Evaluation of Sustainability of Czech Vocational Education and Practical Training for the Position of Construction Manager

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Abstract: Current requirements of employers in the construction industry are aimed at strengthening the link between schools and the manufacturing sector. It is desirable that the students are during their studies already involved in the investment construction process, at least as part-time workers. At the Faculty of Civil Engineering in Brno, Czech Republic, this is being ensured by the accredited course Professional Practical Training. The aim of this contribution is to evaluate and analyze the inclusion of this student internship as a mandatory part of the study to present how many students worked for which construction companies during a period of 10 years, indicating the number of successfully completed internships for individual academic years. At the same time, the boundary conditions for this practice are described. The hypothesis to be confirmed is that the conditions are set in such a way as to be a prerequisite for successful fulfillment. Descriptive statistics are based on a sample of 92 employers involved in the system of securing professional practices for the period 2010 to 2020. The analysis showed that each year about 70–75% of students stay with the same company for their further part-time work during the remainder of their studies, and they may also stay for subsequent graduate employment. A total of 507 students started and finished their internship. Moreover, in the following years of practice, some of the graduates of the field became responsible for the tutoring of other student's work experience on the construction site. Having previously gone through the same educational scheme, it allows them to lead and evaluate students with an optimal degree of constructive criticism.

Keywords: education; work experience; accredited course; execution of buildings; job application

1. Introduction

Brno University of Technology's Faculty of Civil Engineering provides students with university education through the follow-up civil engineering master's study program in accordance with Act No. 111/1998 Coll. on higher education institutions and on changes and amendments to other acts (The Higher Education Act), as amended. The Ministry of Education, Youth and Sports granted accreditation for the study specialization Execution of Buildings on 25 July 2007 under file No. 17 719/2007-30/1, with subsequent re-accreditation under MSMT-12939/2015 from 11 May 2015. The course includes a compulsory period of work experience lasting for 10 weeks, the purpose of which is to deepen and verify the student's professional knowledge in practice during the process of constructing buildings or other structures. The details can be found with the subject card, including an accredited description of the content, objectives and teaching method, as well as the manner of evaluation and criteria employed, in the overview of taught subjects on the university and faculty web pages. Information is available at Portal FAST VUT: Professional practice subject card [1–3].

Professional practice as a compulsory subject for the Construction Realization field was newly introduced at the Faculty of Civil Engineering BUT in Brno in 2001. Pedagogues had no experience with such an educational obligation for the master's level. Until then,

students' professional practice was not managed by the faculty and was either a voluntary activity of the student or a recommended or optional activity that was secured by the student. The faculty had not yet ensured the progress, nor had control activities been set up. The basic hypothesis at the time of initiation was that professional practice should be as close as possible to real job performance with feedback from employers, both towards the student and towards the faculty. Another hypothesis is that the personal experience of the students is a benefit and motivation for further study.

The focus of this work experience in a selected building company is to work actively on the realization of a specific construction work, which leads to the development of the students' professional, theoretical and practical knowledge. During practice, the student supervises the work of construction machines and tries to use them effectively based on the theoretical knowledge acquired during their studies. This is mainly in the area of structures and construction management [4–7]. Students are placed on land, transport and engineering construction sites. Great emphasis is placed on work safety and compliance with construction financing [8–12].

The student performs the work directly on the construction site, particularly as a construction manager assistant, and helps in the department of construction preparation. The student is bound to keep a "Record of the course of the work experience" during the internship and is supervised by a tutor appointed by the company's representatives, who will evaluate their quality of work at the end of the course. This course concludes with a group seminar, where each student presents to their classmates all the activities they performed during the internship and includes a presentation of used materials and a photo documentation of the construction. This supports the student's awareness of undergoing building executions and all problems related. Students, faculty representatives and representatives of the construction companies will evaluate the quality and level of abilities and skills of each student, and the internship graduates will compare their competencies and define the benefits for their professional growth. At the same time, the workflow, the student's presence on the construction site and the activities performed by them are also controlled by inspection activities of the employees of the guaranteeing institute of Technology, Mechanization and Construction Management.

During professional practice, conditions were set that took into account the inclusion of professional practice in the course of study. A timetable was set so that this obligation could be fulfilled for the student in a given year. At the same time, the internship was included in the period when construction activity is at its peak in local European locations and students can be used in the realization of buildings. The subject was included among other teaching subjects in terms of content. Taught subjects that precede practice where the student should draw on the acquired knowledge include, in particular, professional subjects Economic tools of construction production management, Prestressed construction, Construction technology planning, Quality management systems, Selected articles on construction process technology, Ecology and occupational safety, Law in the field business in the construction industry, Realization and reconstruction of reinforced concrete structures, Construction machines and objects aimed at working with devices and software supports, Control and documentation of construction processes and Computer support in the preparation and realization of buildings 1.

The benefit of practical experience and acquired skills during the internship is subsequently used in subjects taught after the internship, such as the Diploma seminar, Computer support in construction preparation and implementation 2, Project management, Construction contract management, Managerial skills, Presentation skills and Psychology in companies practice [1,2].

2. Methodology

Data were collected from the student register. Professional practices were monitored, analyzed and evaluated every year in the period 2010–2020 and are methodically described in this paper in the style of a review. In 2019, a new accreditation for a similar study

program was under consideration, the course structure was modernized and the profile of the graduate was refined. For these purposes, it was necessary to evaluate the previous period, evaluate the results and contribution of professional practices as they are conducted, answer specific questions and propose possible changes. The basic research question is what strategy to apply for the organization of professional practices such as internships in construction companies to maintain and develop the quality of education.

The specific questions and areas that needed to be assessed for the mentioned decade are:

1. What was the highest number of completed internships with set conditions for an individual academic year?
2. Is ten weeks an adequate timeframe for professional practice, so that the practice is feasible for the student in a given year and at the same time long enough to be of benefit to the employer?
3. Is it appropriate and necessary for the subject guarantor to regulate the distribution of students to construction companies? Is it acceptable for the student to arrange the practice on their own?
4. Is it necessary for the student to keep a record of professional practice in the details in which the document is drawn up and required and to control the participation in constructions?
5. Is it necessary to end the professional practice with a final seminar with the participation of company representatives, to end the course with a credit and to require participation in the Final Seminars, which is mandatory for all students of the year of the given field?
6. Can the provision of professional practice be handled even in the case of extraordinary events, such as a change of construction site during the practice, illness or injury of a student or accidents or epidemics in the areas?

After answering the abovementioned questions, the result of the evaluation of the past ten academic years of professional practice should be to maintain the same set of conditions or to change some of the conditions for subsequent study accreditation for the period from 2020 to 2029. For individual areas of the organization of the theory of the subject, confirmation of the expectations of passing through the study and whether the expectations for the expected result have been met.

2.1. The Provision of Professional Work Experience for Students at the Faculty of Civil Engineering, Brno University of Technology

The guarantor of the study program and the guarantor of the study subject ensure the supervision of the quality of professional practice [1,2].

The guarantor ensures that students are informed about the conception for the incorporation of professional training into their education and takes care of communication and contractual agendas with the construction companies involved.

As the study specialization is Execution of Buildings, this professional training takes place not in a design office but rather at a construction site or at a department of construction preparation. The construction companies, which cooperate with the faculty as contractual partners that enable students to take work placements with them, must be authorized to do business in the field of construction. An agreement on cooperation in the provision of professional training is signed between the faculty and the said companies for each academic year. The agreement defines the purpose of the contract as being the provision of such professional training that will deepen and verify the students' professional knowledge through exposure to real-world construction practices, allowing them to gain additional practical experience and skills. The contracting parties are aware of and acknowledge the fact that the professional training is part of the students' course of study and that its performance and the conditions under which it will be performed are affected by this fact.

2.2. Integration of Students in Construction Companies

Vocational colleges are increasingly trying to include practical courses and internships and skills training based on expectancy confirmation theory, where people believe that the behavior will produce a desired outcome [13]. There are case studies available that confirm that practical and skill courses cannot be completed through online learning [14], especially in connection with the period of COVID-19. Vocational colleges had problems with skills training during online education. For example, practical courses and internships were significantly affected during online education; their survey found that more than a quarter of schools did not implement online practical courses, and more than one third of schools did not implement online internships at all [15]. However, the COVID-19 period can be evaluated as short-term, in line with these previous studies, this the post focuses on the entire decade of skills internships, including the COVID-19 period. Learning skill-based subjects via distance learning will lead to equipment and tool limitations, as well as time and space constraints, because while learning the most basic skills, students need to experience them themselves [16]. To fully exploit the inherent benefits of digital transformation for economic growth and social improvement, a highly skilled workforce with the skills and competencies required in the workplace is essential [17]. As the digital transformation of the world of work brings a number of new challenges and uncertainties to vocational education and training, many countries are actively seeking to explore effective strategies for preparing high-quality skilled talents [18]. In order to realize the sustainable development of vocational education, universities must pay attention to quality assurance of vocational education. The description of the methodology, analysis of individual aspects, induction and generalization of the evaluation of organizational procedures in this study can be beneficial to the shape of sustainable vocational education.

Work placements in construction companies can be classified in many ways depending on the size and structure of the company. The ideal situation with regard to the employment of students is stated in the contract: the student is to work directly at a construction site during the construction of a building for at least 70% of the duration of the work placement, this being mainly in a position corresponding to that of assistant construction manager. The student will be employed in the company's construction preparation department for a maximum of 30% of the training period. Students will not be perceived as regular part-time workers during this period; most companies have ongoing graduate training programs which aim to provide students with activities that develop their skills. Students will not be assigned ancillary work, cleaning work, non-professional administrative tasks or activities normally performed by sales representatives, etc.

As far as the labor law context is concerned, the faculty provides protection to the student straight away via the contract by stipulating that the work placement will be performed by the student as an employee in a valid relationship governed by labor law with the company as their employer and that the company will exercise all rights and fulfil all duties with regard to the student for the placement period and thus for the duration of the student's employment. This is the same as in the case of other employees of the company, particularly in the area of working conditions and remuneration for work performed. The scope of the ten-week training period corresponds to 400 h of experience, while the statute of the agreement on the performance of work covers 300 h of experience, and so it is necessary to introduce an agreement on working activities—an employment contract. The provision of such contracts is fully within the competence of the building companies involved and is organized by them.

The aim of the faculty is to ensure the student's safety at any period during the work placement in terms of the validity of the employment relationship, the provision of equipment for the work and protection while at work and compliance with the actual content of the professional training. The faculty does not interfere in the issue of remuneration for work performed at the companies. This is usually set so that the students, as graduates of a previous Bachelor's degree course, fall into the company's graduate wage bracket. This is

dealt with, and students are motivated via the setting of a lower level of wages and the award of bonuses depending on work performance.

The student's employment contract itself should cover a period of ten weeks of work experience, but in order to facilitate cooperation between the company and the student it may also cover part of the period before and after the time planned for professional training in the timetable of the academic year of the given study specialization Execution of Buildings. It is a full-time mode of study, so these options are limited to the time designated for professional training, or to part of the examination period or holidays.

The purpose of the work placements is bringing students and companies into contact with one another, and a longer period of work experience or long-term cooperation is desirable. It is also beneficial for the faculty if companies wish to cooperate in the assignment of master's theses with the teachers of the department concerned. It often happens that students prepare a construction project as part of their master's thesis assignment before starting their work experience, during which they subsequently take part in the construction of this investment. This is an ideal method of deepening a student's specialized knowledge and is also the most satisfying for a student's ambitions, though it cannot be achieved in all cases with regard to the construction schedule for the given project and the student's course timetable, which have to overlap suitably for this purpose. Nevertheless, even in cases when there is no connection between the building work the student is involved in during their work experience and their master's theses, the cooperating construction company offers a helping hand in obtaining project documentation which the student can then utilize in the investigation of parts of the master's project assigned by their teacher. As part of this collaboration, students are developing an interest in digital building models, i.e., LCA or BIM technology [10,11]. Due to the stay on professional practice, many students are interested in acquiring manual skills and are engaged in carpentry or masonry. Modern technology and digitization of production gives the possibility to connect these activities [12].

2.3. Organization of the Academic Year and Procedure for Assigning Students to Companies

As far as the organization of the academic year is concerned, it can be said that one of the most important moments is the workshop called Placement Day when company representatives meet students on the premises of the faculty for a discussion and the planning of work placements. It takes place half a year before the training actually starts. The subject guarantor organizes the whole process and maps out the requirements of both the students and the companies as regards the desired type of construction site and the location where the work experience should take place. The guarantor also proposes the general distribution of available placements throughout the year group in order to match requirements and offers. The end result is the nominal assignment of students to companies.

One week before the placement starts, the guarantor of the subject will contact all participating companies to check if the agreed conditions under which individual students are to be employed at the contracted companies are still valid. If the company offered a student a construction project whose implementation has now been cancelled or postponed to another time, the company and guarantor agree on whether the student will be provided with work on a different construction site. If the company informs the guarantor that it no longer has suitable conditions available for the student to undergo professional training, a new placement is subsequently arranged with another cooperating company. Communication between the guarantor and the companies involved takes place continuously: the companies' human resource officers inform the faculty in cycles, via the subject guarantor, about contracts gained from selection procedures and about reductions or increases in demand for students for the work placement period. As a result of this communication, the faculty also obtains information for students in lower years about job vacancies at firms offering continuous employment or summer jobs. This is especially advantageous for undergraduate students interested in the master's degree Execution of Buildings, as

they will go to Placement Day having already undergone a period of at least short-term or part-time experience, and they may also know in advance which company they want to work for.

As far as student preferences are concerned, it can be said that they come in two main "flavors": either students choose to undertake their work experience with a company with which they intend to stay for a long time, or they already know that they want to work for a small company in Brno as a planning engineer and so choose a work placement at a large construction site in order to gain experience that may later be unavailable to them and will serve them well in life. For example, they might go to Prague and spend their placement with a general supplier so as to become accustomed the organizational processes typical of a different type of firm. Sometimes, they have a specific desire to see what it is like to participate in the construction of a non-typical investment at least once in their lives, e.g., a hydraulic structure, a railway or road transport structure, or a bridge. During the construction of parts of the Prague underground railway system, the subject guarantor often received requests to carry out work placements there. An important role is also played by the student's financial situation with regard to the demands that work experience places on trainees in terms of the cost of accommodation and food. Some companies may deal with all such costs as if they were incurred during a business trip, and their employees do not receive compensation for personal contributions towards food and travel expenses until they are paid. Some students do not have the resources to deal with these costs without the option of advance payments. It is therefore also necessary to take into account the accommodation aspect in the locality of the company or the construction site. The guarantor thus investigates the possibility of a regional placement for the whole year, taking into account the student's place of origin and the towns or municipalities which can offer the student the option of free accommodation with their family or friends. Some companies provide accommodation for all their employees, housing them either in their own hostels directly at construction sites or via the use hotels and other accommodation solutions, with full financing or a share in the financing for individual workers. However, the question of compensation for accommodation costs is not resolved until pay day.

Another important area is that of students' driving skills and their ownership of a car. This aspect is also a widely discussed area on Placement Day. Students are expected to have at least a Group B driving license and driving experience and not simply a newly acquired license. For some locations, the student needs to own a car in order to get to the construction site, though some companies will provide a car. Some companies consider the student's stay on the construction site from the first to the last day of the work placement as a "travel order" with accountable costs; in other cases, travel orders are unusual, and expenditure on meals is covered via the allocation of vouchers.

It can be said that the faculty, through the guarantor of this subject, provides above-standard services to students both by obtaining a full range of information in this area from construction companies and by mediating all communications and mutual requirements concerning the course of professional training and arising from the situation in a given academic year. This places high organizational and time demands on the guarantor of the subject.

2.4. Integration of Professional Training into the Course of the Academic Year and the Influence of COVID-19

Work placements are normally expected to take place during a continuous series of 10 consecutive weeks, but exceptions are possible. It is defined in the contract that the company will provide the professional training in the period commencing with the first week after the end of the summer semester examination period, while the specific dates for the work experience are governed each year by the dates of the faculty's academic year. The period usually starts at the beginning of April, which means that the student will complete their work experience by the end of June in the given calendar year in standard cases. Students have a timetabled three-week exam period before starting their placement,

so there is nothing preventing students from agreeing with their company that they will start earlier. With regard to the requirements of the construction project or the assignment of a student to two different construction sites in different locations, it is not even a problem if a planned break occurs during the placement period providing the total time spent by the student on their work experience is fully equal to the assigned duration. From the point of view of the faculty, only the real performance of the given activity is relevant and not just the formal duration of employment, for instance.

If the student does not complete their work experience within the abovementioned time period due to obstacles arising at work which are specified in the provision of § 191 Act No. 262/2006 Coll., Labour Code, the company will allow the student to complete the remaining part of the placement in a manner agreed individually with the student but by no later than the end of the given academic year in order that the student can fulfil the study requirements of the academic year in which the subject is supposed to be completed.

Shifts of this kind have indeed occurred over the past few years. They did not represent a major complication, and they were always flexibly communicated between the student, the personnel department of the company, the management of the construction project and the faculty. The reasons for the interruption or postponement of work experience were usually related to the requirements of the construction project. In several cases, the interruption took place because the student had an accident. However, these accidents were not work-related but instead occurred while the student was engaging in free-time activities during the placement period. Even in these cases, the companies involved responded in such a way that the work experience was completed on time. The greatest differences between starting dates and also the most changes in the scheduled placement period were recorded in the spring of 2020 in connection with the occurrence of COVID-19: the government of the Czech Republic ordered a stage of emergency and announced subsequent extraordinary measures aimed at dealing with the coronavirus epidemic. Due to the fact that the Faculty of Civil Engineering at Brno University of Technology extended the examination period for students and the fulfilment of study obligations for the academic year 2019/20 was enabled until the end of September 2020, it was possible to postpone the start of student work placements. Employment commenced at the companies at times that varied for each individual as, due to the paralyzed economic situation in the country and the lack of building material deliveries, some construction projects were suspended. Construction companies organized themselves according to various internal directives related to COVID-19 measures that also included closing off cells of working teams with regard to other groups, and they postponed the commencement of student work placements. These postponements did not just last until the end of the state of emergency; in some cases, it was several more weeks before students could start their work experience, meaning that some of them even started in the first half of July. In some companies, the situation was different: the start of the student's placement provided a solution to personnel-related issues in a period that saw their own employees still opting to take care of a family member due to the closure of kindergartens, primary and secondary schools. Because the government extended the payment of a caregiver's allowance up to the end of the extraordinary government measures concerning the ban on school attendance, a third (at some firms even a half) of some companies' employees could not participate in the construction of investments. The students thus, at least partially, acted as substitutes for the missing workforce.

2.5. Monitoring and Completion of the Professional Work Experience via a Graded Credit

During the professional training period, the staff of the institute in charge carries out random inspections at construction sites to check that the students and responsible staff are present. These visits also strengthen the feeling of satisfaction with the organization of the placement and the performance of students on construction projects.

During their work experience, the students keep a Work Placement Record where they describe the individual activities they were entrusted with. In addition, a responsible employee from the company adds comments once per week, as shown in Figure 1.

6. week	
Place of work: Petrovice u Karviné	
Construction: Bridge for railway crossing in Dětmarovice, Bridge near cement plant Dětmarovice	
Object: SO 20-45/01	
Job title: Master	
Day, Date, Hours worked	Description of the student's activities and comments on the course of the internship
Monday 31.5.2021 10	Management of the construction of the cement plant bridge, keeping a diary, carrying out inspections, work performed: Removal of milled asphalt from intermediate landfill, coating the ledge with a protective coating
Tuesday 1.6.2021 10	Management of the construction of the cement plant bridge, keeping a diary, carrying out inspections, work performed: Installation of barriers and railings, underlayment of posts, paving, grouting
Wednesday 2.6.2021 10	Management of the construction of the cement plant bridge, keeping a diary, carrying out inspections, center meeting, work performed: Completion of work on barriers, incorrect painting, road cleaning
Thursday 3.6.2021 10	Meeting with paramedics on the Dětmarovce bridge (bridge cement plant), concreting the cornice on Dětmarovice, excursion for a high school student, keeping a diary
Friday 4.6.2021	Main bridge inspection by an authorized person, meeting on the bridge with TDS and author's supervision. Written unfinished work. Approved possible road traffic. The meeting continued only with TDS in order to get acquainted with the list of works for May.

Figure 1. Record of professional practice, student's weekly work report. Source: own research.

At the end of the internship, the company employee also writes an overall evaluation, which includes a proposed classification for the student's performance, as shown in Figure 2.

A graded credit is awarded by the guarantor of the course during the last two days of the placement. This occurs at what is known in short as the "Concluding Seminar", where the students acquaint their classmates with the construction project they worked on and the events which took place over the course of their work experience. Company representatives are invited to take part in determining the final grade credit evaluation; a photograph from such proceedings is shown in Figure 3.

FINAL EVALUATION OF THE COURSE OF PROFESSIONAL PRACTICE COMPANY	
Name of student:	Bc. Milan Janeček
Names of persons authorized to regularly evaluate the work of the student performing the OP - persons responsible for the performance of the student's work	Kamil Kosek
Final evaluation of the overall course of the OP: Milan did very well in practice. He used the knowledge gained during the studies. He was able to act independently and sensibly. He learned new things quickly and was able to adapt to the course of construction. He arranged the Dětmarovice construction himself without any major problems and went through the complete process of the work. His performance has always been serious. He was able to look after even minor shortcomings on the part of subcontractors. He was always assisted in the construction of Petrovice. He performed partial tasks conscientiously and also won the favor of workers and other co-workers. Except for minor mistakes, it worked very well. Overall, I rate his work on the construction site as very successful and I think he would be able to lead his construction over time. OHL ŽS OHL ŽS, a.s. Burešova 938/17, CZ - 602 00 Brno, Veveří IČ: 463 42 796, DIČ: CZ46342796	
Draft evaluation: A / 1, B / 1.5, C / 2, D / 2.5, E / 3, F / failed	A
Total number of hours worked	492

Figure 2. Record of professional experience, final evaluation of the student by the responsible representative of the construction company. Source: own research.

Getting acquainted with the course of their classmates' work placements and especially with issues concerning other construction projects ensures students receive appropriate feedback. This allows students to compare their professional and personal experience with that of others and assess the competence and performance of other students along with their own. Additionally, they also learn a great deal of specialized information concerning the construction process involved in other investment contracts. Figure 4 shows an example of a page from a student presentation in which they present their professional experience from a construction site. In this case it concerns the deployment of test probes. After completing their work placement, students often self-critically evaluate the knowledge and experience they gained during their studies and how it served them when they applied it in real-world construction practice. They also share with others their preferences in terms of which they enjoy more—working on a construction site or in an office engaged in the technical aspects of construction preparation. We can see an example of this in Figure 5, where the student has included a photo of their office work on one of the pages of their presentation.

Figure 3. Example of a seminar Concluding Student Work Placements taking place in a classroom at the organizing institute. Source: own research.

Figure 4. Example of a page from a student presentation describing their work experience gained in the area of construction Source: own research.
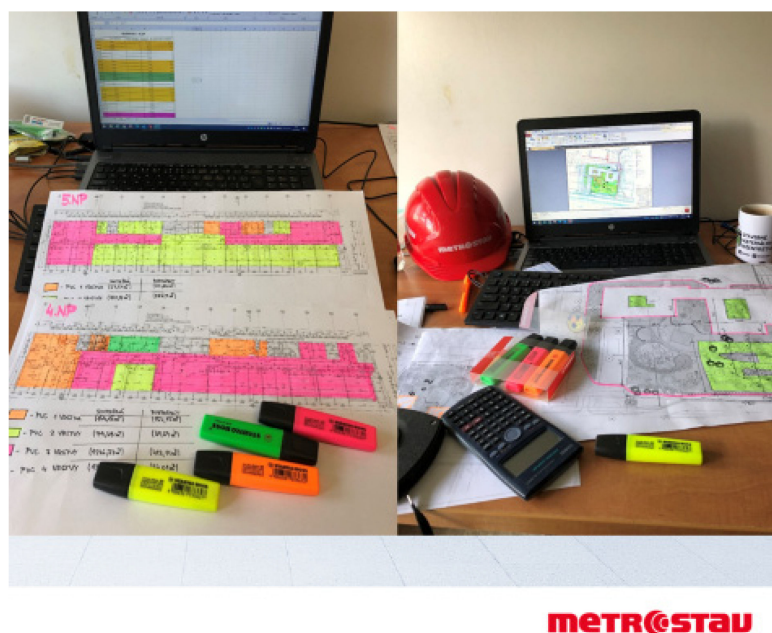
Figure 5. Example of a page dedicated to self-critique from a student presentation concerning their work experience. Source: own research.

3. Results and Discussion

During the monitored period from 2010 to 2020, a total of 507 students underwent the teaching of professional practice with successful completion of a graded credit. In the mentioned period, 92 employers cooperated in securing professional internships, who participated in various ways in the monitored period, some of them regularly with a fixed number of offered jobs and some with a one-time requirement. The benefit for the company's personnel policy is the continuity of recruitment. The number of students at individual employers varies. In general, the demand for students for practice exceeds the supply. Interest in companies varies among the students. In the graph in Figure 6, we see at which of the 20 companies the most students completed their internship during the monitored period. The number of students is given here as a summary for the observed period.
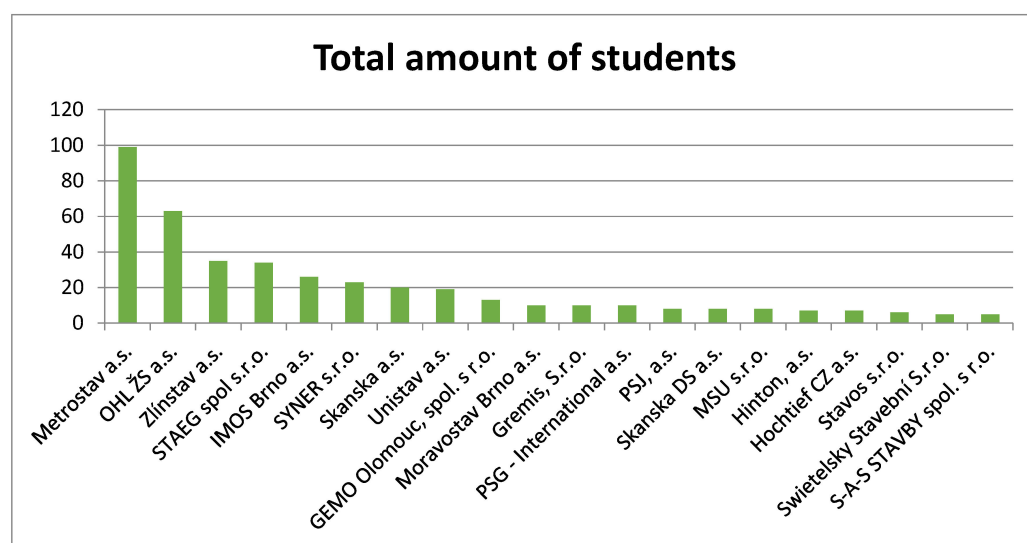
Figure 6. The total number of students monitored at individual construction companies. Source: own research.

The overall benefit of students' professional work experience in companies is great.

Every year, about 70–75% of students continue their cooperation with the company at which they underwent the work placement for the remainder of their studies and take up their first working position there after graduating. Graduates often utilize the contacts they made during the Placement Day when submitting further job applications within a few years of graduating from the faculty. The acquired contacts between workers at the companies involved are established and strengthened, as are the relationships between firms, other suppliers, subcontractors and other legal and natural persons who are involved in the production process, such as laboratories and suppliers of materials and machinery. The establishment of these contacts and the course of the work placement itself are the main means of deepening the student's professional knowledge.

Many graduates eventually take charge of work placement programs at their firm after working there for some time, and after a few years some of our graduates return to the faculty and contact the subject guarantor as representatives of companies which would like to be engaged in the provision of professional practical training. This closes the whole system and strengthens it to enable the stable and functional incorporation of students into the construction industry.

During the analyzed period, 507 students successfully completed an internship, and there was no student who did not complete the professional practice in the given academic year or did not complete their studies due to the presented requirements. The given data from this study confirm that the methods described are functional and can be used in the professional education system for other universities as well. The use of data and experience from this contribution can help education managers in the positions of guarantors of practical teaching to set the conditions for practical courses for students. Thus, the basic research question, whether it is possible to use the strategy of organizing this teaching for the next period and other universities, was answered. The answer to all specific questions is positive: yes, it is necessary, necessary and beneficial to maintain the set rules for increasing the quality of vocational education and preparation for future employment.

The distribution of students into construction companies may not be even, as can be seen from Table 1. The construction companies shown in Figure 6 are part of the list in Table 1 and provide the faculty with the largest number of internships on the largest construction sites and the most feedback at the same time.

Table 1. Number of students admitted to practice in individual construction companies in each calendar year.

Building Company	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total Sum
Metrostav a.s.	9	8	9	10	11	6	8	9	12	8	9	99
OHL ŽS a.s.	11	7	5	5	5	6	9	3	8	0	4	63
Zlínstav a.s.	4	3	3	5	4	3	4	5	2	1	1	35
STAEG spol s.r.o.	4	4	4	4	2	2	2	3	4	3	2	34
IMOS Brno a.s.	2	3	2	2	2	2	3	3	2	3	2	26
SYNER s.r.o.			3	2			3	7	3	2	3	23
Skanska a.s.	5	4	4	2		2	2		1	1		21
Unistav a.s.		7	6	2	4							19
GEMO Olomouc, spol. s r.o.							1	4	3	3	2	13
Gremis, s.r.o.		1	1		1		1	2	2	2	0	10
Moravostav Brno a.s.							4	1	2	1	2	10
PSG—International a.s.				2		1		3	3	1	0	10
Skanska DS a.s.	8											8

Table 1. *Cont.*

Building Company	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total Sum
PSJ, a.s.							1	3	4		0	8
MSU s.r.o.							2	2	2	1	1	8
Hinton, a.s.							4	1	2		0	7
Hochtief CZ a.s.					1	2	1	1	1	1		7
Stavos s.r.o.	1	1	1	1	1	1						6
S-A-S STAVBY spol. s r.o.		1		1			3					5
Swietelsky Stavební S.r.o.								3	2	0	0	5
FIRESTA a.s.								2	1	1	0	4
Chládek a Tintěra, a.s.										4		4
SKR stav, s.r.o.		2					1					3
Navrátil s.r.o.				1	1	1						3
PM GROUP s.r.o.										3		3
GEFAB s.r.o.							2					2
EVT Stavby s.r.o.						2						2
S.I.S. spol. s r.o.							2					2
ATEMIT, s. r. o.								1	1			2
KKS spol. s.r.o.								1	1			2
PM stavby, s.r.o.					2							2
Jaaha, s.r.o.								1				1
SŽDC, s.o.										1		1
STAVING s r.o.			1									1
Karvep stavby, s.r.o.					1							1
Rekonstruktiva S.r.o.							1					1
Kers s.r.o.				1								1
Arch.Design s.r.o.	1											1
Instal Servis—Stavby, s.r.o.							1					1
HT Steel s.r.o.								1				1
KKS, spol. s r.o.							1					1
Eurogema Cz, a.s					1							1
Komfort, a.s.							1					1
RENOVA s.r.o.						1						1
LUKROM, spol.s.r.o.									1			1
EUROVIA CS, a.s.							1					1
LuSo plus, s.r.o.									1			1
Stavby a.s.	1											1
M—Silnice a.s.								1				1
STAVITELSTVÍ TRYNKL s.r.o.			1									1
BAK stavební společnost a.s									1			1
HUTIRA s.r.o.							1					1

Table 1. *Cont.*

Building Company	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total Sum
Beskydská stavební a.s.											1	1
Chládek a Tintěra Pardubice a.s.											1	1
VCES a.s.											1	1
Rebut s.r.o.									1			1
VHS Brno a.s.				1								1
Renesco, a.s.								1				1
VS-build, s.r.o.							1					1
Rop—stav s.r.o.								1				1
BEZEDOS s.r.o.											1	1
Hoblina Robert Malý					1							1
1.kamenická stavební s.r.o.				1								1
JB stavební s.r.o.										1		1
Ncorp s.r.o.			1									1
F&K&B. a.s.											1	1
BRESTT s.r.o.					1							1
Stavby Chrastina s.r.o.						1						1
PKS stavby a.s.											1	1
Stavitelství Kašpar S.r.o.								1				1
IP Systém a.s.									1			1
Stavmal cz			1									1
TERRABAU s.r.o.				1								1
Stylstav s.r.o.			1									1
TRADIX s.r.o.				1								1
H.A.Technik s.r.o.											1	1
FS monolity s.r.o.				1								1
K- team, s.r.o.											1	1
Váhostav a.s.				1								1
UNISTAV CONSTRUCTION a.s.										1		1
Podzimek A Synové S.r.o.		1										1
Úsporné bydlení s.r.o.					1							1
Poličská stavební s. r. o.					1							1
Skupina VCES a.s.										1		1
Porr a.s.							1					1
CTP Invest, spol. s r.o.	1											1
VHS Plus s.r.o.	1											1
MTS GROUP S.R.O.						1						1
Wining PS, s.r.o.											1	1
Navláčil stavební firma s.r.o.				1								1
1. Vasto S.r.o.		1										1

Table 1. *Cont.*

Building Company	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total Sum
Navrátil s r.o.	1											1
Total sum	49	43	43	46	39	31	61	60	61	39	35	507

Source: own research.

This feedback answered specific questions:

(1) Within the academic year, up to 61 students can go through the set practice requirements without any problems;

(2) The ten-week period is an adequate timeframe for professional practice; the practice is well included among the other taught subjects. Thus, during it, the student makes use of the knowledge acquired in the previous study. It not necessary to include some of the taught subjects, which are included only after the end of the internship. The internship is included during the academic year in such a way that the student can draw on the knowledge and skills acquired during it for the preparation of the diploma thesis, further teaching of subjects and for the employer to maintain working contact with the student even for the period after the end of the studies with the final state exam;

(3) It is appropriate and necessary for the subject guarantor to regulate the distribution of students to construction companies; thus, it was confirmed that is it not desirable for the student to arrange the practice on their own;

(4) It favorable for the student to keep a record of professional practice in the details in which the document is prepared and requested. It is convenient to carry out the hospital work on construction sites during professional practice; however, it was confirmed that it is not necessary;

(5) To end the professional practice with a final seminar with the participation of company representatives is desired and beneficial; thus, it is also appropriate, as a condition for completing the course with a credit, that each student participates in the Final Seminars;

(6) And, finally, provision of professional practice can be handled even in the case of extraordinary events, such as a change of construction site during the practice, illness or injury of a student or epidemics.

The list of 92 construction companies according to Figure 1 and in Table 1 together with the number of 507 students involved in this vocational training confirms the benefit of practice. For the stated period of 10 years in cooperation with these companies, 100% of students undergo professional practice properly and in the required term of the academic year, and feedback is received from all in accordance with the content of the research questions.

4. Conclusions

The research shows that for the follow-up master's level of study, a ten-week professional practice is adequately long, can be met by the deadline and can be extended to twice as long if the student is interested.

The internship period is advantageous for both the student and the employer. It is appropriately classified as a compulsory subject after completion of subjects focused on basic expertise in construction, technology, economy, law, ecology, safety, quality, mechanization and digitization of processes.

The basic hypothesis that with the setting of the mentioned marginal conditions this internship is the closest to real job performance was confirmed. Feedback from employers, both towards the student and towards the faculty, functions through the Record of Professional Practice document and through the activities of internships and Final Professional Practice Seminars.

On 27 August 2019, this study program, with the name Civil Engineering—Execution of Buildings, was re-accredited during institutional accreditation [19,20]. For this accredited program, the same procedure is used to secure professional internships. Established

strategic partnerships with construction companies will be used, and experience from the organization of the past ten years will be taken into account. Given the experience from the COVID-19 period, the provision of this professional training is sustainable even in shifts of several weeks in relation to the timetable.

Moreover, the Faculty of Civil Engineering in Brno responded to the call within the framework of the National Renewal Plan and is preparing three completely new professionally oriented bachelor's study programs, for which the strategy of securing professional internships was also adopted. The internship in the company was designed for a longer period, namely 13 weeks, for the bachelor's level of study. For this plan, the evaluation of the mentioned research was essential. The future research will be focused on a comparison and evaluation of differences between demands of bachelor's and master's students.

In conclusion, it can be said that on the basis of monitoring the course of ten years of this professional education with the inclusion of mandatory professional experience, it increases the quality of education in the field of civil engineering—construction implementation.

This article will contribute to the transfer of the experience of educators, as well as other studies [3,21–27] for sustainable education.

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