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OPTIMAL VIRTUAL INTERNSHIP MODEL FOR VOCATIONAL STUDIES

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Abstract: *Key performance analysis in higher vocational studies in the last few years revealed significant difficulties for the conducting of traditional, on-site internships in the field of information technologies. The main on-site internship obstacles are geographical, social, financial or physical disabilities, or lack of experience of many world-of-work educators. In many cases, such internships are not able to fulfill their main goal, to make a painless student's transition from education to employment. The current COVID19 pandemic crisis made this fact more obvious. Therefore, there is a need to reevaluate the traditional internship performance in a time of globalization of the professional world. This paper analyses information gathered from a large data collection, past and present internship experiences, in order to design a virtual internship model for higher vocational studies of information technology.*

Keywords: *Virtual internship, vocational education and training, online.*

1. INTRODUCTION

The National Association of Colleges and Employers (NACE) gave one of the most complete description of in-person or traditional internship, defining it as “a form of experiential learning that integrates knowledge and theory learned in the classroom with practical application and skills development in a professional setting. Internships give students the opportunity to gain valuable applied experience and make connections in professional fields they are considering for career paths; and give employers the opportunity to guide and evaluate talent.” With the standards of the present professional world, the fulfillment of the internship criteria that arises from this definition and is well-known is reasonably under suspicion in developing regions. Increasing levels of education and globalization of present professional world impose a working environment that can rarely be found in companies from such regions. The reasons are various: financial, social, rapid changes in business environment, shorter knowledge lifetime, constant advances in Information and Communication

Technologies (ICT) or lack of experience of many world-of-work educators. If we take into consideration geographical obstacles and inadequate transportation infrastructure the fact is that the majority of students from such regions do not have a chance to gain experience and be well prepared for employment. Additionally, multinational and multi-cultural working environment, which is of great importance [1] for students' adjustment to a globalized job market are not often in mentioned areas. Obviously, reevaluation of traditional internship is needed.

This paper presents statistical data from internship experience of vocational studies that proves previous assertions and will make suggestions about how to develop internship opportunities with due recognition of competing demands and expectations. Field of information technologies is in focus.

2. CHALLENGES OF TRADIOTIONAL INTERNSHIP IN HIGHER VOCATIONAL STUDIES IN THE FIELD OF INFORMATION TECHNOLOGIES

This chapter discusses the various challenges that have been identified through the realization of internship programs of higher vocational studies of information technology for the past four years. The study program of information technology at Western Serbia Academy of Applied Studies, Department of Uzice was analyzed.

After collecting data from 160 students, the following information was found significant:

- Was the company where internship program took place appropriate to students' vocation?
- Are there enough companies for students to choose from?
- Did the students perform work assignments in accordance with their knowledge?
- Did the internships turn out to be passive - an observation and analysis of the current workflow at the company?

The study program gathers mostly students from West Serbia, East Bosnia, and North of Montenegro. These are unbalanced geographical areas due to economic development. Companies where the internship programs took place are located mostly in these regions. There are only a few strictly information technology companies among them. The number of students with internship program in information technology companies is limited because they are mostly small companies. The companies which are not in information technology field have information technology department. It can be concluded that the companies bid is not good enough and company profiles in terms of information technologies are poor.

Further analyze of student's data gives the following facts, only three students of 160 have completed some form of on-line internship. The analysis revealed difficulties in ad hoc organization of the internships as well as limited insights of teachers into internship planning and implementation. The requirement to commute to the other city for the internship also appeared an obstacle for the students. Only few students commuted up to 30km from their residence, while the majority were not motivated to conduct the internship in another town. As all of the implemented internships were of the non-paid type, the commuting is considered as a financial burden for the students.

Numerical results of this analyses are: 59.375% of all students had internship appropriate to their vocation, among those students only 64.21% had their work assignments through internship program and the other 35.79% learned by observation, which means that only 38.125% of all students completed the internship in accordance with the plan and achieved previously set

goals. According to presented numerical results it can be concluded that small percentage of students have appropriate internships.

Taking in account all the presented facts and numerical results it can be concluded that this is an unacceptable result for any study program. The necessity for improvement is obvious.

3. VIRTUAL INTERSHIP MODEL FOR INFROMATION TECHNOLOGY STUDENTS

Virtual internships (VI) can be a solution to the problem in question since they can serve as a bridge between academic and business world [2]. VI is defined as "a set of ICT supported activities that realize or facilitate international, collaborative experiences in a context of teaching and/or learning" [3]. Without a doubt, this is especially convenient for the field of information technologies due to the range of available resources and services, and additionally, ICT students have necessary skills for VI. With the specially designed VI model and on-line platform the optimal learning environment for internships can be created.

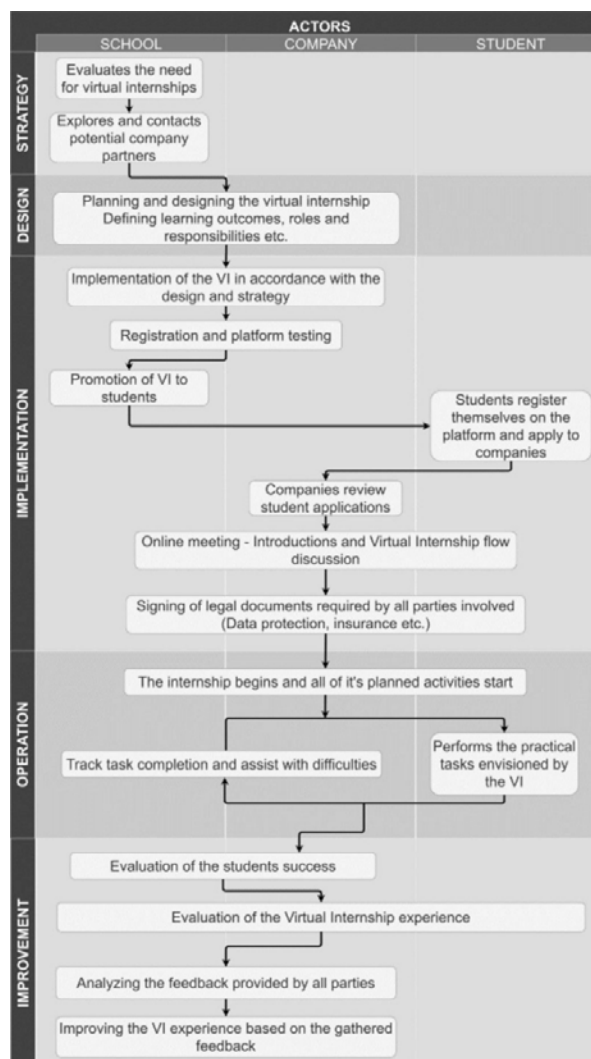


Fig. 1 Virtual internship activity workflow [4]

In [4], complete guide for designing specialized adaptive lifecycle and workflow model for virtual internships in general is given. Creation process is going through five phases: strategy, design, implementation, operation, and improvement. It involves all parties of interest in terms of internship: students, colleges or faculties (teachers) and companies (mentors). Fig. 1 shows the main activities and workflows across different lifecycle phases and roles (parties).

Depending on the field of work this general model must be adjusted to a specialized model. In this particular case, VI model for information technologies is analyzed.

Companies in VI model become partners with schools. School management and teachers together with company officials create learning outcomes that match specific needs of the company for certain competencies of employees. Company's employees become mentors and educators who together with the teachers determine the project plan, which contains duration, activities, goals, deadlines and required knowledge.

The teachers have an important role to motivate students to choose a company and a corresponding project in accordance with their interests. They then identify students that fit the requirements of the specific project plan. The teacher thus becomes an intermediary between students and companies and contributes to the success of all parties involved.

Mentors through effective communication and collaboration with students and teachers, monitor the implementation of internship step by step from its start to final evaluation. They assist the student when facing issues and difficulties while carrying out the tasks assigned to them. In that way, mentors get the opportunity to guide students, shaping their future competences.

At the end of the internship, the students deliver personal reports about success of the implemented practice and gained experience. This is crucial for the future VI experiences and further improvements on existing ones.

Technical prerequisites for the realization of VI model are the existence of flexible, scalable, and functional web platform together with the staff trained for setting and maintaining the platform. [4] completely describes the requirements that the web platform should meet in terms of specific VI processes and workflows. Moreover, it proposes an open-source software solution.

Implementation of the VI model for the information technology study program at Western Serbia Academy of Applied Studies, Department of Uzice started with school year 2020/21. First group of students successfully finished their internships at software companies Heliant and Infolab from Belgrade. Internships at Bulgarian company Tornado Studios are in progress.



Fig 2.: Course information on VI platform

3. CONCLUSION

The primary benefit of virtual internship is it can provide students with a safe, real-world learning experience based on authentic projects for companies located anywhere in the world.

Company catalog will depend on school management and teachers' skills, but it might contain a significant number of leading information technology companies in wider region of southeastern Europe [6], [7] or even all over the world. That will give opportunity to students to carry out their internships with foreign companies and to collaborate on projects with students from abroad. Student's biography will have representative reference. Students will build relations and network with future potential employers.

Communication and interactions between the teachers, students, and mentors, can be intensive through virtual platform which makes teachers' and mentors' roles more active and proactive and thus ensuring the success of the project.

Virtual internship model includes no travel and housing costs and removes barriers such as time and relocation.

Thus, bearing in mind that nowadays students widely accepted the online communication in everyday life, the virtual internship may easily prevail over traditional in-person internships.

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