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Learning in an Industrial Practicum Training Program: A Case Study in a Public University in Malaysia

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Abstract: This study investigates on the learning processes and learning outcomes from the undergraduates' perspectives after completion of their practicum attachment in the industry. Adopting a qualitative design approach, in depth interviews were carried out on 12 students, specifically from the Operations Management Program, Faculty of Business Management of a local public university in Malaysia. Learning in the practicum training was evidenced through various learning processes as described by the informants such as: learning through observing, doing authentic tasks, problem solving, social interactions, experiences and through feedbacks. This study revealed that these trainees acquired job-related knowledge (cognitive outcomes), developed related work and hands on skills (psychomotor outcomes) and acquired work values at their workplaces. However, there are areas for improvement to enhance the quality of practicum training such as the curricular structure of the industrial training program, proper placement of undergraduates and guidelines for practicum training for both the students and the organization so as to enhance the human capital development of these potential new executives for the global business in the future.

Key words: Industrial Training · Training and Development · Learning Theory · Learning Outcomes

INTRODUCTION

Universities today generate business graduates who are hardly trained in business operations. Graduates hold a compartmentalized view of the conduct of business as subjects and the present curricular program are taught in unconnected and unsynergistic manner [1]. Local institutions of higher learning should attempt to develop programs that match future skills and knowledge requirements of global businesses in the 21st century and integrative learning processes that not only emphasized on functional skills but also to inculcate communication skills, the ability to learn continuously and operational focus within the graduates.

The industrial practicum training in the academic program structure aims to provide students with practical exposure, work experience and skills as these are only available at the real work place in the organizations. Given early training exposure through attachment in the industry to these undergraduates will provide the opportunity for them to learn work skills, develop competence, gain work experience before they graduate and enter the job market [2].

The importance of industrial training program is now gaining attention in the academia and it is an essential component in undergraduate courses [3]. Universities, graduates, government and the private sector can enhance the chances for graduates of being employed through internships and preparation platform for transition from university to world of work [4, 5]. It was recommended that the higher education curriculum should develop human resources who can think creatively, able to comprehend issues in the context of societal realities and develop professionals with managerial skills. Hence, internship is made mandatory for a minimum period of six months for undergraduates [4]. With this background, it has prompted the researcher to carry out this study to investigate the learning processes of final year students undergoing the practicum training. It also aimed at assessing their learning outcomes with respect to the cognitive development, behavioral and skills development and attitudinal outcomes upon completion of the industrial training in the industry.

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Statement of the Problem: General assumptions were made that students whom have gone for industrial practicum training had benefited from the program as they would learn something during practicum. There were no substantiated evidences on the effectiveness of industrial practicum training; there had been no study carried out in the faculty of this local public university to evaluate the industrial practicum training and to determine its effectiveness in meeting the program objectives and fulfilling the students' needs. It was also commonly heard that trainees were not really learning in the practicum training as they were given menial and clerical tasks and they were treated as extra hands on the jobs. Previous similar studies by other researchers revealed low mean scores on the responsibility from both host organizations and the faculty or the institution towards industrial training; trainees' feedbacks were received such as unclear training objectives, scope and nature of training at the work place and inadequate evaluation [6]. A research survey carried out by the researcher on two batches of practicum trainees in 2005 - 2006 in the same institution revealed 70% (233) trainees have benefited from the practicum and described their training as effective [7]; but this study lacked in depth details on their learning processes. There was also no report nor baseline information on students' satisfaction level on the industrial training program as required under the Quality Assurance Academic Standard from the Ministry of Higher Education [4]. The present evaluation in the industrial training program was inadequate as it did not assess the "learning" and "behavioral level" of the students; it was mainly based on the evaluation of the trainee's work performance by the supervisors in the organizations. Henceforth, this study focused on the trainees as subjects of the study since they were solely responsible for their own actions and learning. Gaining an insight into the trainees' thoughts, their feelings and experiences would help to understand how the industrial training contributed to their cognitive development, behavioral and skills development and attitudinal values based upon the realities at their actual work places and reflecting upon their encounters, work experiences during the learning processes.

Research Objectives/Questions: The purpose of this study was to investigate on the learning processes and students' learning outcomes in the industrial practicum training. The research questions are:

- How do trainees learn in the industrial practicum training?
- What are their learning outcomes in the practicum training?

Literature Review: Today's competitive business environment places demands on graduates that cannot often be provided within the academia. Business and education must cooperate to create more real world opportunities for students. Employers and academic researchers have identified a major gap between corporate needs and graduates skills that shows that graduates have little real world experience and need to practice communication and problem solving skills. Graduates need opportunities to work in teams to develop initiative, persistence and integrity [8]. There is a need for both university training (for disciplinary knowledge) and on the job training (for practical knowledge). It is necessary to incorporate exposure of the work place into the university context. There is a need to help students move from the general (book knowledge, theories) to the particular (real clients, real work place) as they move from the university to actual practice situations [9]. Employers expect graduates to have already possessed some skills at level of finesse and expertise that are rarely available in a university setting. Providing exposure and real world experience can help improve graduates' capabilities through internships, apprenticeships or industrial training attachment. Students who have gone for industrial or internships reported of significant learning outcomes, their communication skills improved and exhibited significant personal growth [2]. Formal education is no longer sufficient to guarantee one's future, let alone job employability.

Industrial practicum training involves three main parties; firstly, the trainee undergoing the practicum, secondly, the facilitator from the host organization and thirdly, the institution that requires practicum requirements. Host organizations are organizations that voluntarily provide training for the undergraduates to facilitate trainees with job related competencies through OJT. Host organizations are expected to provide adequate training, job skills and work experience to these trainees at the work place so that it is meaningful for the trainees to gain work experiences. on the other hand, the trainees expect to acquire much practical knowledge, gain experiences, job skills from the training; the institution expects the organization to provide training opportunities and also hopes the trainees acquire as much skills and

knowledge in the training. Practicum provides the activities, the context and culture of the organization for practical learning in real situations [10]. Basically, the institutions and the industry expect the students to maximize learning through applications and practices, to assist in the organizational works and operational tasks and activities and to be involved in problems solving. However, the execution on the practicum is the onus of the host organizations and institutions have not much intervention in the conduct of training for their students. Thus, adopting a negotiating interest approach in program planning, institutions can play some active roles in planning the industrial training together with the organizations [11]. There is a concern for the institutions to improve on their roles and managing the industrial training program, as well as to strengthen the industrial training program from the academic and learning perspectives [3].

The high demand for skilled human resources can be met by producing graduates who are equipped with knowledge of work processes and practical skills at every level. Thus, students should be required to undergo practical training in the private sector so that they would be able to acquire practical work experience [4]. There is a need to produce qualified and competent graduates that corresponds to the needs of the Malaysian development economy; thus there must be a strong emphasis on English and a practical approach to learning [12]. From human resource development perspective, industrial training emphasizes on job focus and the human itself. It is application driven and aims to impart skills that are useful immediately in particular applications at work or real life situations. It serves to develop a person towards some form of positive growth that embraces the realities of environment, as well as to achieve organizational goals and objectives and actualization of inner reality of emerging self [13].

The key role of the facilitator is to structure the learning experiences and activities for the trainee [14]. An effective learning results when 1) the program is based on the needs of learners, 2) these needs form the basis of educational objectives, 3) knowledge is external to the learners, 4) objectives are the basis for organizing learning experiences, 5) the emphasis of learning effort is on the individual learner [15]. Objectives of a program are commonly defined in three learning domains: 1) cognitive domain deals with knowledge and the development of intellectual abilities and skills; 2) affective domains describe changes in interest, attitudes and values and 3) psychomotor that includes all the human senses and their dimensions [16]. OJT is suitable for new, inexperienced trainee learning through observing peers or managers performing the jobs and trying to imitate the work processes or behavior. OJT involves intentional learning; it is a good training method where the facilitators are managers or peers who are job knowledge experts.

Cornford and Athanasou [28] stated that effective learning occurs within a specific, natural workplace where there are clearly visible models of applications involving theory, skills and attitudes. Also, they added that trainees should be exposed to levels of difficulties commensurate with their understanding; opportunities beyond a mere demonstration of competency and mastery level should be provided for them to practice; trainees should be exposed to situations with examples of incorrect skills applications and errors in process application available as negative examples. The engagement in problem solving activities is also central to the cognitive development of a trainee where learning is extended and reinforced and this is extended along a continuum of routine (frequently encountered) to non routine (new problems or unfamiliar cases). The more non routine the activity, the more likely it will lead to new learning. The routine activities provide learning through reinforcement that strengthen the existing knowledge and enhance the confidence of trainee to proceed with other tasks or problems [17]. Graduates that are employable need to possess generic skills, not only good communication skills but they need to have impetus to keep on learning in an environment that is knowledge based, examples: the ability to search for information and utilize it to make decisions, the ability to use technology and the ability to comprehend social issues and their links to individuals, organizations and business [4]. The socio-cultural perspective of a work place also accentuates learning; the contributions of the experienced workers and guidance must be acknowledged towards mediating the learning process for the trainee's development [18].

Learning is the process whereby knowledge is created through transformation of experience; the interaction between content and the experience whereby each transforms the other [19]. Experiences that provide learning are never isolated events; the learner that must connect what they have learnt from the experiences from the past and reflect on it. Students are learning new roles as a trainee, a worker, a subordinate in the organization [13]. Training and learning in industrial attachment is a

new experience for trainees as it is a totally different learning environment and setting [9]. A trainee engages in learning tasks as an entrant into a new organization: learning in OJT, social learning and informal learning. Hence, the trainee's characteristics: motivation-related constructs (motivation to learn and transfer learning); ability constructs (knowledge acquisition, situation identification and personal capacity to transfer) also known as self efficacy affect learning effectiveness [20].

MATERIALS AND METHODS

A qualitative design was suitable for this study as this area needed to be explored and to present a detailed view on industrial training in its natural settings [21]. The researcher was the instrument of data collection gathering words, analyzed them inductively, focusing on meanings of participants and described the process that was expressive in language. The context of the study was seeking an in depth understanding on the trainees in the industrial training program; focusing on how they learn, what did they do, how and what they encountered, how they solved problems and what experiences that impacted their learning. The nature of the interview questions was predominantly probing with what and how [21]. For examples: what were the tasks carried out, how the work activities were carried out; how was it delivered; how did they handle pressure and what did they feel. The snow balling technique, where each informant was asked to propose one name of his course mate whom he knew (or heard) that the industrial training was effective to that particular person was adopted. The researcher adopted in depth interview technique on purposively-selected informants; transcribed with due care and caution for each interview recording, analyzed data using constant comparison method, back and forth through each transcriptions and each analysis, formed keywords, categories and themes, repetitive checking and reported the findings as explicitly precise and descriptive as possible [22, 23]. To ensure validity and precision of data, members check technique was used where transcriptions were given back to the informants to verify their statements and its accuracy.

FINDINGS AND DISCUSSIONS

Findings of the study revealed that trainees had high expectations from the practicum and were motivated to learn new things in their tasks. They learnt new knowledge, skills, values in the context of applications in real life situations and this concurred with Knowles, Holton and Swanson [13]. All trainees described that they participated actively in work activities that brought changes in them [19]. Trainees were found to demonstrate evidences of readiness to learn new things and were able to cope effectively with their real life situations; as described by Knowles, Holton and Swanson [13] that young adults have a self concept of being responsible for their own decisions. Analysis showed that these students were self directed learners who take primary initiatives for planning, carrying out and evaluating their own learning experiences. Even though, at the early stage the trainee was dependent on the facilitator and required close supervision and coaching, but when they had adapted the work culture and involved in the system, the trainees were in control of their learning and the facilitators only needed to monitor them. Trainee, Mariam said:

Industrial training is good. Many companies when looking for candidates, even though there is no working experience, at least they pick those with industrial training. It's true, really true, I did asked the company: it's better off, at least we (trainees) know a bit how people work, how to face situations, in practical.

The learning processes in the industrial practicum training were commonly informal; of which they were: observation, doing authentic tasks and activities, problem solving, social context in the work environment, self directed learning, experience, feedback; and the learning outcomes were demonstrated by the trainees.

Learning in Observation: The trainees described their initial learning was from observing others. This concurred with learning in observation and listening to others at the work place as one of the effective contributors towards work place learning [18, 19]. Trainee, Wani reiterated:

I started off with the first project: improving the information system, soft copy and hard copy …it was difficult to retrieve, they can't find it …so what I did was, I look through first a few files, look into the system, what's wrong with it, how it can be improved partitioning or …they gave me 2 days to analyze the situations …present what was wrong with the current system; how to improve.

Learning in Doing Authentic Tasks and Activities: Participating in everyday activities in the work place is a rich source of learning the knowledge required for completing the tasks [18, 13, 24, 25]. Participation in every

day work activities, observing and listening to others and the work place are components of the learning curriculum at the work place. Based on the data analysis, the trainees' contributions were obvious in the workplace and these contributed to learning; it became part of their conscious experiences. Doing work activities, the trainees learn as these were sources of knowledge construction. Another trainee, Sarah, mentioned:

We Were Rotated Every One Month: For the first one month, we did the basics and daily management. Their intention was to let us know first what was going on in the Park. The supervisor taught us, we learnt: how to use the tools, how to do the packaging. Then we went to Admin department: we learnt about Daily Cash Sales Report, how to do P/O. The third week, we're in Operations. Ok. We did vacuuming the pool, treated the water with the chlorine, how to wash the slide. We also handled event management on weekends, preparing banners, chairs and tables, backdrops, electrical, PA system and games for the customers.

Learning in Problems Solving: Trainees were placed in various departments such as production planning, quality control, occupational safety and health, operations, purchasing to mention a few. The trainees carried out routine tasks that provided learning which strengthened and reinforced the knowledge and enhanced their confidence to proceed with the next tasks. This data supported that engagement in problem solving activities is central to the cognitive development of an individual [2] Harris said:

There was one day, the clerk did not come to work for two weeks because of suspected dengue. She is the only person who knows the Client online system. The secretary and myself were not used to the system, we tried but cannot do. So we called another clerk on the other factory, so I learnt bit by bit from this clerk… only after that, we could print Number Order: we gave it to the storekeeper to get ready the parts. If I did not do it, I wouldn't know till I did it.

Learning in Social Context and Work Environment: Positive working relationships with coworkers and supervisor assisted the trainees in learning culture through understanding the organizational norms, values and work styles. Learning through social context at the workplace, a new comer adopts the informal systems, the roles people play, the "taboos" of the organizations, why tasks are performed the way they are and making sense of daily experiences of organizational life [13]. Trainee Leslie confirmed this.

I learn to be punctual. For me, one thing was punctuality and the last time being a student, I took it easy. I learnt anger management. The work was too much. When, I was so stressful, I easily got angry, I would stomped around, threw things around, but in working, I couldn't do that, I had to be more professional even I was angry. I had to relax, do steps by steps because if you were angry, tendency to make mistake was even bigger. That was the whole thing I learn. I also learnt how to approach the workers there, many personalities….

Activities and work environment are integral to cognition and learning. Practicum, internship or apprenticeship embedded learning in activities and make deliberate use of the social and physical context [10].

Learning Through Feedback: Feedback to the trainees is an essential part of the learning process. Feedback provides useful feedback information about the trainer, assess levels of knowledge, skills and behavior improvement, evidences of transfer of learning back to the work place of the trainee, determine the extent to which the objectives have been met and to gauge whether the program is effective for future improvement. Trainees were receptive to feedback as they described of being monitored, assessed by their superiors and peers. They feared most when no feedback was given, as they perceived that the management would not be bothered about them.

Learning Through Experience: The trainees shared their experiences with keen enthusiasm. "Experience is always the starting point of an educational process; it is never the result" [24]. Experience has been acknowledged as a rich source of learning for adults [24]. Learning from experience is an act of becoming aware of the experience, building upon it, extending it and in the process creating new experiences which become part of what we know. Quoted from trainee, Alam, she stressed:

I prepared the daily schedule for all the machines, starting from November, because in December there is an ISO audit. So, I have to help. There are many documentations and I audited, start from there. People sneered at me that I would not be able to cope with all these but I just ignored them because I want to get that experience.

Self Directed Learning: A trainee, Rose, reiterated that she learnt many things on her own effort; quoted:

I had to publish newsletter as part of my job. I was not well versed in power point and I learnt a lot from the HR manager He taught me initially using the power point, so when I did that, I'm totally on my own. So, it was up to me, the creativity, the font, the design, the points I wanted to put in, the latest news and all that. I finished the whole set and got him to endorse.

Learning Outcomes: Students in industrial practicum training demonstrated strong desire to learn and to develop oneself in the organization. The study showed that trainees demonstrated cognitive development in terms of job knowledge, behavioral outcomes through the job skills and their abilities to carry out works and attitudinal values relating to their respective organizational values. The findings concurred that the development of an individual involves learning, thinking, doing and feeling [25].

Cognitive Outcomes: All the informants in this study were confident when relating their specific job knowledge with composure on how to carry out tasks, the knowledge of the organizational products, services, understanding of the internal processes and the working system. The learning perspective as seen by the trainees were autonomous, growth oriented, exhibited confidence as a worker, developing sense of responsibility and commitment in execution of daily tasks. From the context of human development, it expands the trainee's potential to take a future role within the organization.

Behaviorial Outcomes: Students demonstrated the acquired skills as compared before they went for the practicum training. Trainees such as Harris, Wani, Mila, Alam and Leslie concurred that they had improved their ICT (Information, Communication Technology) skills, management skills on the job. As mentioned by Schon [26], learning brings about desired change in behavior in individuals and adapting to the communities of practice.

Affective Outcomes: All informants revealed that they have improved themselves in time management, sense of responsibility, ability to work independently with minimal supervision, maturity, listening to people, ability to work under stress, making productive contributions to the department. For instance, trainee Alam and Harris both shared the same affective outcomes:

I've learnt a lot on safety, machines, chemicals, products, time management skills. Situations in learning and working were completely different. In working, we felt it was our responsibility to complete our tasks…. whatever jobs they gave me, we can know ourselves better, our capability in solving problems, are we dependent or not? …we see the reality.

CONCLUSION

The trainees demonstrated the ability, the desire and feelings to accomplish tasks assignments. They revealed a strong sense of responsibility towards their tasks. Their self concept for being accountable lead them to be self driven and proactive in accomplishing the task despite problems, obstacles and pressure faced by them in the organizations. Evidences such as self directed learning, learning in doing, solving and experience contributed towards their learning outcomes. The learning outcomes were observable changes as described and experienced by the trainees: the knowledge gained on organizational works and systems, behavioral outcomes in job skills and personal development in the trainees, values and self growth. In conclusion, the industrial training and learning were effective for the trainees. For a practicum training to be effective, this program requires collaborative efforts from host organizations and institutions so as to provide opportunities to expose these students towards future global business. Therefore, the institution, the host organization, the trainees and the facilitators play important roles in making the practicum training effective.

Implications: There are several implications that need to be considered by industrial training coordinators in the institution and the facilitators in the organization:

Selective Practicum Attachment: Proper selection of host organizations is important for practicum. The choice of organization and practicum attachment must satisfy the trainees' interest and their needs as these affected trainees' motivation and participation in training. Training allowance, transportations and accommodations also need to be taken into consideration. For the host organization, proper selection of trainees such as their capabilities and interests was important to cater to the departmental needs and requirements. The host organization must determine the practicum objectives and academic program requirements as practicum training involved management time, commitment, mutual responsibility and support from the facilitators and peers at the work place.

Transfer of Learning: The learning curriculum was the catalyst that triggered learning in an effective practicum where there were provision of authentic tasks and activities, problem solving, real work situations, social interaction, experience, provision of feedback and evaluation. It was obvious that transfer of learning had occurred within the trainees through the OJT and also linking their institutionalized based learning to the workplace.

Practicum Learning Curriculum: There is a need to establish proper training guidelines for the conduct of industrial training program, to review the practicum structure, training duration, scope, content and learning curriculum, the training evaluation focusing on the trainees' learning outcomes and job employability skills. It can become a basis for designing a better industrial training structure or program. The findings of this research have to some extent managed to identify the gap between the host organization and the institution. This study provides recommendations to strengthen the linkage between the institution and the industry; the institution needs to keep abreast with the technological advancement, good management practices and expectations in the organizations and the real working world and that the academic curricular structure must be relevant to the market and industry needs and towards global business.

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