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EVALUATION OF IN-PERSON AND VIRTUAL INTERNSHIP LEARNING OUTCOMES IN PROFESSIONAL HIGHER EDUCATION[20]

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Abstract: Study programs in Professional Higher Education Institutions typically have the mandatory internship, with defined learning outcomes and ECTS expressed workload. When an internship is performed in exchange for ECTS credit, it must be strongly related to an academic discipline with defined set of learning outcomes. The goals and therefore learning outcomes, differ depending on the educational level and year of the study. At large, internship learning outcomes in professional higher education belong to two general categories: study program-specific learning outcomes and generic academic and soft skills outcomes. In previous years, the need for the development of a virtual model of internship and a platform for its implementation, suitable for performing work-based learning in Higher Education Institutions, is clearly recognized as the response to Industrial revolution 4.0. Even more, the significance of remote work-based learning emerged with the Covid 19 pandemics that disturbed work placed and hampered the implementation of professional practices, internship schemes, and all other forms of work-based learning. While different virtual internship schemes are developed throughout the educational systems, the question arise what are the advantages and disadvantages in the learning outcomes achievement in such work-based learning models. Here we discuss learning outcomes in professional higher education from the position of both traditional in-person internship and modern virtual internship.

Keywords: in-person internship, virtual internship, professional higher education, learning outcomes **JEL Codes:** L10, L11

INTRODUCTION

Study programs in Professional Higher Education Institutions (PHEIs) typically have the mandatory internship, with defined learning outcomes and ECTS (The European Credit Transfer and Accumulation System) expressed workload. At the level of Higher Education Institutions (HEIs) internship is organized to provide structured and applied learning through practical experience. It is performed under the supervision of a professional(s) with a significant background in the field of the expertise.

When an internship is performed in exchange for ECTS credit, it must be strongly related to an academic discipline. The usual requirements for students are to demonstrate what they have learned from the internship, i.e. to keep a journal, write an essay, or complete a presentation. This approach leads to the development of outcome-based internship. This outcome-based learning focuses on facilitating the achievement of desired learning outcomes through the design of learning and assessment activities.

Generally, it is considered that this integration of internships into the curriculum made a shift from treating students as workers that are learning to work, to treating students as learners that are working to learn (Cooper et al., 2010). Yet, it is clear that internships provide great opportunities for students to develop diverse knowledge and competencies. Importantly, compared to classical learning in the classroom, learning in the workplace is less predictable and those unplanned learning outcomes may be even more meaningful to student (Hussey & Smith, 2002; Luk & Chan, 2021).

Covid19 pandemic caused workplace disorders that significantly hampered the implementation of professional practices, internship schemes, and all other forms of work-based learning. The analysis of key quality indicators in higher education institutions revealed a significant decrease in the number of graduates, mainly due to delays in completing internships and final theses (Aucejo et al., 2020). As a consequence, this delayed certification is likely to affect the immediate and future careers of millions of students worldwide. Therefore, the need for the development of a virtual model of internship and a platform for its implementation, suitable for performing work-based learning in Higher Education Institutions, is clearly recognized.

However, the importance of such a model, outweighs the need to address barriers to education in emergencies like Covid19 pandemics. Even under "regular" circumstances, assigning work tasks to students that can be performed remotely and digitally can significantly facilitate their achievement of internship. Development of platform that can adequately monitor student's progress would further improve the whole process. Besides, some of the students cannot participate in traditional in-person internships due to financial, geographical reasons, disability, etc. Virtual internship might be also a solution for these types of situations. Therefore, virtual model of internship and appropriate platforms are expected to facilitate the process of realization of professional practice in vocational studies and increase its inclusiveness.

As each workplace learning experience is different, tends to be less structured as it involves both formal and informal learning, it is clear that the internship learning outcome definition also has to have a student-based component. Even more, when it comes to the digital, virtual or remote internship, it is of a great significance to foresee the advantages and disadvantages in the learning outcomes achievement. Here we discuss learning outcomes in professional higher education from the position of both traditional in-person internship and modern virtual internship. We believe that reach experience obtained in the area of traditional in-person internship might be used for effective establishment of modern virtual model of professional practice.

DETERMINATION AND ASSESSMENT OF LEARNING OUTCOMES

All internships have the general goal of gaining new professional and general skills. Clearly, when academic internships are mandatory linked to the curriculum, they have to have more specific learning goals and broader outcomes than just career exploration or learning the basics of professional practice. In addition, mandatory professional higher education internships are very distinctive because they share common goals and elements with regular school learning process such are reading, writing, critical thinking, and problem solving.

The goals and therefore learning outcomes, differ depending on the educational level and year of the study. The primary goal of a bachelor work internship is an orientation on possible future employment. Bachelor students are introduced to the work field and can gain some experience working in a professional organization. On the other hand, internship at the master's level must have a clear academic or practice-based research component, or it is directed to solve a practical problem. If the master internship itself does not comprise a research component, student have to carry out an additional research project directly related to that internship. The employer offering the internship at master level must be informed beforehand that student will carry out research, and must be asked emphatically to facilitate this research by allowing time, access to archives or data, granting interviews with employees, etc.

At large, internship learning outcomes in professional higher education are general and/or study program-specific. There are several categories of internship learning outcomes such as: knowledge, technical competencies, as well as academic-related and non-technical generic competencies (soft-skills) (Luk & Chan, 2021). Focusing on what and how students are to learn requires that an intended learning outcome specifies not only what is to be learned, the topic, but how it is to be learned and to what standard (Biggs & Tang, n.d.). Well-articulated learning outcomes not only help to guide curriculum design by fostering constructive alignment, but they also make the process of quality assurance more transparent (Biggs & Tang, n.d.; Luk & Chan, 2021). Importantly, learning objectives focus learning in specific areas and can help students to maximize time spent in an internship. Acronym SMART is useful as a mnemonic describing what learning objectives should be: Specific, Measurable, Attainable, Results-focused, Time-focused (Chatterjee & Corral, 2017)

The assessment of the learning outcomes is generally performed during the internship by the student supervisor and by the mentor at HEI upon the internship completion. The assessment by the teacher is typically based on a combination of the following indicators, presented by the student (Nitterright et al., 2004):
• Summary of activities on periodic basis
• Personal reflection on professional or skill development related to work duties
• Project and report related to work duties
• Academic papers that require the application of concepts from the curriculum (including bachelor or master thesis)
• Industry or company analysis
• Oral presentations based on work experience
• Interactive group exercises based on work experience

Some of the HEI require the second form of assessment where the student providing his/her self-assessment of accomplishing the individual outcome, occasionally coupled with their oral presentation given to their classmates and freshmen in the program (Nitterright et al., 2004).

And finally, of great significance, the third form involves the industrial supervisor who, as an outside constituent, rates student preparedness against the prescribed outcomes (Nitterright et al., 2004).

At the end of the successful internship, students should be able to identify, integrate, and apply both general scientific concepts as well as technical knowledge from their majors to their job environment.

LEARNING OUTCOMES IN TRADITIONAL IN-PERSON INTERNSHIP

Study program-specific learning outcomes in traditional internship

The study program-specific internship learning outcomes include the knowledge and technical competence, later is particularly important aspect for the engineering internships. The gain in general knowledge and disciplinary knowledge from their internship experience is the students' expectation. Knowledge of engineering and scientific theories and their practice is what is considered as the disciplinary knowledge (Najid et al., 2012). In addition, the disciplinary knowledge includes health and safety awareness: knowledge of industrial standards and codes of practice; risk-analysis methods and engineering judgment; appreciation of appropriate ethical conduct: intellectual property and legal issues in engineering (Lock et al., 2009).

Interestingly, the disciplinary knowledge as the internship outcome appears to be more crucial for the engineering students, compared with students that perform work-based learning in other, non-engineering subjects. For example, while only 24% of engineering students felt able to apply the theory they had learned at university, this figure was as high as 57% for the biologists at their internship positions (Lock et al., 2009). Yet, it is important to notice that, in contrast to the engineering placements, the majority of biology/biochemistry placements were at research laboratories and not companies.

Another critical aspect of internship learning outcomes, particularly for the engineering students is achieving of technical competencies. Technical competencies include: the ability to design and conduct experiments, use techniques and tools relevant to the discipline, analyze and interpret data, and apply knowledge learnt in the university to practical work (Lock et al., 2009; Luk & Chan, 2021; Najid et al., 2012).

Thus, the study program-specific learning outcomes could be defined as:

• Professional knowledge and/or behavior (i.e., learn employer expectations for workplace behaviors; gain knowledge of a specific company/industry; gain knowledge of a specific technological process; learn specific common job functions, such as: marketing, management, customer service, accounting, security, PR, production, design, training, etc.; relate classroom learning to its application in the workplace.)

• Specific skill-building. (i.e., improve skills, confidence, competency in specific areas related to study program or particular area of career interest.)

• Project-related skills. (i.e., develop skills in research, analysis, organization, time management, teamwork, multiple task coordination, initiative, adaptability, and project completion).

Generic competences as the learning outcomes in traditional internship

In addition to study program-related knowledge and technical competencies, the development of generic or non-technical competencies are also one of the key learning outcomes of engineering and science internships. It includes development of soft skills, personal attributes and attitudes that are vital for students' whole-person development (Cecilia K.Y. Chan et al., 2017).

Since recently, it has been the question whether higher education should be responsible for students' generic competency development. Now days, however, there is only a discussion whether all academic courses should provide students with generic competency training (Treleaven & Voola, 2008). In favor of this opinion is the fact that Organization for Economic Cooperation and Development (OECD) claimed that the development of what they call "21st century skills", "employability skills", "soft skills" or "generic skills" is an international priority (Enhancing Employability Report Prepared for the G20 Employment Working Group with Inputs from The International Monetary Fund 2016, n.d.). Interestingly, when it comes to the importance of the generic skills development during an internship, there is no differences between engineering and other students. They all claim that the internship improved communication and networking skills and that it increased the students' confidence, maturity, independence and motivation (Luk & Chan, 2021).

Generic competences as the internship learning outcome can be classified in two categories: academic-related generic competences and soft skills.

Academic-related generic competencies include several important skills required for the accomplishment of the study program in general. This list includes: writing skills, problem-solving skills, the ability to identify the relationship between theory and practice, presentation skills, research skills and language skills (Luk & Chan, 2021). Problem-solving skills and the ability to identify the relationship between theory and practice are highly valued and expected learning outcomes. On the other hand, writing, presentation and language skills are not easily recognized and noted as the internship learning outcomes in professional studies. This particularly stands for the engineering students as they mostly dislike writing (Lievens, 2012). However, internship does provide students with the experience in discipline-specific writing tasks. For example, they have to write the preparation of user guidelines or feasibility study reports, and they all have to write down and present their internship experience, which in turn enhance their awareness of the importance of writing skills for professional practice. Development of the research skills is dependent on the nature of the allocated task and therefore it is not a necessary part of each internship experience.

Soft skills include a large list of skills such are: interpersonal communication skills, adaptability, time-management skills, planning skills, teamwork skills, professional judgement, independence, positive attitudes (e.g. self-confidence, openness, respect, proactive attitude, conscientiousness) (Cecilia K.Y. Chan et al., 2017; Luk & Chan, 2021). They also include communication skills. (i.e., speaking; persuasion; customer service; leadership; and listening — as practiced in the professional world) as well as the employability-enhancing activities. (i.e., gain experience to add to your resume; expand your network of company or industry contacts; earn a job reference to vouch for your performance.). During the internship learning outcomes articulation, it is important to present the student with the value of soft skills development. This is of special importance as the soft skills are not easily assessed. From the perception of researchers who question the feasibility of assessing generic competencies, assessment may lead students to eventually lose interest in developing generic competencies and create a situation in which students only learn the skills for assessment (Cecilia Ka Yuk Chan, 2012)

LEARNING OUTCOMES IN VIRTUAL INTERNSHIP

The virtual professional practice involves the use of an environment supported by information and communication technology where students communicate with each other and companies, independent of time and space and across traditional geographical boundaries. In this environment, efficient communications are created between students, faculties and company representatives, in order to perform a specific and significant activity based on work that fits into the mandatory educational curriculum of students. (Vriens et al., 2010).

Within the EU-VIP project, Ula Rintala defined a list of benefits that is obtained by applying virtual practice schemes for HEIs and students (Rintala, 2010). Virtual practices can:

• Provide a way to integrate the workplace into full-time study programs

• Provide flexibility in time and space (i.e. for employed students or students with disabilities)

• Provide a way to combine study, work and social life

• Ensure international mobility without the need to move and provide an opportunity to learn something about cultural differences

• Provide a way to learn new competencies (i.e. students learning a new language and new ways of working, such as telecommuting)

• Provide a professional way to build a balance between business life and the education system

From the point of view of employers, the list of benefits of applying virtual practices includes (Rintala, 2010):

• Increasing profits (productivity is higher in remote than in traditional jobs)

• Overcoming space constraints (space constraints can cause a reduction in the number of accommodations because space is one of the most expensive costs for companies)

• Overcoming geographical constraints (no need to relocate workers geographically; companies do not have to relocate a student, he / she can stay at home)

• Reducing dependence on labor supply in a particular area

• Overcoming time constraints

• Reducing employee inefficiency (trainee work can be easily monitored, also when part of a team)

• Programs are short-lived and / or unpaid (the company can save money)

• Programs are simpler than traditional ones (employers are experimenting with this idea because more high school students have access to computers, virtual jobs are becoming more common, and companies want to access from more accessible sources of labor).

Obviously, the question arises whether the internship learning outcomes present in traditional in-person internships are achievable if internship is performed remotely and in virtual fashion?

Study program-specific learning outcomes in digital internship

For the professional higher education studies, the focus is placed on study program-specific learning outcomes. If properly planned, the digital internship may provide the student with the same level of knowledge and technical competencies as the traditional workplace-based learning (Bayerlein & Jeske, 2018). Here is important to note that even more than for traditional work placements, a good definition of the project, a careful preparation and a detailed planning, and a clear distribution of roles prior to the activity is absolutely necessary for the learning outcome achievement in digital internship. It is crucial to ensure that the student is not just spending some required time behind the desk. Therefore, it is recommendable that the assignments are as such that the student's contributions are esteemed valuable to the company. This way, both student and company are motivated and they both benefit from the internship.

Helping student to achieve the study program-specific learning outcomes in virtual work placement requires a specific pedagogical approach. The approaches such as guided independent self-study, collaborative learning, and problem/project-based learning are shown to be quite good methods for the organization of virtual activities.

The achievement of the technical competencies, such as the ability to design and conduct experiments, analyze and interpret data, and apply knowledge learnt in the university to practical work, is in large extent feasible in the virtual internship model. However, the achievement of the learning outcomes that include the use of techniques and tools relevant to the discipline can be limited in digital internship, if the particular technical competence is associated with the use of specific equipment. Yet, this can be, at least partially, overcome by the use of video tutorials, augmented reality or similar approaches.

Generic competences as the learning outcomes in digital internship

While the study program-specific learning outcomes, as the priority of the internships in professional higher education, can be easily achieved in the virtual model, the achievement of the generic competences might be a larger challenge. Yet, the achievement of the academic-related generic competencies, including writing skills, problem-solving skills, the ability to identify the relationship between theory and practice, presentation skills, research skills and language skills are not limited by the virtual setting for the internship conduction. All of these skills are required for the internship assessment stage, as this is the process that in a large extent includes writing different kind of reports and presentation. Moreover, the virtual format actually potentiates the significance of the written communication as this is the primary way for students to express themselves. On the other hand, the soft skills development might be affected by the virtual internship, comparing with the internship in a real work environment. The virtual internship is somewhat inferior to the traditional work based-learning when it comes to the development of interpersonal communication skills, adaptability, teamwork skills, professional judgement, positive attitudes, speaking, persuasion (sales), customer service, leadership, and listening — as practiced in the professional world (Bayerlein & Jeske, 2018; Jeske & Linehan, 2020).

However, the virtual internship model is actually superior to the traditional internship in development of time-management skills, planning skills and independence (Jeske & Linehan, 2020). With virtual internship, students engage in a professional learning experience independent of their physical location, being in their homes, their home institutions or a host university. As well, there is a flexibility regarding the working hours. Although this means that virtual internships can provide a way to combine studies, work and social life, it brings more responsibilities to the student to perform the job independently. Importantly, student has to develop good time-management and planning skills and avoid procrastination issues.

CONCLUSION

In order to accept the virtual internship as the legitimate model for the mandatory, study program-related and ECTS awarded element of the curriculum in professional higher education, it is required that this type of work-based learning is providing a student with the same learning outcomes as the real work experience. As virtual internship can provide the adequate level of the study program-specific knowledge and academic-related generic competences, it could be concluded that this mode of learning can be incorporated into professional study programs.

However, there is a concern that soft skills, particularly the communication skills can be downsized by the virtual internship, comparing with the communication in a real work environment. Yet, one has to be aware that today's students are typically very familiar with the online communication. Even more, the 4th industrial revolution that blurred the boundaries between the physical, digital, and biological worlds actually requires a development of distinctive communication skills. Thus, the limitation of virtual internship concerning the communication skills and finding the new modes for the online communication could easily turn into the advantage in the students' future work.

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