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Exploring the Authentic Teaching and Learning Experience of the Apprentices of the National Dual Training System

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ABSTRACT
The study is a concept paper on the authentic teaching and learning (T&L) experience of the National Dual Training System (NDTS) apprentices. The authentic T&L emphasizes on the two learning aspects centred on trainers and apprentices. This is because the success of of authentic T&L can only be experienced with active participation from the trainers and trainees. An apprentice would not just learn the theoretical aspects, but they must know how to apply the practical aspects, and perform the positive social values within the time allocated. The learning atmosphere allows the apprentice to combine the practical and the theories from the formal education and apply it practically. The research explored and explained a few autehntic T&L models that were often debated and applied in past research that could form as the background for future studies.
Keywords: Teaching And Learning (T&L), Authentic, National Dual Training System (NDTS)

INTRODUCTION

Authentic T&L is an approach that aims to enhance the trainees' motivation and learning experience by creating T&L activities that reflect real-life situations (Bennet, et al., 2005; Borthwick, et al., 2007; Wagner, 2008). Apart from that, authentic T&L takes into consideration the perspective of the trainees by adjusting the learning content to make it more meaningful by assigning them with tasks that are similar to actual job tasks (Andersson & Andersson, 2005). This type of learning environment allows the trainees to merge the concepts and theories from formal education and apply them to actual situations (Bennett, et al, 2005; Borthwick, et al, 2007). The apprentices are not only exposed to knowledge, but they could directly relate the theories to real job tasks, and nurture the embedded values, which indirectly provide them with invaluable experience (Granton & Garusetta, 2004).

The involvement of apprentices in teaching activities and authentic learning are major resources that proved to be more meaningful than knowledge that were sourced from theories only (Billet, 1996). It is reiterated by constructivism philosophers that apprentices could form their own knowledge through experience gained. It is also supported by Reeves et al (2002) who states that knowledge gained through theories only was not enough in authentic T&L. In

fact, authentic T&L could accurately define any term and be adjusted to real-life situations (Brown et al, 1989). Hence, in authentic T&L, trainees should be provided with access to actual framework used by practitioners or experts in a field (ibid). Lave & Wenger (1991) state that trainees should be proficient in the basic elements of their chosen field. Through authentic T&L, apprentices would be more inclined to believe that each problem could be solved, and may even have various solutions. The more exposure they get to the real environment, the faster they build their knowledge and skills as practiced by professionals (Lombardi 2007). This paper is to identify the authentic T&L model for the apprentices of the NDTS program.

RESEARCH METHODOLOGY

The research is a conceptual paper research based on literature review by analysing the works of past research. Analyzed documents include journals, reference books, proceedings, reports, dissertations or theses from local and international sources. The findings of the study are based on secondary resources that have been documented. The conceptual research paper applied the traditional approach by synthesizing past research and reporting it sytematically for statistical integration (Leedy & Ormrod 2010). All information in this research review allowed the researchers to observe the development of the study based on information and past literature on the issues and problems that were studied.

AUTHENTIC TEACHING AND LEARNING

The type of education system that is teacher-centered was found to be too passive and the effect towards developing the knowledge of apprentice was moderate, as the T&L activities were confined to the classroom (Nicaise, Gibney, & Crane, 2000). The statement is supported by Rule, (2006); Herrington, Reeves and 0liver (2006), who reiterate that teacher-centered lessons gave negative impact as the apprentices lacked initiatives to learn. Therefore, authentic T&L that is learner-centered is an important approach in developed nations like German and America in producing human capital that are innovative, competitive, and highly skilled (Petraglia, 1998).

Constructive learning environment is known to provide space and opportunities for trainees to develop their knowledge actively by integrating their existing experience to new experience to develop new knowledge (Duffy & Jonassen, 1992; Jonassen, 1991). Thus, authentic T&L is needed to improve the quality of learning in the classroom to produce trainees that have better, more concrete understanding and knowledge based on the theory of constructivism (Barab et al., 2000). Meanwhile Maor (1999) claims that constructivism-oriented learning programmes can only be implemented within the setting of authentic T&L.

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THE DEVELOPMENT OF AUTHENTIC TEACHING AND LEARNING

Authentic T&L at training centers began to draw attention since the 1980s (Rule, 2006). However, it was not thoroughly implemented, as there were still gaps between theoretical education and teaching practically (Herrington, Reeves, & Oliver, 2006), and between the learning experience at training institutions and real-life learning application (Stein, Isaacs, & Andrews, 2004).

Past research by Resnick (1987), Brophy (1991), Brown (1997), Herrington & Oliver (2000), and Leveson (2000) found that the teacher-centered teaching approach did not expose apprentices to problem-solving in the context of real life as the focus was on passive learning theories compared to active participation. Thus, what they learned in the classroom was not easily transferred to what needed to be done at the workplace. Hence, the need to shift to a better approach was required, in the form of authentic T&L (Betty, 2012).

In the attempt to close the gap between classroom learning and its link to the actual working experience, the better approach is to prepare an apprentice with authentic learning surroundings. As explained by McKenzie (2002), authentic T&L allows apprentices to relate concepts and theories from normal education to actual practices carried out in a field (Borthwick, et al., 2007). Apart from that, authentic T&L provides opportunities for apprentices to recognize their identity through social interactions with peers and the society.

However, until now, there are continuous challenges to reduce the gap between learning experience at training centers and learning application in the real world (Hui & Koplin, 2011). The challenge can be classified into four major groups that are; trainers as the authentic T&L implementer (Betty, 2012; Lombardi, 2008; Marilla, 2005; Joseph, 2003), apprentices undergoing authentic T&L (Hui & Kristina, 2010; Lombardi, 2007), training institutes that prepare suitable curriculum that meet the criteria of authentic T&L (Caroline et al., 2010), and the surrounding community that shape the actual learning in the real world (Elaine & Matthew, 2011; Lombardi, 2007). The combination of these groups is needed to ensure that authentic T&L can succeed, especially programs held at training centres.

Researchers have started developing theoretical frameworks for authentic T&L, like the one by Brown et al. (1989) that proposed *Situated Cognition Model* for T&L activities. This model shows how apprentices could improve their skills by applying authentic T&L activities. There are six elements identified in *Situated Cognition Model,* that are apprenticeship, coaching, collaboration, multiple practice, reflection and articulation. All the elements are inter-connected where the elements of pioneering, collaborating and reflection are specific to the trainees' learning activities. Meanwhile, the elements of guiding, various trainings and articulating are specific for the trainers' teaching activities. Figure 1 shows the model proposed by Brown et al. (1989) in connecting the authentic T&L activities to be realistically comprehended by the trainees' cognition.

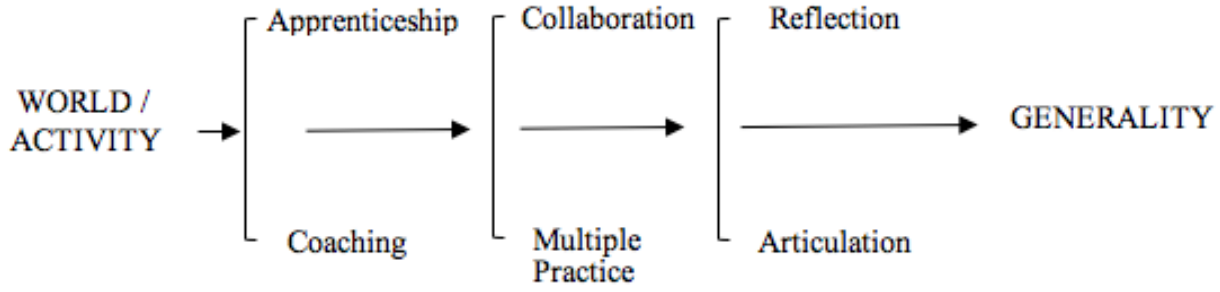

Figure 1 : Situated Cognition Model by Brown et al. (1989)

Next, Herrington and Herrington (2006) illustrates the general principles and ideal traits of an authentic learning environment for a training center. They identify nine characteristics of authentic T&L based on the constructivism philosophies according to the *Situated Learning Theory* proposed by Brown et al. (1989). They believe that authentic T&L must provide a real context, that visualizes how the knowledge they learn is applied in everyday life. Thus, authentic T&L must provide opportunities for trainees to be able to get experience by relating the problems faced to real-life situations (Brown et al. 1989; Bransford et al. 1990; Reeves & Reeves, 1997).

Now, authentic T&L is gaining interest at training centers. Research shows that there is a marked increase in the implementation of authentic T&L especially in vocational training (Scott, 2000), mathematics, (Forman & Steen, 2000), aborigines education (Marshall et al., 2001), online learning (Reeves, Herrington & Oliver 2002), arts (Chung, 2005), sciences (Renzulli et al., Callison & Lamb, 2004; Koenders, 2006; Kuldell, 2007), literature (Fitzsimmons, 2006), social sciences (Borthwick et al., 2007), curriculum design (Elliot, 2007), entrepreneurship (Nab, et al., 2010) and finances (Hui & Koplin, 2011). The role of information technology in supporting the implementation of authentic T&L was studied and discussed at length (Bennett et al.,2005; Herrington & Oliver, 2000; Herrington, Oliver, & Reeves, 2003).

THE MODEL AND THEORETICAL FRAMEWORK OF AUTHENTIC TEACHING AND LEARNING

The development of authentic T&L model places emphasis on the aspects of teacher- and learner-centered learning. The success of authentic T&L could be achieved through active participation of trainers and trainees. The trainees will not only learn the theoritical aspects, but the skills as well, within a realistic period of time, using related sources. A few T&L models that have been developed are:

1. Stein, Isaacs and Andrew model (2004)
2. Lombardi model (2007)
3. Herrington, Reeves and Oliver model (2010)
4. Revington model (2012)

5. Parker, Maor and Herrington model (2013)

1. Stein, Isaacs and Andrew model (2004)

Stein, Isaacs and Andrew (2004) proposed a theoretical model that contains major elements in designing, developing and implementing a curriculum in the form of authentic T&L. in this model, three main elements, that are trainees' learning style, natural traits and the learning style of certain fields. When the three elements are identified, every scope of targeted learning could be aligned with the development of current issues, T&L strategies, activities and resources could be planned. Therefore, an evaluation on authentic T&L could be carried out effectively.

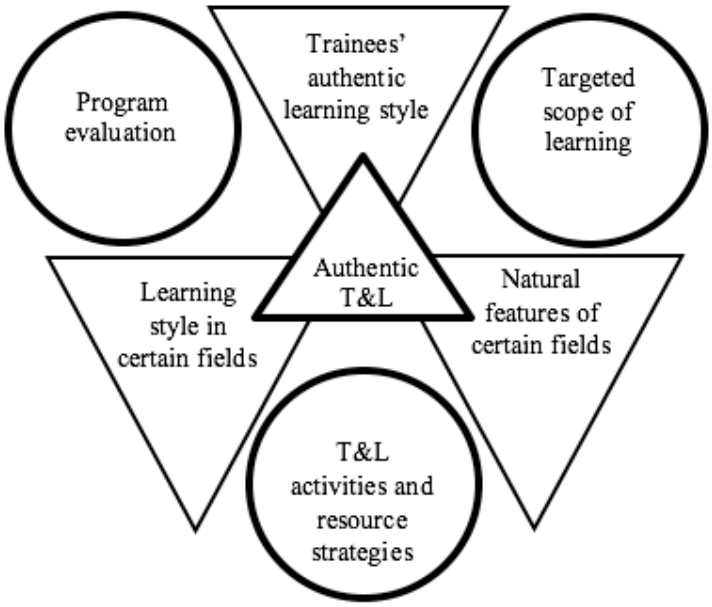

Figure 2 : Stein, Isaacs and Andrew model (2004)

2. Lombardi Model (2007)

Lombardi developed a (Herrington and Oliver, 2000) that could be implemented by carrying out challenging assignments. There are nine features of the model that could be applied by completing challenging assignments in implementing authentic T&L, as shown in Figure 3:

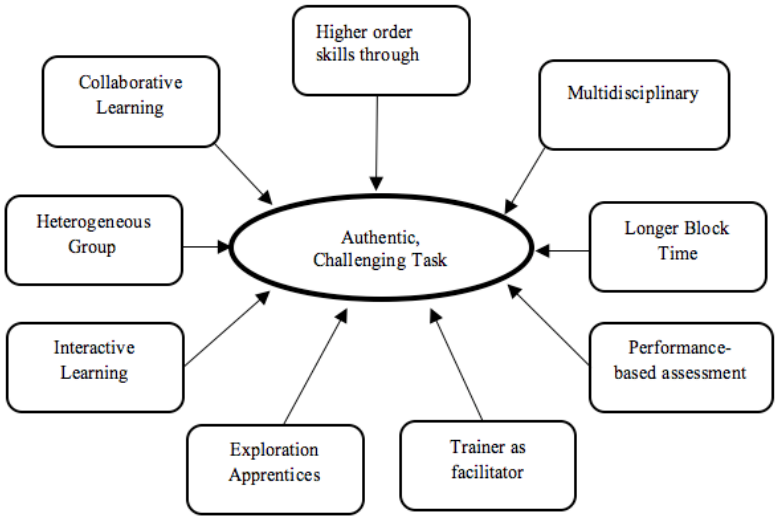

Figure 3 Lombardi model (2007)

3. Webb Model (2009)

The Webb model (2009) is featured in the form of matrix that shows the level of specification from lessons that are trainer-centered to trainee-centered compared to the level of trainee achievement on lessons conducted in lecture rooms, compared to the actual reality. The matrix is divided ino four sectors, that are Sector A, B, C and D. Figure 4 shows the sectors.

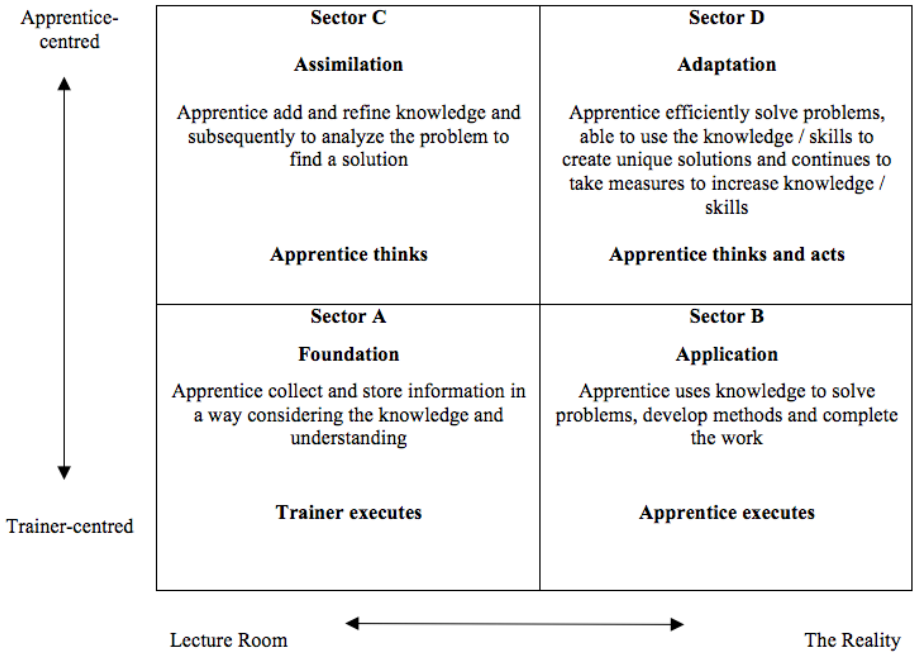

Figure 4: Webb model (2009)

Sector A is the foundation phase, where trainees are equipped with theories. The T&L approach is trainer-centered, and carried out in the classroom. In sector A, trainees collect and save information by memorizing and understanding, based on what is taught by trainers.
Sector B is the application level where trainees need to play a part in solving problems given by the trainer. Then, trainees need to use their knowledge to devise problem-solving methods and complete assignments within the time allocated. Trainers will provide more tasks and understanding and the trainees' skills will improve once they start applying their knowledge.

Meanwhile, Sector C is the assimilation stage. Assimilation is the match of new and old information as a result of the building of knowledge by the trainees based on the Cognitive Constructivism Theory by Jean Piaget (1896-1980). The T&L approach at this level is focused towards trainees even though the implemention is carried out in the classroom. Trainees need to think more to improve and detail their knowledge and analysis to solve problems. Sector D is the adaptation phase, where trainees must think and act based on knowledge and skills adapted internally to solve problems uniquely. This sector is the most critical as the learning result is no longer dependant on trainers.

4. Herrington, Reeves and Oliver model (2010)

Authentic T&L involves assignments that demand an apprentice to think and solve problems in actual situations. Thus, there is a need to relate T&L in the classroom with real life. The more T&L activities there are that could relate the trainees with real life situations, the better their knowledge and skills will be (Herrington et al. 2009).
Further research carried out by Herrington, Reeves and Oliver (2010) found that authentic T&L did not necessarily need to be conducted outside the classroom or off-campus only. The Herrington, Reeves and Oliver model (2010) shows that authentic T&L could also be conducted in the classroom or on campus. The model shows the matrix form of the authentic T&L of four sectors, Sectors 1 to 4 as shown in Figure 5.

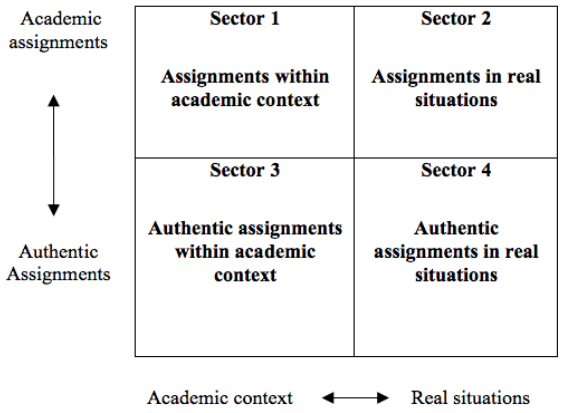

Figure 5 : Herrington, Reeves and Oliver model (2010)

Sector 1 shows T&L activities that are carried out formally in lecture rooms. The teacher would prepare topics, questions, assignments, exercises, quizzes and tests to equip the trainees with theoretical knowledge.

Sector 2 demonstrates assignments that are carried out in actual situatuions. The assignments are generally set up by the trianers. However, the assignment can only be completed after an apprentice undergoes the actual experience.
Sector 3 illustrates how authentic T&L provides apprentices with opportunities to think profesionally. In sector 3, trainers must prepare tasks that are realistic, complex and could be completed by trainees by the given deadline.

Meanwhile, Sector 4 shows tasks that are performed in actual situations. In this phase, trainees need to execute tasks which are not assigned by their trainers, but prepared by the employers at the workplace.

5. The Revington model (2012)

The Revington model (2012) highlights the authentic T&L approach which is very similar to the actual situation. In this model, T&L is based upon the nucleus or the starting point of the transmission of T&L activities. At this stage, the conduct of T&L is theoretical in nature, and is trainer-based. Next, integrated learning approach is used to reinforce the trainees' knowledge of theories, and use of teaching and learning aids are enhanced. The teaching aids include physical appliances and online software like websites, portal and interactive discs.

The mastering of theoretical knowledge is not enough especially in the aspect of social skills and social values. Thus, project-based lessons could hone the skills of the trainees. Revington (2012) cliams that project-based learning is the starting point of authentic T&L. The success of implementation demands for good theoretical knowledge, and the ability to use suitable teaching aids. Figure 6 shows the Revington model (2012).

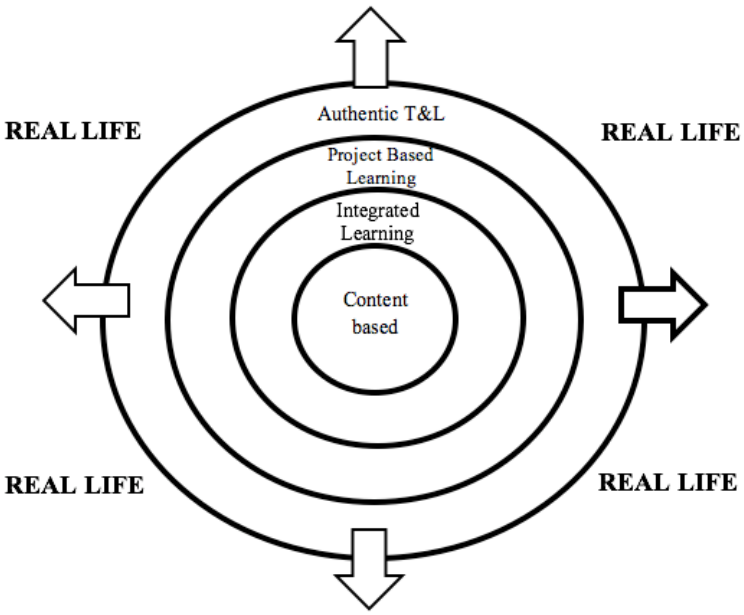

Figure 6 : Revington model (2012)

5. Parker, Maor and Herrington model (2013)

The Parker, Maor and Herrington model (2013) illustrates that the learning objective is situated in the middle of the **cross-section** between given tasks, related sources, and support required to make authentic T&L a success. Thus, the learning objective could be achieved if there is good integration between the elements.

In ensuring that authentic T&L could be accomplished, assignments must be accompanied by general and specific instructions on what are expected of the trainees, in the form of plan and rubric. At this stage, a deadline must be set based on the assignment's level of difficulty. Apart from that, trainees must be exposed to related resources to ensure that learning objective is achieved. Early exposure to resources is vital to shape an apprentice's inquisitive nature. In this model, there are four (4) resources included that are course content in the form of synopsis, primary source in the form of module, reference books, and online sources.

The third element to achieve the learning objective is support. Trainers must guide the apprentices during critical situations, and convince them with various approaches. A more systematic supervision must be set in motion to encourage discussion in order to initiate new ideas. Then, trainers should provide positive and negative feedbacks towards the apprentice's work. The feedback is invaluable to improve the projected T&L activities. Figure 7 shows the Parker, Maor and Herrington model (2013).

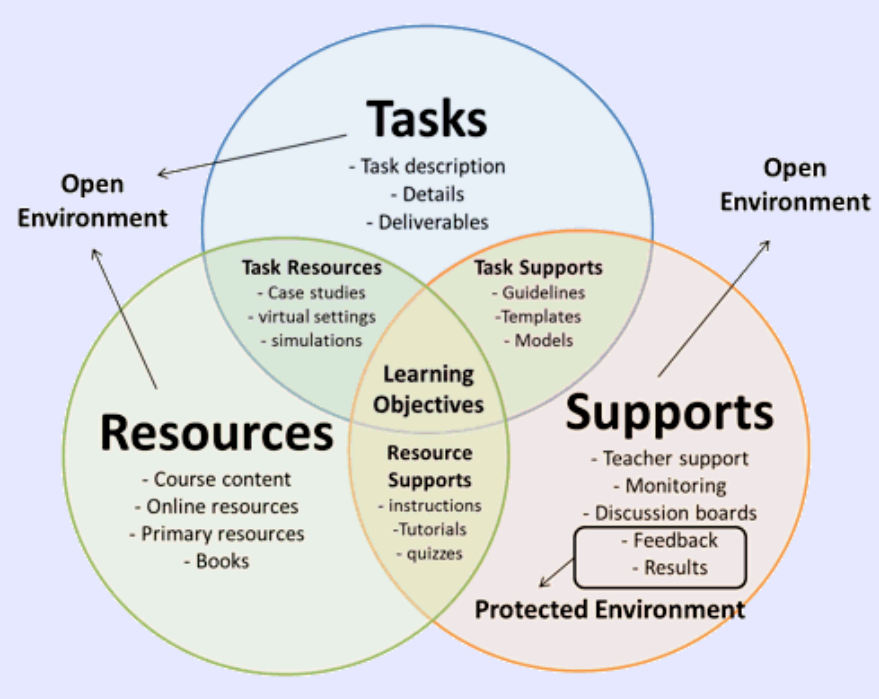

Figure 7 : Parker, Maor dan Herrington Model (2013)

CONCLUSION

The study focused on the development of apprentices that are balanced from the aspects of intellectual, spiritual, emotional and physical. This is because authentic T&L could offer opportunities for the trainees to learn in the actual context. It could also relate formal classroom learning to the actual scenario of the workplace, hence it provides good impact on their knowledge, skills and social values of the trainees once they complete their studies. Authentic T&L environment could encourage the apprentices to explore different perspectives which are not confined to disciplinary limitations and allows a collaborative development of knowledge. In authentic T&L, experienced trainers would function as mentors or facilitators and could guide initiation of ideas. Assessment process could be conducted simultaneously throughout T&L activities, which allows the apprentices the opportunity to improve their performance from time to time. Hence, they get the chance to enhance their capability and potential and tailor it to the requirements of the industry.

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