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The Implementation of the Internship as a Coursework in Teaching and Learning Vocational Education

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Abstract: Internship is one of the common practices of higher education institutions in Malaysia for enhancing the learning experience and technical skills among their students. Students who follow the internship programme are found not only to be able to develop their professional attributes but also have the opportunity to acquire professional networks and career paths. Besides being a conventional approach that links students with real-world employment experience for a programme, internship can also be implemented for a specific course within a programme. The article discusses the implementation of an internship programme as a pedagogical approach in providing experiential learning for a specific course, i.e., Foundation and Concrete Work. This study involved 51 second-year students who were pursuing a degree in vocational education at the Universiti Teknologi Malaysia. Analysis on the impact of the internship experience indicates that the internship programme is an effective pedagogical approach for experiential learning for foundation and concrete work course.

Keywords: Internship, experiential learning, vocational education, higher education, teaching and learning

1. Introduction

Higher education institutions are facing challenges in supplying graduates to fill the job market demand. One of the initiatives to address this challenge is to create programmes that can help an institution in providing meaningful learning experiences for students.

Internship is one of the critical components in the structure of a programme of study at a bachelor's level of study in most Malaysian higher education institutes. Internship is seen as a window or a bridge to the real world of work. Students have the opportunity to apply theoretical and practical knowledge acquired in the lecture room into the real work environment. Besides, students can also improve the generic skills required in their area of specialisation. The internship programme also enhances the potential of students' marketability. In the context of higher education institutions, internship programmes are one of the mechanisms that can be used to evaluate a programme of study. Through the internship programme, the institution can get useful information on the adequacy of a programme which involves the structure of the program, the structure of the academic course and the quality of the graduates to be produced. Studies however caution that unplanned internship programmes will negatively affect students. Almoayad and Ledger (2018); Wu and Wu (2006) prove that there are students who are less confident about the future of their careers after completing the internship programme. An unplanned internship can thus lead to a student who does not feel confident to venture into a career that is in line with their speciality. In that regard, the planning and implementation of an internship programme should be taken seriously by institutions of higher learning to ensure that through the internship programme students gain valuable work exposure and experience. Internship programmes need

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to be viewed from a different perspective of conventional practices so that the ultimate goal of internship implementation can be achieved well.

The internship is generally defined as a process where students are allowed to experience and understand the world of work more attractively (Beggs & Hurd, 2010). Sumual and Saputan (2018), and Silva et al. (2016) emphasise that an internship should be a platform that enables students to link between the theories learned in lecture rooms with real practice at the workplace. Internship serves as a catalyst for students' self-development as well as providing them with the opportunity to learn to do something (Simons et al., 2012; Beggs & Hurd, 2010).

The internship approach demands more than the typical classroom learning activity as it requires full commitment from various inter-related parties. Students, supervisors, institutions and industries need to work together to ensure that learning activities that occur during the internship period are the most valuable and beneficial experience for students. In this case, students and supervisors need to look at the learning experiences based on this experience as another dimension to gain and understand how the relationship between theory and practice knowledge is integrated into real-life situations.

The internship programme which falls under the umbrella of experiential learning which is also sometimes known as apprenticeship has long existed since the mid-era of the industrial revolution. John Dewey, an expert in experiential learning, believes that a little experience is better than having a lot of theoretical knowledge. This is because according to him, the experience of such a theory will be more important and significant than the theory alone (Dewey, 1944). This view was then brought back by Kolb (2015) who emphasised the need for an experience to be incorporated allowing information to be transformed in a way that would help the learning process. The learning environments should be conducive to enable students to grow and learn from experience, help them actively address thinking activities.

Internship in the higher education system can be implemented in various ways such as the followings:

- The internship is a planned and supervised learning opportunity to enable students to acquire more in-depth knowledge and skills, beyond the context of lecture rooms and in real-life situations before graduation
- The internship can also be a real application of the concepts, theories, the knowledge and the learning skills in the classroom lectures to the context of the real world of work
- The internship can be carried out either to obtain academic credits or just for a mere experience
- The internship can be implemented as a single subject or as one of the course work assignments in a subject or course

Three main elements could be utilised as a platform to contextualise the concepts of internship in a subject as shown in Figure 1. The elements of internship programme are student, faculty, site supervisor, internship environment – real work settings, and assessment by both supervisors; course planning and approaches.

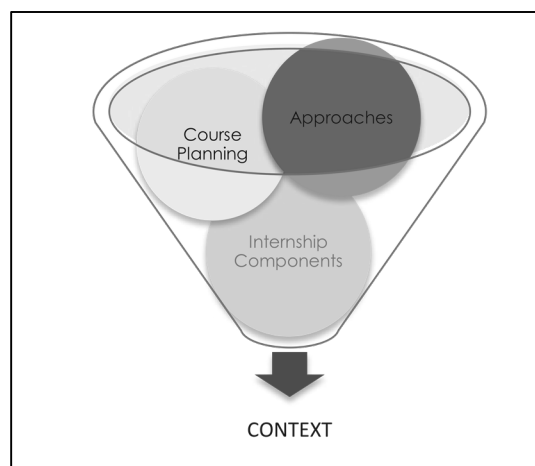


Fig. 1 - A concept of internship contextualization.

The primary purpose of the current study is to investigate the implementation of an internship programme as one of the pedagogical approaches and assessment methods in the teaching and learning process of vocational education course at a university. As one of the approaches categorised as high impact educational practices (HIEPs), the implementation of an internship programme in the context of this study is different from the usual practice of internship at the university. A course offered to students pursuing a degree programme in vocational education at Universiti Teknologi Malaysia was chosen namely, Foundation and Concrete Works. This study was conducted with the following objectives in mind:

- To identify the effectiveness of the internship approach as coursework in the teaching and learning of undergraduate students
- To analyse the perceptions of students on the implementation of the internship approach as coursework in the teaching and learning of undergraduate students

2. Methodology

The study employed the qualitative approach to studying the implementation of the internship as coursework in the teaching and learning process of Foundation and Concrete Works for undergraduate students. An evaluation form consists of four open-ended questions and two questions for respondents to assess the development of their knowledge as a whole and how they classify the internship programme was used to gather data for the study. The qualitative data from the open-ended internship assessment form were transcribed and analysed thematically to draw out emergent themes. Descriptive analysis was used to understand the development of the students' knowledge as a whole and their perception of the internship programme.

The respondents were 51 second-year students (33 females, 18 males) who were pursuing a degree programme in vocational education at the Universiti Teknologi Malaysia. A total of 46 students possess a diploma in various engineering fields namely civil engineering (n=27), building construction (n=1), land surveying (n=2), quantity surveying (n=9), building service (n=2), architecture (n=3), wood technology (n=1) and mechanical engineering (n=1), while 5 respondents are matriculation graduates. A total of 27 respondents had working experience before attending a bachelor's degree in vocational education at Universiti Teknologi Malaysia. The study of the effectiveness of the internship programme also involved a total of eleven construction industries in Johor Bahru district. Respondents in a group of not more than three had been chosen from a suitable industry according to their learning goals. As experiential learning, the whole structure of the internship for this study consisted of four phases as proposed as by Wolfe and Byrne (1975) namely design, conduct, evaluation and feedback.

2.1 Design

This phase involves the substantial efforts of the lecturer in setting the stage for the learning experience. The lecturer sets out the learning outcomes to be achieved, the objectives of the programme involved, the teaching strategy, the assessment methods and the course content covered by the course. The course information has also dictated the timetable for the internship. This phase is crucial for the application part of the course to applied experiential learning. The logical nexus is laid so that the students can picture the practice in the related context. Table 1 shows the weekly schedule of the course for 14 weeks.

Table 1 - Implementation of Internship in A Weekly Schedule of A Course

Week	Topic	Remark	
1	Introduction to the course		
2 & 3	<ul style="list-style-type: none"> ▪ Safety practices at the construction site ▪ Setting out ▪ Piling work and excavating pile caps ▪ Stump construction 		
	4	Ground beam	Talk by the industry
	5	Ground slab	Talk by the industry
6	Upper floor column		
7	Upper floor beam and slab		
Week 8 Mid-Semester Break			
9 - 13	Practical work	<ul style="list-style-type: none"> ▪ Test ▪ Internship embedded in a course ▪ Lecturer/instructor visit ▪ Assessment by the industry & lecturer 	
14 - 15	Presentation & reflection on the practical activity		

The curriculum of this second-year two-credit course comprised of three-course learning outcomes (CLO) primarily to analyse the process of foundation and concrete works in the building construction. Besides CLO, the course curriculum comprehensively has been planned so it covers the whole process of the building construction from

safety practice at the construction site, setting out, piling works, to concrete works that involve structures such as the beam, slab and column. The primary assessment method of the course is internship which is worth 50% of the grade. Other assessment methods for this course test (20%), report (20%) and presentation (10%). Besides technical knowledge, the course also addressed two generic skills namely communication skill and thinking skills.

The researchers also formulated student learning times (SLT) for each teaching and learning activity based on the percentage of each assessment method. As for the internship, based on the 50 percent value of assessment, SLT for the teaching and learning activities are at least 42 hours. Thus, students must complete a minimum of 42 hours of internship. Table 2 depicts the student learning time for the course.

Table 2 - Student Learning Time for The Course

Teaching and Learning Activities	Student Learning Time (hours)
1. Face-to-Face Learning	
a. Lecturer-Centered Learning	14
b. Student-Centered Learning (SCL)	
i. Workshop/Practical session	0
ii. Student-centered learning activities – Active Learning, Internship	28
2. Self-Directed Learning	
a. <i>Non-face-to-face learning</i> or student-centered learning (SCL) such as manual, assignment, module, etc.	
i. NALI – Internship	42
ii. MOOCs	0
iii. Blended Learning	8
b. Revision	10
c. Assessment Preparations	10
3. Formal Assessment	
a. Continuous Assessment	6
b. Test	2
Total (SLT)	120

2.2 Conduct

This phase concerns were maintaining and supervising the design. The conduct phase covers the revising the initial schedule and activities to accommodate the learning setting. The significant implications of this phase are, the learning experience is a well-structured and closely-supervised.

2.3 Evaluation

Both the lecturer and supervisor conducted the evaluation. However, there was a provision of opportunities for students to evaluate their learning experience. Students were able to articulate and demonstrate specific learning obtained from the design and conduct of the learning experience. This article focuses only on the student evaluation on the effectiveness of the internship program.

2.4 Feedback

Feedback was obtained continuously starting from the briefing of the course through to the final debriefing as suggested by Wolfe and Byrne (1975). By doing so, the lecturer could monitor the process of internship to ensure the positive aspects of the learning were fostered. In this phase, students were allowed to learn from their errors.

The four phases suggested by Wolfe and Byrne (1975) described activities of the internship which is associated with experience-based learning. The activities were dichotomized as structural and process activities. Structural activities define the what, where and when of student learning. While process activities determine how student learning. The effectiveness of this internship approach is assessed regarding theoretical knowledge, practical skills, generic skills

and general knowledge of the field of work. The study also assesses students and industry supervisors' feedbacks regarding the implementation of the internship approach as coursework.

3. Results and Discussions

Respondents were asked to reflect on the internship they did in the industry and the effects this programme had on their technical and procedural knowledge on the construction process and generic skills. This study also identifies problems faced by students during the internship. Besides, other knowledge and skills acquired throughout the programme are also identified. Respondents were also asked to evaluate the overall development of knowledge and to give an insight into the implementation of the internship programme.

3.1 The Effectiveness of the Internship Approach as Coursework in the Teaching and Learning of Undergraduate Students

Throughout the internship process, lecturer visited the construction site to monitor the process. Before the visit, lecturer contacted the group leader regarding the date and time of visit. On-site, students reported what they have learned. The lecturer asked some questions about what they had learned to assess the extent of their knowledge and skills. Discussions were also held with project supervisors to obtain feedback on the progress of each student. Overall, students provided useful feedback on the internship approach as coursework in the process of learning and teaching of Foundation and Concrete Works course. The effectiveness of the program can be seen as the feedback indicates that students have been able to learn various types of foundation and concrete works.

5.1.1 Types of Construction Learned

Students acknowledge that they can better understand the foundation and concrete works after the internship program. They witnessed how the construction process for each building structure was carried out. In addition to self-directed learning at the construction site, students also acquire technical and procedural knowledge of foundation and concrete works from site supervisors or project engineers. Students are also involved with briefing sessions with construction workers before work begins. This opportunity raises the awareness of students in the interest of adhering to ethics and safe work procedures at the construction sites. The type of constructions students have learned at construction sites throughout the internship process are as follows:

- Construction site clearance and excavation
- Compaction of the construction site
- Construction site preparation and setting out
- Pile foundation construction
- Pad foundation construction
- Formworks installation
- Placing and tying the reinforcement bar
- Construction anti-laying termite treatment
- Installation damp proof membrane on the concrete floor
- Concrete pouring, compacting testing and curing process
- Concrete defects and treatment
- Safety and health at the construction site
- Construction process of the ground beam, floor slab, column, upper floor beam, upper slab, staircase and roof
- Construction of retaining concrete wall and gabion wall
- Finishing works such as plastering, painting and tiling

The findings clearly show that students are able to study in-depth the construction process, especially foundation and concrete works through this internship program. In fact, they found that learning became more meaningful when they were able to relate theory in the classroom with real work practice on the construction site. The findings are in line with that proposed by Kapareliotis, Voutsina and Patsiotis (2019); Simons et al. (2012); Miller (2011); Narayanan, Olk and Fukami (2010); Beggs and Hurd (2010); Tynjälä (2009), in which they claim that internship helps students gain knowledge and skills related to work.

5.1.2 Important Experiences Learned

Students acknowledge that they acquire valuable experience throughout the internship period. This experience does not only enhance the technical knowledge of the foundation and concrete works but the experience gained enriches their soft skills. More importantly, they can better understand the working environment at the construction site. This finding is important as the early experience gained can reduce cultural shock when students are actually employed as suggested by Narayanan, Olk and Fukami (2010). In their study Narayanan, Olk and Fukami (2010) found that internship experience can reduce the reality of shock to students when engaging in the field of work. The internship also helps

students to socialise and acculturate. Below is the students' feedback on invaluable experience learned at a construction site:

- concrete work using static pump and crane
- the latest technology in the construction process
- high-rise building construction
- the practices of sustainability in the construction such as the use of aluminium formworks
- sustainable management at the construction site
- industrialised Building Systems (IBS) construction and installation
- learning the actual process of construction at the real-working setting
- enhance self-learning skills where students need to plan and organise learning activities taking into account various factors
- enhance communication skills at the various level at construction sites
- learning becomes more meaningful when students can relate the theoretical learning to practice at the construction site
- self-esteem increase markedly
- more confident when dealing with outsiders
- more motivated to gain knowledge in construction
- interpersonal skills
- leadership skills

5.1.3 Problems Encountered

The internship programme was also found to help create meaningful learning among students. Students have the opportunity to reflect on their experience and are able to provide useful feedback on the problems faced during the internship activity. This feedback, when taken into account, can help to improve the implementation of future internship programmes. The problems faced by students during the internship programme are as follows :

- arranging the appropriate time to carry out internship activities
- unpredictable weather disrupts learning activity on a built site
- the time allocation for internship activity is insufficient, thus the construction process cannot be learned until it is fully completed
- transportation to the construction site
- difficulty getting cooperation from industry
- difficulties to schedule time for the internship because of different member lecture schedules
- tight lecture schedule
- inadequate financial allocation for carrying out an internship programme at the construction site

The findings clearly show that students find the time allocated for the internship is insufficient. Students were not able to learn some of the construction processes until they are fully completed. Inadequate internship duration has also been reported in previous study conducted by Parvin & Meerza (2012) who found that the duration of the internship programme is insufficient. This situation made it difficult for them to arrange the internship schedule with the site supervisor/engineer. Thus, longer internship duration is necessary. The current internship duration of 42 hours should be extended to at least 48 to 96 hours on average as proposed by Okay and Sahin (2010).

5.1.4 Other Knowledge and Skills Acquired

The internship programme has provided many benefits to students. There are new knowledge and experience gained in addition to the scope of work specified in the course content. It turns out that the internship programme can enrich students' knowledge and skills. In addition to technical and procedural knowledge, students also acquire tacit knowledge, especially from site engineers and construction workers. The findings support that of (Wasonga & Murphy, 2006) who explain that knowledge can be deepened and strengthened through dialogue, discussion, sharing, experience and observation during the internship programme. These experiences allowed students to create their knowledge based on the site supervisor/engineer's tacit knowledge (Barbarash, 2016; Narayanan, Olk & Fukami, 2010; Erden, Von Krogh, & Nonaka, 2008). Here are other knowledge and skills acquired as reported by students:

- construction management
- the implementation of green technology at the construction site
- process of handover project to the client
- handling the building without pillars
- safety at the construction site

3.2 The Perceptions of The Students on The Implementation of The Internship Approach as a Coursework in The Teaching and Learning of Undergraduate Students

Students should be provided with the opportunity to articulate their thoughts and feelings about what they have experienced in the real-construction setting. In this study, there are two questions to allow students to evaluate their experience. Students were given full autonomy to determine their internship activity based on the guidelines that have been briefed in the class. They decide where to go for the internship, when to go and what to learn. What they have set together is what knowledge and experience they want to acquire throughout the internship process.

The findings showed that 31.4 percent of students perceived that their overall knowledge development was outstanding while 68.6 percent thought that their knowledge development was good. This is evidenced by student feedback in relation to various new knowledge related to foundation and concrete works. Students also explained that there is current technical know-how knowledge of Foundation and Concrete Work that is not available in lectures in the classroom. Perceptions of students related to the internship programme and the development of their knowledge are shown in Figure 2.

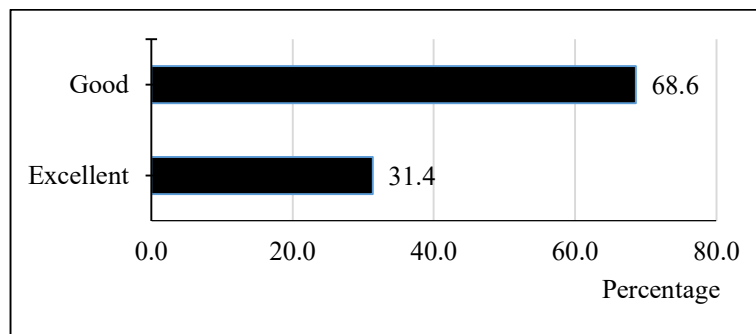


Fig. 2 - Students' Perception on The Development of Their Knowledge as A Whole

Students are also required to assess the implementation of this internship programme as a whole. For this purpose, one question was raised whether this approach has achieved their learning objectives, whether the programme is challenging or not giving any impact. Students were allowed to provide more than one feedback on this item. As shown in Figure 3, the findings show that 88.2 percent of students find that the internship approach in the process of learning of Foundation and Concrete Works can facilitate them to achieve their learning objectives. As one of the active and meaningful learning approaches, Wrenn and Wrenn (2009) assert that the internship can help students achieve their learning outcomes. However, feedback from 33.3 percent of students showed that the internship approach in the learning process was challenging. This finding is in line with result reported by Rangan and Natarajathinam (2014), and Lam and Ching (2007) which emphasises that the internship programme is an exciting and challenging learning approach.

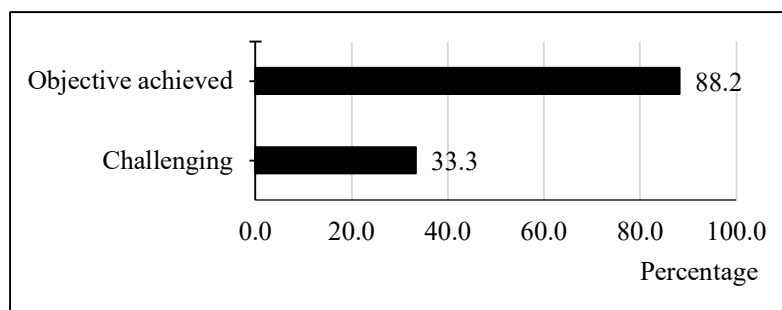


Fig. 3 - Student Assessment on The Overall Impact of Internship

4. Conclusions

This study aims to evaluate the implementation of internship in the teaching and learning process of vocational education courses for undergraduate students. The findings of this qualitative study found that the internship can increase the technical knowledge and soft skills of students. Besides, students are also found to be able to acquire implicit knowledge through guidance from site supervisors/engineers. In contrast to the conventional method, the internship implemented as one of the methods of coursework has been designed in such a way as to allow students to acquire knowledge effectively from the experts in the building construction, position their learning in the actual environment of practice, learn invaluable knowledge and skills in Foundation and Concrete Works which could not be acquired in the conventional classroom settings. The findings of the study are very helpful in helping TVET institutions

to successfully conduct internship programme. By taking into account factors such as knowledge and skills to acquire, appropriate industry and duration, the internship programme is able to achieve its ultimate goal of providing real-world exposure to students before they graduate.

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