ABSTRACT

Following the economic downturn in 2009, Singapore has undergone several years of restructuring. Besides tightening labour conditions, the nature of jobs is also changing. In 2013, 15,100 or 2.3% of degree holders were under-employed, possibly due to two factors: first, structural unemployment; and second, job polarization. With a mismatch of skills and industry requirements, it is not surprising that four in ten Singaporeans laid off in 2014 were degree holders. An integrated work study programme (IWSP) was designed and implemented at the Singapore Institute of Technology (SIT) to address such challenges in graduate employment. SIT is the first university in Singapore to implement such a programme. IWSP will provide students with the opportunity to be immersed in a real work environment, allowing them to integrate theory and practice and develop deep specialist skills in their chosen field. The IWSP is structured in a unique and distinct way for each degree programme to cater to the specific needs of the industry, developing industry-ready graduates. Students will undertake 8 to 12 months of relevant work within the course of their studies. IWSP is compulsory for all students in SIT degree programmes. The paper explains this new model of work-integrated education and gives examples of the successful implementation of such a programme in an Asian context.

INTRODUCTION

The financial crisis of 2009 proved once again the vulnerability of small city states like Singapore. In tandem with the world’s economy, Singapore’s economy took a dive. What showed up quite clearly was the lack of cost competitiveness and over reliance on foreign labour. In the ensuing years, Singapore’s economy underwent a restructuring to regain its competitiveness. Policy decisions were made to regulate the influx of foreign workers to ensure sustainability. With the source of cheaper labour constricted, local companies had to move up the value chain to provide higher added value and more innovative products and services. Efforts in cost reduction, however, have not been successful as rental and manpower costs continuing to rise.

Structural Unemployment and Job Polarization

Consequently, labour intensive industries begin to relocate to lower cost countries in the region. Manufacturing bore the bulk of the crunch. More capital and skills intensive industries began to take their place. This led to a mismatch between the skills possessed by workers whose industry has shrunk and that sought by the new
growth industries. Simply, the nature of the job has changed, producing what is known as structural unemployment.

Another common industry response to the ongoing economic restructuring is to reduce costs by automating some job functions or outsourcing them to specialist firms in lower cost locations overseas. These jobs tend to be well-paying, mid-level jobs held by university graduates. Most of the remaining jobs would either be highly skilled (well paid) top positions or unskilled jobs (lowly paid) at the bottom. This results in job polarization.

University graduates received a good education; hence they can usually find another job. However, it may be part-time, lower skilled or lower paying than their previous position. This is considered underemployment, which is defined as graduates clocking 35 hours of work or less a week even though they want and are available to work more hours. Underemployment reflects underutilization of the productive capacity of the labour force. Time-related underemployment, which is the only internationally accepted statistical definition of underemployment, examines the extent to which a person is insufficiently engaged in employment based on hours of work. Specifically, it refers to persons working part-time but are willing and able to engage in additional work. Conceptually, there is also underemployment where the employment does not make full use of, or pay according to skills that workers could offer. This is more difficult to measure due to the subjectivity involved.

From the report “Labour Force in Singapore 2013” published by the Singapore Ministry of Manpower, some 15,100 degree holders were underemployed in Singapore in 2013, up from 13,000 in 2012. This represents 2.3% of all employed graduates (2013) increasing from 2.2% in 2012. What is equally worrying is that university graduates are more likely to lose their jobs. The 2014 report revealed that they made up four in ten of the workers who were laid off in 2014, up from one third in 2010. This could result in an economy with over-educated but underemployed workers, an emerging trend in countries such as South Korea and Taiwan.

SINGAPORE INSTITUTE OF TECHNOLOGY’S RESPONSE

Persistent underemployment among graduates will raise questions about how well universities are preparing students for the working world. Are degree programmes in sync with employers' needs? This explains the recent push in Singapore to tailor output that is relevant to what the market demands. With the continuing economic restructuring and keen international competition, companies in Singapore are faced with very short lead times to launch and ramp up their business. It is important for universities to educate students in such a way to equip them with the necessary skills to serve the needs of the industry upon graduation and take off with the company with minimum runway. The Singapore Institute of Technology (SIT) is pioneering a new work based learning model, named the Integrated Work Study Programme (IWSP), to meet this need.

What is the Integrated Work Study Programme (IWSP)?

The IWSP is a compulsory programme designed to produce practice oriented graduates to meet the industry’s skilled manpower needs. In IWSP the student works
in a host company, in an industry relevant to his course of study, for at least two trimesters, each trimester comprising sixteen academic weeks. It is an integral part of applied learning and allows the student an opportunity to integrate classroom learning with what is practiced in the real world, and vice-versa. It is designed to meet the academic rigour of professional accreditation or to count as work experience towards meeting such requirements.

With this extended work stint, the host company would be able to train the student to execute tasks performed by its own similarly qualified employees. It allows the company to assess the suitability of the student for employment, effectively making it equivalent to probation. The student will also have ample opportunity to immerse in the company’s culture, understand its business, and decide if it’s the company he should seek employment with.

During IWSP, the student is encouraged to initiate innovative projects or projects aimed at improving productivity at the workplace. He will be mentored by a SIT faculty and a supervisor appointed by the host company. This allows the student to apply his knowledge to real work situations and enhances his learning and industry skills.

**How is IWSP different from traditional internship?**

The majority of SIT students come from the polytechnics and are diploma holders. Polytechnics in Singapore provide 3-year diploma courses. The Polytechnics provide a more industry-oriented education and offer a wide range of courses in various fields, including engineering, business studies, accountancy, hospitality management, mass communications, digital media and biotechnology. They admit students from secondary schools who have completed their “O” or “N” Levels (equivalent to year 10 or 11 respectively).

The SIT student is thus work ready. So, although he may have the status of an intern, he is expected to perform the same tasks as other diploma-level employees and is immersed in a real work environment. A necessary condition for IWSP is adequate time for work induction and training, and subsequently, sufficient time for productive work. However, this has to be balanced against extending the undergraduate degree programme beyond the norm of three to four years. Feedback from industry partners indicated that the optimal duration for IWSP would be between two and three trimesters, the equivalent of eight to twelve months.

This is contrasted against traditional internship which is to provide the student with an appreciation of the working environment. Most internship are too short, being a few weeks or a couple of months, to induct and train the intern to be as productive as an employee for the expense and effort incurred. As he is not an employee of the host company, he is often assigned tasks or projects that do not contribute directly to the company’s business. Such tasks or projects vary greatly in scope and relevance to his course of study.

IWSP is fundamentally different from internship as the intent is for the student to be immersed in a real work environment. The student goes through the same hiring
process as would an employee, submitting job applications, presenting himself for interviews, and being inducted and trained should he be selected.

**A platform for applied learning**

IWSP is an applied learning platform for achieving the following educational objectives:

1) Equip students with career and job skills
2) Allow students to apply theoretical knowledge to practical problems at work
3) Provide students with skills to innovate at the workplace

In addition to meeting academic requirements, these objectives contribute to educational outcomes such as SIT’s goal of imbuing its students with the SIT-DNA, namely a) Thinking Tinkerer b) Ability to Learn, Unlearn & Relearn c) Catalyst for Transformation and d) Grounded in the Community, and where appropriate, form part of the academic programme for accreditation purposes. It is only being fully immersed in a real work environment, provided through IWSP, will the student be able to achieve these objectives.

The IWSP is customized to the specific need of the degree programme and the industry it serves. Take the degree programme in software engineering for example. To integrate the study component into their work experience, students will return to the university two mornings a week: one morning to consult their professors on their capstone project and to highlight their progress at work, and the other to attend flipped classes. During flipped classes, students will be able to bring their real work experience into the classroom for discussions. Ideas and solutions generated from these classroom discussions can then be brought back to their host organizations to promote innovation in the company.

**Student supervision**

Unlike in traditional internship, IWSP students may be supervised by more than one faculty supervisor. Besides the faculty member teaching in the student’s degree programme, there would likely be other staff as the learning objectives are diverse, eg. there may be “innovation supervisors” to coach the students in innovation skills. The host company would also assign a work supervisor.

Owing to the nature of IWSP, the faculty supervisor would have to actively coach the student at least twice a month, whether at the host company, on-line or on campus. This is necessary to ensure the attainment of career and job skills, academic rigour when integrating knowledge with practice and the proper application of innovation skills. Doing so entails higher manpower requirements than traditional internship.

**Academic rigour**

Students undergoing IWSP have both general and specific learning goals. Students in a given degree programme would have common goals. They would need to meet
university objectives such as being imbued with the SIT-DNA, and also professional requirements such as accreditation. Specific goals are specific to the host company. The student would have to determine, jointly with his faculty supervisor and work supervisor, these specific goals. These goals would allow the student to settle into the host company and perform the real-work required of him. The faculty supervisor would have to work very closely with the work supervisor so that they can work as a team to supervise the student.

IWSP is compulsory and credit bearing. It counts towards 20 credit units and is graded on the quality of the assignments submitted, which include:

a) Student Logs – These are a record of the student’s activities during IWSP and should be verified by the work supervisor.

b) Reflection essays and work-based assignments – Students are expected to reflect on how knowledge is integrated with practice in a series of reflection essays. There may be additional assignments from IWSP supervisors based on the work being done by the student for the company to draw out additional learning points.

c) Innovation progress reports – The innovation process involves several distinct phases and students will submit progress reports in tandem.

The student would also be assessed on his suitability for the job by his work supervisor. The ability to perform in a real work environment is critical to ensuring that he is work-ready. Hence, he must pass this assessment.

**Professional certification**

During IWSP, the student will have the opportunity to accumulate the required hands-on experience in a chosen field of specialization. A student enrolled in the Sustainable Infrastructure Engineering degree programme, for example, will also have the option to undertake Non-Destructive Testing Level II or III (NDT) certification, (ISO 9712, in collaboration with the Non-Destructive Testing Society of Singapore) so as to enhance their industry-readiness. He may then choose a host company offering NDT services to gather the necessary experience necessary for certification.

**INDUSTRY FEEDBACK ON IWSP**

SIT’s first batch of students enrolled in the accountancy degree programme has embarked on their IWSP. Most host companies deploy the students as the equivalent of audit associates (year 1), working independently, whilst the others pair the students with a senior associate. Students had the option of either a continuous 8-month or two 4-month stints. This customization follows industry feedback that the auditing peak period is from January to April. Some audit firms prefer students to come in during the peak periods whilst others prefer students to come earlier in September so that they can be trained in the firm’s procedures before embarking on the audit. So, for a student who has opted for two 4-month stints, he would have worked through two peak periods and would have clocked the equivalent experience of an associate (year 2). This ensures that he is work-ready when he graduates.
From the company’s perspective, having the student fully immersed in the company for 8 to 12 months allows the student to contribute to longer term projects and sufficient time to pick up the relevant specialist skills on the job. The company would have adequate time, more than the typical employment probationary period of six months, to train and assess the student. Should the student excel in his work, the company would have the opportunity to offer him a full-time position before he graduates. When the graduate returns to work for his host company, he can hit the road running. This is the key feature in IWSP meeting industry’s skilled manpower gaps.

**CONCLUSION**

This paper introduced an innovative work based learning programme named IWSP where an undergraduate student spends between eight to twelve months with a host company, immersing himself in a real work environment. IWSP allows the student to apply theoretical concepts in work situations, work on productivity improvement projects and facilitates his picking up specialist skills relevant to his host company’s business and his chosen profession. Through this, a steady pool of graduate manpower is being raised to bridge the gap in skilled manpower that has arisen from the economic restructuring in Singapore.