar Castell, Report of BEST Symposium on Education "Principles of Effective Teaching and Learning & Class and Course Organisation", Ankara, 13 - 20 September 2015
https://issuu.com/bestorg/docs/eoe_ankara_final_report
- [3] M. Stanojevic, O. Y. Zhou, E. Garklava, I. Bour, Report on BEST Academics and Companies Forum "Let's Cement the Canyon! Removing the Gap between University and Profession", Riga, 23 - 31 July 2015
https://issuu.com/bestorg/docs/eoe_riga_report
- [4] M. Cortesão, A. Millitaru, J. Pacheco, R. Couto, Report on BEST Academics and Companies Forum "LINK: Let's Introduce the Network of Knowledge", Gdansk, 28 June - 5 July 2015
https://issuu.com/bestorg/docs/baco_gdansk_final_report
- [6] Aldred, R., "From community participation to organizational therapy? World Café and Appreciative Inquiry as research methods", *Community Dev Journal*, 2009, Vol. 46, no.1, pp: 5771
- [7] G.Guerreiro, J. Jakobs, M. Maidin, M. Tikhonov, T. Tartes, Report on Event on Education "Raise your hand, make a change!", Aveiro, 30 August - 8 September 2013
https://issuu.com/bestorg/docs/2013_eoe_aveiro_report
- [8] Educational Committee of BEST, Report on BEST Academics and Companies Forum "Innovations in Engineering Education", Zagreb, 6 - 12 March 2005
https://issuu.com/bestorg/docs/2005_baco_zagreb_report
- [9] A.A. Danilov, C. Benito, M. Stanojevic, Y. Smirnov, Report on Event on Education "This Summer is Canicular Go Extracurricular!", Cluj-Napoca, 23 July - 1 August
https://issuu.com/bestorg/docs/2014_eoe_cluj-napoca