Special Feature 1: What are off-campus practical learning and internship programs?

Section 1

Improving off-campus work experience programs for learning about technology and its real-world applications

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I'd like to begin with an example. In the latest issue of a construction industry magazine, there is a piece by Kotaro Takemura, a professor at Ritsumeikan University, describing memories of his own practical learning experience. In clear prose, he states that he glimpsed the souls of engineers as they dealt with the pressures and conflicts of field operations, and that this experience has had an important influence on the way he has lived his life since then. At a dam construction site prior to the start of full-scale construction work, he was impressed by the efforts of site engineers as they held negotiations and discussions with residents of the area that was to be submerged, carrying out their mission in an atmosphere of trust as well as tension. It may well be that Professor Takemura's talents enabled him to take away more insights from this experience than others could have gleaned. However, the fact remains that these insights and impressions resulted from his work experience in the field. Working at a site office allows students to develop an understanding of the mechanisms behind the implementation of operations and skills, as well as the psychological workings of people and communities, in addition to hands-on acquisition and confirmation of skills.

My own experience was nearly 40 years ago, when I participated in practical learning for a month and a half during the summer of my third year of university. I was assigned to supplementary operations related to projects under the direct management of the Port Construction Office of the (then) Ministry of Transport. The goals of the operations were clearly stated: to revise the standard design of concrete mix proportions according to the characteristics of aggregate to be used at the site. However, the procedures were not clear, and I recall feeling bewildered at the beginning of my practical learning experience. I realized that I myself had to find something to do in order to get anything started. After awhile, the work of aggregate testing and specimen preparation got on track, and I was also able to witness on-site loading tests, verification of dredger operations, and other aspects. I was often fascinated by the everyday skills and innovations practiced by staff members, and although the pay was low, I was glad to be earning ¥750 per day. I did not have the same kind of opportunity as Professor Takemura, who perceived even the emotional distress of technical staff; but my experience was sufficient for me to at least imagine the emotions that he experienced.

"Virtual" techniques are popular these days, and various virtual learning methods are also being used in educational fields. However, there are limits to virtual techniques. In order to apply learned

information and knowledge in the real world, one must have real hands-on experience for a higher dimension of understanding and cognition. In particular, civil engineering technologies need to be suited to the various natural and social conditions which necessitate them, as well as technological factors. It is not enough to superficially observe a factory or worksite in a manner that doesn't go much deeper than a bus tour. Instead of seeing the worksite through a merely virtual, simulated experience, it is necessary to understand the mechanisms that lie behind the actual operations and the complex processes that are involved; and students should have a deeper understanding that includes shared reflection and concern. The attitude and perspective of actual involvement is important; and although the length of time spent is not at issue, it should be at least four and preferably six weeks.

Some would say that even simple practical learning experiences may be valuable as a preparation for joining the workforce. However, I do not believe that the university should have to motivate individuals for employment. Students who wish to see what it's like to be part of the workforce can easily find opportunities to observe many workplaces by asking their instructors, or friends who have already graduated. Instead of choosing an occupation in a uniform manner based on the conventional educational process, the individual's career aspirations should be decided according to his or her future plans, based on individual awareness and attitudes. Career selection for university students should be more individual, strategic, and elevated.

For quite some time already, off-campus practical learning has not been a requirement at the university where I teach. However, until very recently, the classical kind of summer off-campus practical learning was conducted in practically the same way as it was done in the past. Ever since that time, students took practical learning journals with them when proceeding to their practical learning assignments. The outside cover of this journal is shown in Photo 1. Its content included somewhat old-fashioned rules, as shown in Fig. 1; and the students entered a summary of each day's operations in notebook style. At the end of the journal, there was space for evaluations by the student's immediate superior and instructor, as shown in Fig. 2. In the present curriculum, practical learning is offered in the form of internship as a specialized course, as it is in other universities and departments. There is some debate about distinguishing between practical learning and internships. Here, these classifications and names are unimportant. The essential points are the length of time and the clear positioning of practical learning.

In addition to debate concerning the length of time spent on practical learning, another important issue is improving conditions at the accepting location. To really experience skills, administration, and construction work, it is essential to have appropriate advice and direction in the field. If the goals and aims are clearly understood, this can be left up to the accepting organization; but this cannot be expected in every workplace. In some cases, unfortunately, students may be treated as copy machines, or learn only about processing software, or only read books. For better practical learning and internships, more improvement is needed on the basis of a renewed recognition of the educational purposes of such programs. The modes of operations related to civil engineering have changed greatly over time. There is increasing diversity regarding the types of operations that are included, the roles of government agencies, the level and content of technology, the acceptance conditions for practical learning students, and workplace environments. It is important to match the university's wishes for engineering

education with the capabilities of the workplaces that support these programs. Further efforts are needed to find effective approaches to practical learning, based on an understanding of the varied types and modalities of workplaces.

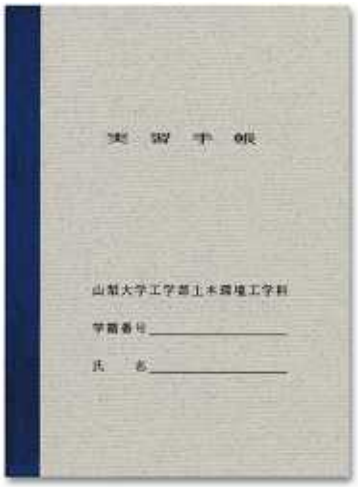

Photo 1. Practical learning journal

Rules for practical learning

1. Students in the practical learning program should act with responsibility, consistently maintaining the dignity and self-respect befitting a university student.
2. Understand that the practical learning program is based on the good will of the accepting organization, and work diligently with a thankful attitude, in daily efforts to overcome various difficulties.
3. Enthusiastically engage in the work and learn from the field instructor, with a keen recognition that off-campus practical learning is not a part-time job but a learning experience.
4. If two or more students are assigned to the same location, or if you are together with students from other schools, be sure to maintain a friendly spirit of cooperation.
5. Take particular care of your health during the practical learning program and never act recklessly. If you are ill or injured, consult a physician immediately.
6. Appear at the appointed place, date and time.
7. If two or more are going to the same place, proceed together as a group.
8. When appearing at the assigned location on the first day of practical learning, give the Practical Learning Initiation Certificate which you received from the instructional coordinator to the designated person in charge (director, senior staff member, etc.).
9. Write journal entries in your practical learning journal every day during the time period of the program. Upon completing the practical learning program, obtain certification from the person in charge (director, senior staff member, etc.) and submit the journal to the instructional coordinator by _____.

Fig.1. Rules for practical learning

Practical learning performance certificate

Practical learning student				
Practical learning period	From ____ to ____			
Content of work				
Number of times tardy	times			
Number of days absent	days			
Number of days leaving early	days			
Practical learning attitude	Excellent	Good	Fair	Unacceptable
Job performance: Field work	Excellent	Good	Fair	Unacceptable
Job performance: Office work	Excellent	Good	Fair	Unacceptable
Overall performance	Excellent	Good	Fair	Unacceptable
Other				

I certify that the above is true and correct.

Date:

Name of practical learning supervisor: Seal

Note: Please circle your response.

Practical learning completion certificate

Name	
Time period	
Practical learning subjects	
Comments	

I certify the completion of practical learning as stated above.

Date:

Certified by: Seal

Fig. 2. Practical learning completion certificate