The Readiness Level of Vocational Training Institutions in Malaysia for the Implementation of National Dual Training System

Exposé

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ABSTRACT

The National Dual Training System (NDTS) has been identified as the training system to be implemented by the Malaysian government as a means to rectify the problems faced by industries related to inadequate competencies among workers. However, the readiness level of training institutions to implement the National Dual Training System (NDTS) is still not yet ascertained. It is important to ascertain the readiness level to ensure the effective implementation of the NDTS program in training institutions. Therefore, the purpose of the study is to measure the readiness level of training institutions with regard to the implementation of the NDTS programme. The sample for the study will consist of 32 institutions that have agreed to implement the programme and two industries that are piloting the programme. The data gathering instruments will be used namely, a survey questionnaire, an observation schedule, an interview protocol and also the focus group of questionnaire. The survey questionnaire will be specifically designed to incorporate industry and training institution input, current practices and current research findings of critical success factors that will be used to measure the readiness level of the training institutions. The respondents will be selected from the personnel in the training institutions and industry. It is expected that the results will indicate gaps in the readiness level of training institution with respect to instructional skills and management of resources. Expected contribution from the study will include a readiness measure which can be used to evaluate other training institutions and a better understanding of the interactions between needs of training institutions and demands of vocational training in Malaysia.
1.0 INTRODUCTION

For the past ten years, the investment climate of the country and structure of the economy has changed. It is now becoming more difficult to achieve higher rates of investment with the current availability of skilled and highly skilled human resource. It is also one of the critical factors considered by foreign and domestic investors in making their decision to invest. In this regard, a more market-oriented training delivery system needs to be established. The role of the private sector is now not merely providing advisory input in terms of developing training standards and identifying the training programmes to be conducted but more important to be directly involved in conducting work place training.

Global changes and rapid development of technology and particularly in the nation’s industries increased competition in the world market and created a need for a skilled workforce and a comprehensive training system which has also placed human resource development as a critical element in the development of policies and strategies of the country. The government is being highly pro-active towards the need for competence workers in the industrial sector. Public Vocational Training institution is main concern in producing the skilled workers needed by industry. Industrial skill training programmes are offered in Malaysia Skill Certificate (MSC or Sijil Kemahiran Malaysia) under level 1, 2, 3 and 4. (Definition level 1, 2, 3 and 4 as Annex 1).

NOSS is the curriculum use for vocational training institution at present. NOSS is defined as “specification of the competencies expected from the skilled worker who is gainfully employed in Malaysia for an occupational area and level” (MLVK, 2005a, p.2). Today it comprises of about 800 different job titles for various economic sectors and provides main foundation for the implementation of more than 6,000 skills training programmes in about 1,200 training institutions in Malaysia. It is accredited by the NVTC under the Malaysian Skills Certification System (MLVK, 2005c). The training system approach is based on Competency Based Training (CBT). CBT is an approach of vocational training that emphasizes what a person can actually do in the workplace as a result of education and training (Developing Competency Based Curriculum Models, Australia). The differentiation between conventional training program and competency based training in learning approach as noted in Annex 2. At present, the NOSS based system is already being implemented in all training institution in Malaysia.
2.0 DEVELOPMENT OF THE RESEARCH QUESTION

2.1 Problem Statement

The National Dual Training System (NDTS) has been identified as the training system to be implemented by the Malaysian government as a means to rectify the problems faced by industries related to inadequate competencies among workers. Malaysians also need many professionals and semi professionals in various fields to develop nation’s status by 2020. However, the readiness level of training institutions for the implementation of the National Dual Training System (NDTS) still is not yet ascertained. The definition of readiness according to Hellriegel/Jackson/Slocun (2001) readiness is a follower’s ability to set high but attainable task-related goals and willingness to accept responsibility for reaching them. It means that, willingness to do it, but to reach the target, the adequate preparation must be ready to attain the task-related goals.

Training institution shall be well prepared to implement the NDTS programme effectively. As mentioned before, training concept of NDTS involves training at two locations. 70 to 80 percent of the training will be done at the industries and another 20 to 30 percent at training institutes based on day release or block release. Even though it is only 20 to 30% in the institution, all the current system and procedure which are related to the management of the administration and now being implemented need to be changed, when we need to adopt the two system at one time (NOSS and NOCC). The problem that the Training Institutions, which are already implementing the NDTS (ITI Jitra), are facing now more on the arrangement of the equipment, accommodation that are provided and the institution shall also adhere to what the need of the industry in learning process.

According to CEDEFOP (1998), Quality management is an organizational strategy and a method of management, which involves all employees and seeks to improve continuously and effectively of an organization with regard to the customer satisfaction. Besides that, the teaching approach is also different with the current system based on NOSS system (Competence base training). NOCC training delivery is the concept of learn and work assignment, self reliant learning and action oriented teaching. The types of learning approaches are new to the instructor to be implemented. With regard to this, it is important to manage and reschedule all aspect of training system to make sure NDTS programme can be run concurrently with the current system in a proper manner.

In Germany, the system is already implemented in 1969 since the adoption of the Vocational Training Act (BBIG of 1969) according Greinert (1992, P-16). But in Malaysia the
NDTS or dual system is a new system, which was just announced by the government in last May 2005 to implement the system, but the awareness and the knowledge of dual system still at low level to the responsible person at training institution and also at industry. So the readiness level should be identified to make sure the NDTS program could be implemented in the institution and partnership with the industry effectively.

Therefore the purpose of the study is to assess and explore the readiness level of training institutions regarding the implementations of NDTS programme. This research is to measure the readiness level at training institutions to implement the NDTS program effectively and develop a guideline for all training institution in implementing NDTS system.

2.2 State of Research

2.2.1 Modernization of The System

Currently training program in the training institutions is based on NOSS system. The NOCC is a new form of curriculum, which is never used before in the country’s skills training system and it differs from any training resources used in the existing NOSS-based training. The comparison between NOSS based and NOCC based system is referred to Annex 3. In the NOSS based system, the implementation of learning approach is more on institution based training and curriculum based on job title, but in NOCC, the implementation of learning at workplace and curriculum develop based on work process knowledge. The teaching delivery is also different where self-reliant learning and action-oriented teaching are use in NOCC based for NDTS. The combinations of self-reliant learning and action-oriented teaching are being using to develop learn and work assignment. LWA is developed by the instructor and trainer from the training institution and industry. LWA documents consist of criteria for knowledge and skill evaluation, guideline for the apprentice, instructor and trainer in the training institution, industry and also illustration of question to evaluate. LWAs is integrated between the actual work place related assignments with the steps of the action oriented learning process. The difference type of curriculum used between NOSS and NOCC, which will make the learning to be more complicated. The instructor shall also be innovative and professional for this challenge in order to be ready for the new system.

Therefore, when the new system (NDTS) is going to be implemented, the readiness of training institution and industry should be looked into in order to effectively manage in a proper manner. Regarding this, the training institution should be well ready in facilities, curricula, appropriate teaching approach and competence of instructors or teachers. The industry should also have enough facilities and equipment, qualified trainer and sufficient range of operation. The management level at the training institution shall also be well prepared to manage the
system with the current system. The organization must be redesigned, on the timetable, the material and resource for NDTS should be ready with the suitable need. The management level should be planned, managed, and take action and lastly the feedback from the system should also be improved.

Quality management has always been one of the main concerns of Vocational Training Institutions (VTIs). As a national institution implementing the NDTS system, their interest in offering an adequate answer to national needs implies good quality. The concept of management is a step forward in the route towards quality. Those interested in training, and the customers of the institutions expect that the provided training is related to the abilities and competences required. The growing training demands and the rapid changing conditions have imposed to the training, offer the need to show that they did a good job. Also, the funds assigned to training have become so important that frequently an analysis of their correct application especially on their impact is required. This transforms quality management in the training process into a relevant issue. It is important to point out that the concept of Quality Management developed in dual system to be effectively implemented.

According to the guidelines for quality management (ILO, SDC, 2004) there are four stages process of the training process in order to achieve the objective as below :-

i. Defining training needs- The organization should define the competencies needed for each task that affects the quality of products, assess the competency of the personnel to perform the task, and develop plans to close any competency gaps that may exist. The definition should be based on an analysis of present and expected needs of the organization compared with the existing competencies of its personnel.

ii. Designing and planning training- the design and plan stage provides the basis for the training plan specification. It implies that defining relevant items (legal, financial and availability aspects) which constrain the training process should be determined and listed in order to design resources.

iii. Supply of training - The responsibility of the training provider is to carry out all the activities specified for the delivery of the training in the training plan specification. As well as providing the resources necessary to secure the services of the training providers, the role of the organization in supporting and facilitating the training might include supporting both the trainer and the trainee and monitoring the quality of the training delivered. The training support may include activities such as providing relevant tools, equipment, documentation, software or accommodation to the trainee or the trainer, providing adequate opportunities for the trainee to apply the competence being developed and giving feedback on task performance as requested by the trainer and/or trainee.
iv. Evaluating training outcomes - The purpose is to confirm that both organizational and training objectives have been met. Within a specified time period after the trainee has completed the training, the management of the organization should ensure that an evaluation takes place to verify the level of competence achieved. Evaluations should be carried out on both short-term and long term basis and should include the collection of data and the preparation of an evaluation report which also provides an input to the monitoring process.

Training institution shall formulate a management system for their training program to ensure that the NDTS system is implemented without disturbing the existing programme. Therefore to manage the quality in the training operation to implement the NDTS programme successfully, the four steps of guidelines for quality management should be looked as a critical success factor for the measurement of the quality management in readiness of training institution in implementing the NDTS. Besides the monitoring and evaluation of these activities, customer satisfaction evaluation and analysis shall also be conducted as a critical factor for quality management.

The dual system means plurality of learning location including workplaces and training workshop, group training centers and vocational schools. Again the features for attractiveness and stability of the dual system of vocational training for dual system in Germany are the concept of occupation, dual learning locations and consensual decision making. According to Thomas Stahl et.al(1993), he points out the obvious strategy in regional context of creating partnerships between school and SMEs by spiral development of the learning process alternating between external training and work. He suggests three marketing strategies in three areas:-

i. Analysis of qualification needs- a clarification of the competencies needed in relation to the strategic needs

ii. Development and implementation of teaching and training programmes- development of teaching concepts, methods and material in co-operation with the company by establishing development projects and job rotation between the two partners.

iii. Evaluation of the educational programmes and co-operation- establishing a network of feed-back loops in relation to the various activities.

According to Rauner (1999) and Gerds (2000), ten key principle underpin to proposed programme of reform to develop a regional dialogue on vocational and education and training as below:-
i. The promotion on training partnership via implementation of regional programmes of cooperation between learning providers. Its means that regional programmes of cooperation between learning venues could be used to promote partnership between enterprise and between enterprise and vocational school.

ii. From dual to cooperative vocational training. If schools and enterprise based learning are really to go hand to hand, teachers, trainers, enterprise proprietors and guilds must coordinate vocational training in the region.

iii. Vocational schools as regional centers for development of competences

iv. Raising training quality and reducing training costs. Partnership between enterprises together with the center for development of competences can provide a broad range of training opportunities at different levels leading to improved quality and reduced costs.

v. Raising the upper level of dual system and establishing links to continuing vocational training.

vi. Vocational oriented education at all stages of the general education system

vii. Professionalism of training and continuing training for teachers in vocational schools

viii. Concentration and professionalism of continuing vocational training.

ix. Regional VET dialogue. There is need for dialogue to be organized between enterprises and vocational schools, trade association and others self-organised bodies.

x. Involving universities and institutions of higher education

From this, the partnership between vocational training and industry is one of the criteria to develop the readiness in implementing the NDTS. The willingness of public sector and the willingness of industry to participate in the dual system is the important point to focus, without the participation of industry the system could not be ran. The partnership between vocational training and firm should be looked in analysis of the qualification needs regarding the curricula, training regulation, development of teaching process and job rotation between two partners, evaluation of the educational program cooperation, dialogue and promotions of training partnership between industry and all the criteria that involve learning partnership between vocational training and industry. Therefore by establishing all of that matter, the readiness level at training institution can be accessed.

2.2.2 The Role of Teachers and Trainers

According to The report of the project of Professionalisation of VET teachers for the future (PROFF), (Cort et al, 2004, pg 5), the investigation shown that Malaysia are facing a shortage of VET educators or expert to face such a shortage soon. This makes it imperative to
improve teachers and trainer’s training. The report pointed out that some of the skills and knowledge need to acquire include as follow:

i. new pedagogical skills in line with the learner-centered approach of modern pedagogical theory and on-the-job learning techniques;
ii. up-to-date vocational skills related to modern technologies and work practices;
iii. awareness of the needs of business and employers;
iv. skills for team working and networking; and
v. management, organization and communications skills.

Hence, the trainer must be a professional and must meet four main criteria that are vision, competence, work ethics or professionalism, and identity (Ibrahim Mamat, 2001, p 53). According to Gerds and Hoepfner (2003, p 13), the TVET Teachers or trainers must be able to have such requirement as mentioned below:

i. provide a narrow linkage between their own pre-service (further) and in-service (initial) teacher training, and to use modern ways of distance and e-learning;
ii. have command of the vocational (practical) skills and theoretical knowledge they have to train their students;
iii. establish and conduct strong relationships and networks between their schools and the local/regional business in order to offer vocational training on needed and employable qualifications;
iv. develop demand-driven contents and forms (courses, programmes, modules) of TVET programmes; and
v. recognise the large variety of student’s demands, interests and prerequisites of learning.

According to 8th Malaysian Plan (RM 8, p 113, ch 4.72) to nurture creativity and innovativeness as well as thinking among students, the current curriculum and performance assessment of students will be reviewed. The student centered learning approach will be strengthened. Therefore the instructor or teacher at training institution must be ready in the aspect of learning approach, skill and knowledge related to the NOCC based. The training delivery for NDTS is different from NOSS system (Refer to Annex 3). Therefore professionalism of instructor competence represents a significant contribution to the quality and effectiveness of NDTS. The instructors or teachers need to work in a team, have to be able to guide trainees more than just transfer knowledge, and they must also be able to plan, describe and reflect their own teaching practices.

Therefore the learning and teaching approach towards the development of knowledge worker must comply to the NDTS programme in all training institution. The purpose of vocational training is to combine elements covering technical know-how with methodological and social
abilities to ensure the apprentices’ general competence. The aim is to prepare apprentices for their future job so that they will be able to make plans and implement them. This requires certain key qualifications to develop quality consciousnesses, a strong commitment to the profession, personal responsibility, critical judgement, creativity, and the ability to work in a team, and to think and act in a larger context. Clearly, these qualities cannot be acquired solely in class sessions that emphasize theory. So that, new teaching methods are necessary which focus on working in self-governing groups, enabling each apprentice to assume responsibility and to exercise self-control.

2.2.3 Analyses Of Curricula

Traditional curricula are built up in a scientific systematic way. The fact that the actual content of these curricula often has only an indirect connection to the world of work or the occupational tasks to be learned is taken into account (see Zabeck, 1995). It is assumed that the scientific-based curriculum represents a theoretical foundation for the occupation to be learned or the vocational field as a whole. According to Rauner, he categorized different approaches in the development of scientific systematic vocational curricula which are based on learning theory and Beruf (occupation) concept. Rauner suggests three focuses of analysis:

i. The process of work
ii. The learning and training processes
iii. The regulatory system for the vocation / profession / occupation

Three major tasks for vocational science research are also formulated:

a) Criteria for the development of occupational profiles and clustered needs to be identified and developed. This approach characteristic the so-called social shaping orientation in VET (Rauner et al, 1988, 2001), education and training is not simply derived from tendencies within the world of work, but serves as resources for the social shaping of work and technology.

b) Vocational task analysis research explores the question of what vocational tasks need to be undertaken now and in the future and what learning content results from them in terms of the development of vocational training planning.

c) Vocational work process research investigates question about the work process knowledge of skilled workers and investigates the knowledge incorporated in practical vocational work.

The NOCC was developed as the main curricular framework for the NDTS together with the self-reliant learning and action-oriented teaching to become its didactical approaches (MLVK, 2005). These will bring another new dimension that so called work process orientation
into the Malaysian skills training scene. The work process approach builds upon the business process orientation of a modern and innovative company in which its core work activities become the collective responsibility of all its members rather than specific functional units only (Spottl, 2004). According to Kamarainen, Attwell, Brown (2002, p208), work process knowledge is the main conceptual tool for curriculum development in vocational education and training. Again Bernand (1998) also argues that the development of vocational curricula should not be separated from the development of new production method. Therefore the developments of NOCC curricula for NDTS should be focused on the work process knowledge in term of measurement of the readiness level to implement NDTS effectively.

2.2.4 Analyses Of Work Process Knowledge

According to Fischer, Boreham and Nyhan (2004, p-13-14), to build an effective partnership between vocational education carried out in institutional settings and learning on the job, can provide a framework based on work process knowledge. According to Boreham et all (2002, p 7) Work process is defined as an understanding of the labour process and the production process in the organization as a whole and the need for work process knowledge in this context derives from the fact that the introduction of new technology broadens work roles. He gave an example when an employee makes a transition from manual worker to controller of an automatic process, he or she usually assumes responsibility for a range of operations which are previously allocated to different employees. Fischer & Rauner (2002, p.161) have defined the work process knowledge as:

i. immediately useful for the work to be done (the knowledge that actively being transform to the work of the skilled worker);

ii. mostly (although not exclusively) constructed in the workplace through experience and work itself, especially through interaction between individuals and the complex tools they use;

iii. an understanding of the whole work process including preparation, action, control and evaluation.

Rauner (2005, p. 9) defined the foundation for TVET which is based on work process knowledge to include as follows:

i. Work process knowledge includes an understanding of the work process and the production process in the organization as a whole. It is necessary to the Taylorist principle of narrow jobs, each underpinned by the minimal level of understanding needed to perform that job alone. It includes the preparation of action, control and evaluation of the work process/tasks.
ii. Work process knowledge is continuously constructed in the workplace by employees through experience and work itself, especially when solving the problems in the workplace.

iii. Work process knowledge is directly useful for the performance of work which is active rather than inert knowledge.

iv. Work process knowledge is a synthesis of theoretical and experiential knowledge typically being constructed by resolving contradiction between codified knowledge and lived experience when solving problems in the workplace. It does not follow the traditional dichotomies of theory versus practice, declarative versus procedural knowledge, scientific knowledge versus know-how.

The concept of work process knowledge is used in discussing the relationships between work, learning, on the job, organizational development, individual knowledge, collective knowledge and occupational competence and can be seen as a way of describing the kind of knowledge which employees need for working in organizations which have develop more flexible structures and which have introduced new technology in search of greeter competitiveness. It signals more than practical know-how or procedural knowledge for this way of knowing also encompasses theoretical understanding. For this reason, the concept is a generative one which provides a framework for understanding how contradictions between theory and practice (Fischer, Boreham and Nyhan ,2004, p-13-14). According to Fischer (2000), work process knowledge is a needs for reforms of vocational education and training. Kruse (1996, 2000) pointed out that labour of work process knowledge is needed while companies are introducing new technologies or a new production example from manual to automatic process, so worker may take responsibility for managing a sequence of operation instead of being restricted to a narrower range of activities as with manual.

Gerds (2006, p. 1) had stressed that scopes of tasks and responsibilities in work processes have been fixed in a given work-organization by the typical tasks belonging to a special occupation or vocation. Investigating, documenting and transforming the occupational tasks into learning assignments is a precondition for shaping and delivering didactical arrangements. The quality, complexity and extension of occupational learning assignments with respect to their social, technical and ethical dimension determines the potential scope of professional development of the learners. The crucial problem of planning didactical arrangements and delivering real teaching-learning situations in TVET is to fit together learning assignments relevant for real occupational tasks and the individual prior achievements, knowledge and work-experience of the learners.
According to Kamararainen, Attwell and Brown (2002, p. 208) work process knowledge has become the main conceptual tool for curriculum development in vocational education and training. In conclusion, work process knowledge as a form and content of skilled worker-specific knowledge, which can be found in any company in one form or another. Work process knowledge also as a concept that is used for reforming work organization and working conditions within companies to define occupational profiles and VET curricula, and for improving work related learning (Fischer, Boreham and Nyhan, 2004, p. 48). According to Kruger et al. (2002, p. 201). Work process knowledge is an understanding of the whole work processes in which the individual participates, in its product-related, technical, employment organizational, social and system-related dimensions. Again Fischer & Rauner (2002, p. 170) had concluded that work process knowledge can be understood as the result of a process of 1) constructing personal competence out of experiential as well as theoretical knowledge and contextual factors, such as the labour process in the workplace, and 2) non-contextual factors such as a personal identity as a professional practitioner or the general and scientific knowledge embedded in artifacts used and 3) ways of implicit knowing as well as explicit communication.

In implementing the NDTS, the teacher at training institutions shall understand the concept of work process knowledge. NOCC as a curriculum are develop based on work process knowledge for NDTS. The teacher also must know in technical know-how. That means to combine theory and practical in learning process at workplace and training institution to be more competent and apply a variety of modern learning method. The concept of work process knowledge also have a relationship between work, learning, on the job, organizational development, individual knowledge, collective knowledge and occupational competence. NDTS programme are combination of learning at workplace and training institution and also must have a strong partnership between industries in learning process. Therefore work process knowledge should be applied at training institution for the implemention of NDTS.

### 2.3 Expected Outcomes And Relevance Of The Study

The expected outcomes from finding of this research are as follow:-

a. To develop an instrument and measure to assess the readiness level of training institutions base on Annex 4.

b. To identify critical differences between current practices in training institutions and expected practices as required by their future roles as NDTS training institutions.

c. To formulate recommendations and to develop a guideline that will enhance the capabilities of current training institutions to effectively implementing the NDTS programme.
The measurement and criteria will be used as an element for the measurement of the readiness level and as a guide line for preparation of the training institution. The critical success factor from the finding of study is a key indicator, which measure the readiness level. The success of NDTS implementation depends on the readiness and preparation of training institution beside the commitment and active participation of industries. Vocational training institution shall also develop cooperation with industry further by sharing and gathering the knowledge from within the enterprise to develop the curriculum and communication between the instructor, coach and employer (Learning Partnership, 2001-p 61). From the finding of the study, the measure of readiness and guideline will be developed for the training institution to be adequately ready in implementing the NDTS programme effectively in order to achieve the objective of NDTS.

3.0 CHARACTERISTIC OF TVET IN MALAYSIA AND THE IMPLEMENTATION OF NDTS

3.1 Public Vocational Training In Malaysia

In Malaysia, vocational and technical schools, polytechnics and industrial training institutions prepare youths for employment in various industrial trades. *Industrial Training Institute* under Ministry of Human Resources (Institut Latihan Perindustrian), *Youth Training Institution* under Ministry of Youth and Sport (Institut Kemahiran Belia Negara) and *Mara Skill Institutions* under MARA (Pusat Giat Mara) are the public training institutions. There are 61 training institutions under the federal, where 26 of them are Industrial Training Institutes, 21 are the Youth and Training Institutes and 14 are Mara Skill Institutes. All the trainees’ fees are supported by the government. Certification offered is Malaysian Skill Certificate (MSC or Sijil Kemahiran Malaysia) under the National Vocational Training Center (NVTC or Majlis Latihan Vokasional Kebangsaan Malaysia) from level 1 to level 4 based on National Occupational Skill Standard (NOSS) as a curriculum.

The *Ministry of Higher Education*, which was established in March 2004, supervises 20 polytechnics and 34 community colleges to prepare skilled manpower for industries. At the post-secondary level, the formal training conducted in polytechnics and community colleges aims to produce trained manpower at the semi-professional level in engineering, commerce and services sectors. More polytechnics and community colleges are being planned for establishment under the Ninth Malaysian Plan (2006 - 2010).
3.2 The Implementation Of NDTS Programme

In May 2005, the government introduces NDTS programme from the cabinet decision under 8th Malaysian Plan, which involved joint cooperation between industry and institution (NDTS Manual). This programme involved in two locations, classroom at training institution and workplace at industry. The NDTS program is adopted from Germany Dual Vocational Training system. The dual training system has been successfully implemented in Germany, Austria and Switzerland and is located between school and market-oriented training approaches. The system is called “dual” because vocational education and occupational training are provided simultaneously to the participants by training institution and employer respectively (Indermit & Amit, 1996). The aims of NDTS are 1) to provide the basic of lifelong learning 2) to integrate working and learning 3) to provide knowledge, skill and attitude taught in an integrated manner, 4) to develop key competencies development.

National Vocational Training Council (MLVK) is responsible for the introduction and implementation of the system. The ministry involved for implementation NDTS are Ministry of Youth & Sports (MYS), Ministry of Entrepreneur & Cooperative Development (MECD), Ministry of Higher Education (MOHE) and Ministry of Human Resources (MHR) and partnership within industry. The dual system project has been conceived on the basic recognition that technical education and vocational training should always be closely inter-linked with the actual work environment in business, industry or small and medium sized enterprise. Since technical education and vocational training (TEVT) is a preparation for performance at the actual place of work, it must incorporate this environment (DSP concept-EPU).

The NDTS has evolved from the Dual Training System Project (DSP) which was formulated with the purpose of strengthening technical education and vocational training in Malaysia by incorporating the dual training system practiced in Germany. The DSP started with a study known as ‘Basic Study on the Design of a Dual Vocational Training Scheme in Malaysia’, undertaken by German consultants during 1997-1999 (Blumenstein et al, 1999). In terms of training delivery, self-reliant learning, action-oriented teaching as well as learn and work assignments (LWA) have been adopted as the fundamental teaching and learning approaches (MLVK, 2005b). This system focuses more on the integration of technical, learning and social competencies in training, and it is believed that the implementation of the dual training system tailored to the local context will enhance the capability of the training system in meeting industrial requirements.

In general the training concept of NDTS is comparable with the German dual system, involves training at two locations which 70 to 80 percent of the training will be done at the
industries by work process task and another 20 to 30 percent at training institutes by theory and practice. The types of training under the programme will be determined by the industries in collaboration with training institutes. In other words, work place training is a major component of dual training, and thus the private sector is a driving force for the effective implementation of this system. Without the commitment and involvement of the private sector, the human resource strategy to improve vocational training through the implementation of the dual system would not be realized.

The National Occupational Core Curriculum (NOCC) is the foundation for the NDTS implementation of training and assessment of the training in the industry and training institutes. It is developed by the industry for specific training occupations. NOCC is defined “as the documented training structure to be carried out by the industry and the training institution comprising of the practical and theory of the changing technologies to produce “K-workers”. The definition of "k-workers" according to Malaysia’s Knowledge-Based Economy Master plan (Malaysia, 2002, p.43) in a holistic manner is to include any worker who is able to acquire and utilize the required knowledge. It acts as a basic to prepare teaching materials and others need and marks the standard for levels of achievement and skills quality of the apprentices under NDTS.

The assessment of trainees in the NDTS programme is based on the three type of certification: a certificate issued by industry’s trainer and assessment by training institutions at the end of the training period upon successful completion of national final examination which all trainees must take regardless of industry sector. An assessment is based on NOCC and must be handled in a proper way and follow the rule and procedure. Those who complete the course and meet the condition will be awarded the NDTS K-worker certificate which is equivalent to Malaysia Skill Certificate (MSC) level 3 (MLVK, Manual). The completion must be validated by the responsible industry, training institute and verified by the technical committee.

There are two programs to choose, i.e. the day release programme where students are trained in the industry for about five days a week and spend the remaining days (2 day) in the training institutes, and block release programme, trainees undergo training for about four months in industries and for about two months in the training institutes. The duration of the training is 2 years and in Germany the duration is between 2 and 3.5 years.

There are two automotive manufacturers, Naza Automotive Manufacturing and Daimler-Chrysler having already implemented NDTS programme. The Industrial Training Institute at Jitra and Kota Samarahan, Sarawak are the training institutions that are also implementing the NDTS programme, but only one of the vocational training institutions in Malaysia has already run dual
system in the Automotive course field that involved is NAZA Motor with the number of participants is 14 (Industrial Training Institute Jitra Kedah) the rest are done in the industry that already have their own training institution (Daimler-Chrysler). The type of programme is a block release program

4.0 RESEARCH QUESTION IN CONCRETE TERMS AND RESEARCH DESIGN

4.1 Concrete Research Question

a) What are the significant marks of the different levels of readiness?

The research will investigate the significant mark of the different level of readiness at training institution which is based on the dimension on the framework that will be investigated such as quality management, teacher readiness, curricula, equipments and partnership between industries. When the critical success factor for the dimension is identified, rating will be given base on the level of readiness rating 1 to 4 as below:

1. Strong resistance against the reform. To refuse innovations and conserving status quo.
2. Partial willingness to accept elements. To integrate and combine the elements of innovation and traditional with the new elements and moderate modernization of the old system.
3. Readiness for innovation. To reform the complete system by transformation, obstacle are clearly defined, measure are carried out and evaluate successfully.
4. Strong support and active participation at the implementation to change the old system completely and radically.

From the rating, the level of readiness at training institution will be measured and the research will answer and look what are the levels of readiness at training institution in implementing NDTS.

b) Define the critical success factors for implementation of NDTS and the criteria for success by comparing the old and the new system

Appropriate facilities and equipment with sufficiently wide-ranging operations, state-of-the-art curricula, and very important is the competent and qualified instructors (NVTC Manual) and teachers ('train the trainer') are prerequisite for a successful NDTS. Therefore monitoring involves reviewing the entire training process and maintaining appropriate record at each of the four stages i) defining the training needs, ii) design and planning training, iii) supply of training
iv) evaluation of the training outcome (ILO, SDC, 2004) and the identification of further opportunities to improve the effectiveness at any stage and improving the training process are the main purpose which is to ensure that the training process, as part of the organization’s quality system. According to Gasskov (2002, p-36), administrator of the vocational training institution should aim to improve the quality of service, reducing unit costs and increasing the flexibility. In order to respond to the future market demand properly, the curricula, training standards and assessment techniques need to be updated continuously and qualified instructors have to be made available.

The dual system is based on the close cooperation between the training institution and the industry. Industry shall also play prominent roles beyond socials and moral reasons, and have no obligation to participate in the system and provide apprenticeship place. However when the industry agree to provide the training places, they must also comply with the various laws and regulation which particularly important for the development of vocational training standard governing to the vocational training procedure. Therefore the regulation consensus between training institution and industry must be developed base on the basic standard, designation, duration, job description, type of assessment, and training program. (Diane/Irene, February 2003).

The role of the teacher is now being change towards the function of being as a coach and a facilitator. Yet, we are still holding the teacher largely responsible for the effectiveness of the learning process. Consequently a good teacher will regard it as his overriding goal to arrange the learning process for the trainees in a way that they will be prepared for the comprehensive functional and extra-functional complexity of performing successfully at the place of work. Therefore the competence instructors are also measured by the teaching approach to comply to the NDTS programme. This is call upon the instructors to plan and differentiate their teaching in different learning style according to Cort, Harkonen, Volmari (CEDEFOP, 2004-p 13). The instructor professionalism in NDTS programme shall know how to teach and learning method, learn and work assignment (LWA) and job enrichment. In addition a systematic teacher training is necessary to enable the teaching staff to transfer work process oriented curricula into didactical concepts. (Spottl, Becker)

Curricula refer to the teaching learning content, structure and processes provided by teaching institutions or training centers and defined by the combination of an initial objectives-goals hypothesis and the strategies needed to achieve this. The basic component of curricula is learning objectives, learning content, learning organization (duration, sequencing), learning methods, place of learning, teaching media and materials Assessment (exams) and Certification. In the dual system learning field orientation, learning in and within occupational
work processes and a work oriented turning point raise the question of the sources for the structurization and shaping of the respective curricula (Fischer 2003, Rauner 2004, p. 9). In the development of curricula for NDTS (NOCC), the process of work process analyses will be laid down by describing the curriculum development process.

Therefore this study is focused to identify the critical success factor of training institution in an organization based on the quality management, partnership with industry, suitable curricula, appropriate facilities and instructor in term of teaching approach, skill and knowledge and also further training to look into the readiness level for the implementation of the dual system program effectiveness (See annex 4). It is also to identify the current practice at government training institution that is using a training system base on NOSS and the comparison of both practices will identify what are those differences and what are the gaps that need to be filled up in order to effectively manage, organize and eventually produces a highly skills and competence worker to meet the current demand. The study mostly will be explored in work process knowledge change in the new system to be developed. According to Fischer, Boreham and Nyhan (2004, p-13) the concept of work process knowledge is increasingly used in discussion exploring the relationship between work, learning on the job, organizational development, individual knowledge, collective knowledge and occupational competence. Work process knowledge emerges as a dynamic concept, a way of conceptualizing the continuing processes of restructuring patterns of communication, not just a way of describing static work roles. Therefore from the gap analysis between the old and the new system, the guideline shall be developed as a reference for the readiness of training institution to implement the NDTS system.

Research Design
Scope And Methodology Of The Study

The scope of this research is to identify the readiness level of the training institution for the implementation of National Dual Training System. This scope is focused on the 32 of Government Training Institution in Malaysia (Public Sector) that agreed for the implementation of the NDTS (One already run) and the industry that already implementing the NDTS programme (NAZA and Daimler-Chrysler) for the level of the readiness to implement NDTS. The research will focus on the administration, facilities, instructors and partnership with industry. Focus will also be on the pragmatics which includes training regulation, curricula, competence instructor and learning process in dual system. The intervening factor that will be involved in the study is government policy.
This research is designed to measure the readiness level of training institution for the implementation of the National Dual Training System. The criteria to measure are based on the framework that identified from the literature review and also the guideline requirement for NDTS at training institution from National Vocational Training Center (NVTC). Anyhow the element is not limited; another criterion also will be look as a guideline for training institution for readiness in implementing the NDTS.

According to Denzin and Lincoln (2000, p 7-8) define that qualitative research as a set of practices, embraced within its own multiple disciplinary histories, constant tensions and contradictions over the project itself, including its methods and interpretations. Winberg (1997, p3) also describe that qualitative research, is research that produces descriptions of how and why people do certain things. Again Babbie and Mouton (2001, p53, 270) simplify the description of what qualitative research as research conducted in a natural setting, attempting to study human action from the insider’s perspective (also referred to as the “emic” perspective). For them the goal of research is defined so as to describe and understand rather than to explain and predict human behavior. The focus of qualitative research is thus rather on the processes involved than on the outcomes.

According to Punch (2000, p 4) and McMillan and Schumacher (1989, p14) simplify the description of quantitative research as empirical research where the data are in the form of numbers. It is indirect and abstract and treats experiences as similar, adding or multiplying them together, or ‘quantifying’ them. McMillan and Schumacher (1989, p12) describe quantitative research as a hypothetic-deductive approach. It makes deductions from theory and there after identifies a hypothesis. The hypothesis is then tested, by means of the data to confirm, reject, or modify the theory.

The most important distinction between qualitative and quantitative research, according to Blaxter, Hughes and Tigh (2001:p 65), is that qualitative research investigates behaviour in an unstructured way, while quantitative research focuses on facts that cause social phenomena. with combine qualitative inquiry at one end and the qualitative approach to research (naturalism) at the other end. Crowson (1987;p4) makes this statement and also asserts that these two research paradigms have fundamentally different epistemological traditions, although despite these differences, have recently been treated as potentially compatible systems of investigation.

Blaxter et al. (2001, p.67) agree when they point out that a researcher may use the families, approaches and techniques that represent different dimensions of the research process. The researcher may use alternatives from the different dimensions in combination as
appropriate to the study. The multiple uses of data collection are called triangulation. The use of triangulation, according to Punch (2000, p 247) is to check the findings of one study against the findings of another. For example, the results of a qualitative investigation might be checked against those of a quantitative study. The aim is generally to enhance the validity of the findings. Therefore the research will utilize the triangulation approach which includes quantitative and qualitative (Triangulation knowledge) method to be more validity of the finding.

The questionnaire will be designed by 2 categories, for the management level and teacher and coach at training institution and industry and for trainee at training institution. The questionnaires are developing based on critical success factors that identified from the study regarding the quality of management, partnership, the role of teacher, curricula and facilities. For the trainee, questionnaires will be developed based on customer satisfaction. The study also will be carried out using three main instruments, analysis of the existing data, collecting data from training institution and industry that will be focus and case study at training institution already done NDTS at Malaysia and German. Semi-structured interview and focus group will be carried out to the personnel involved at industry and training institution (Director, teacher, personnel staff and trainee at training institutions and coach and employer at industry). Group discussion and pilot test also will be use to identify the questionnaire are related to the research.

Data will be collected from all the training institution in Malaysia that agreed to implement the NDTS program and two industries that already run NDTS programme. Quantitative data will be analyzed by Statistical Package for Social Science (SPSS) software, while qualitative data will be analyzed by Nudist software.

**Population and Sample**

The limitation of this study focus on the 32 Government Training institution in Malaysia that has already agreed for the implementation of the NDTS programme, 2 private sector that already run this programme (NAZA and Daimlerchrysler) and the institution that have implemented the Dual System at Germany for the case study. The actual samples are the personnel who involved in the program including instructor, coordinator and center manager institution and industry. The measurements are use based on the variable are identify from the study. Training also will be considered to show the satisfaction what the training institution provided.
Data Collection Procedure

The data will be collected in Malaysia. The approach of data collection will be used through the two years NDTS program. The types of data collected are primary and secondary. The primary data are obtained directly from the respondent through survey questionnaire and interview, whereas the secondary data are acquired from internet, textbook, bulletin, past research paper, government circular and acts. The questionnaire to the respondent will be distributed by hand or by mailed. The questionnaire is the main instrument to collect research data from respondent. The question formulated is of open-ended and close ended According to Ary, Jacob and Razavieh(1990). The open-ended question permits a free response rather than restricting the respondent to a choice from among stated alternative. While responses to close-ended questions are easier to tabulate, it takes time to construct. The limitation of close-ended is that it does not provide much insight into whether respondents really have any information or any clearly formulated opinions about the issue. Questionnaires which have been sent out will be coded and tracked in a computerized database to enable multiple rounds of data collection.

To increase the response rate, a four-round data collection process based on Dillman’s Total Design Method will be used (University of Minnesota, 2004):

Round 1: Direct mailing. The questionnaire will be mailed with a cover letter that describes the study, and a self-addressed stamped return envelope.

Round 2: Postcard mailing. For every target who has not responded, a postcard emphasizing the importance of the study and reminding him/her to complete the questionnaire will be sent.

Round 3: Direct mailing. Every non respondent will receive another set of the questionnaire as in the first mailing, with the exception of a cover letter indicating that this is a third request.

Round 4. Direct e-mail and/or telephone call. Every non respondent will be contacted so that the purpose of the study can be explained.

The in-depth interviews will provide qualitative information about readiness and preparation of training institution in NDTS. The interviews are to support the data collected from all sections of the questionnaires. It allows to clarify terms that are unclear, and to probe for additional and more detailed information. All interviews will be carried out with the help of questionnaires prepared by the researcher. The questionnaires serve as a guideline, not as a detail instrument. Unexpected information or information not given in the questionnaires can be assessed as well.
Data Analysis

Quantitative data will be analysis descriptively by SPSS software and qualitative data will be analyzed by Nudist software. The data will be collected from the focus group discussion, the questionnaire and from the personnel involved in NDTS at training institution and industry that already done the NDTS programme.

Organization Of Study

Table 1: Organisation of the Research
I shall undertake the study in six main stages as outlined in Table 1, whilst the milestone chart for the main research activities is shown in Table 2.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Research Focus</th>
<th>Main Activities &amp; Writing</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>DEVELOPING RESEARCH PROPOSAL/ EXPOSE</td>
<td>Developing research proposal/expose Finalising research Short papers on rationale and theoretical framework Review of literature</td>
<td>Dec. 2006 (Research proposal / expose approved)</td>
</tr>
<tr>
<td>2.</td>
<td>DEVELOPING FIELD RESEARCH</td>
<td>Developing and finalising field research - obtain access to field - develop and pilot - finalise procedures - Prepare questionnaire and interview guideline. Finalising conceptual/ theoretical chapter Drafting of methodology chapter</td>
<td>Jan. 2007 (Field research is developed)</td>
</tr>
<tr>
<td>3.</td>
<td>UNDERTAKING FIELD RESEARCH</td>
<td>Carrying out field research - undertake research - complete field research Short papers on field research Write-up of research procedures</td>
<td>June 2007 (Field research fully undertaken)</td>
</tr>
<tr>
<td>4.</td>
<td>ANALYSIS AND EVALUATION</td>
<td>Drafting and finalising analysis and findings chapters. Drafting of conclusions</td>
<td>Mar. 2008 (Analysis &amp; findings concluded)</td>
</tr>
<tr>
<td>5.</td>
<td>REVISION OF THESIS</td>
<td>Finalising chapters Refining thesis Seminar/ conference papers</td>
<td>June 2008 (Thesis fully refined)</td>
</tr>
</tbody>
</table>
# Table 2: Milestone Chart for the Research

<table>
<thead>
<tr>
<th>SEMESTER</th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S2</td>
<td>S3</td>
<td>S1</td>
<td>S2</td>
</tr>
<tr>
<td>MONTH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>4 mths</td>
<td>3 mths</td>
<td>4 mths</td>
<td>4 mths</td>
</tr>
<tr>
<td>LOCATION</td>
<td>Malaysia</td>
<td>Germany</td>
<td>Malaysia</td>
<td>Malaysia</td>
</tr>
</tbody>
</table>

**MAIN ACTIVITY**

- **Registration**
  - Developing research proposal
  - Finalising research proposal

- Literature review
  - Literature review
  - Literature review

- Conducting field research
  - Conducting field research
  - Conducting field research

- Analysis
  - Analysis
  - Analysis

- Refining thesis
  - Refining thesis
  - Refining thesis

- Seminar
  - Seminar
  - Seminar

- Submission
  - Submission
  - Submission
### Overview of Research Design

#### Table 3

<table>
<thead>
<tr>
<th>Major Research Question</th>
<th>Concrete Research Questions</th>
<th>Main Activities of Research</th>
<th>Research Method</th>
<th>Time Scheduling, Milestone</th>
</tr>
</thead>
</table>
| 1. Level of Readiness   | Rating for readiness level 1-4  
   1. Strong resistance against reform.  
   2. Partial willingness to accept elements  
   3. Readiness for innovation  
   4. Strong support and active participation | 1. Define the level of readiness based on critical success factors from research question 2.  
   2. Measure the level of readiness by using rating 1-4 | 1. Analyses of questionnaire  
   2. Analyses of interview  
   3. Analyses of survey and case study  
   4. Evaluate by using spider software. | Refer to table 1 and 2 |
| 2. Critical Success Factors | 1. Readiness in quality management  
   2. Readiness in partnership with industry  
   3. Readiness in role of teachers  
   4. Readiness in facilities  
   5. Readiness in curricula | 1. Define the critical success factors in quality management (see Annex 4)  
   2. Define the critical success factors in partnership with industry (see Annex 4)  
   3. Define the critical success factor in role of teachers (see Annex 4)  
   4. Define the critical success factors in facilities (see Annex 4)  
   5. Define the critical success factors in curricula (see Annex 4)  
   6. Compare the old and new system | 1. Survey  
   2. Interview  
   3. Literature review  
   4. Questionnaire  
   5. Focus group  
   6. Case study | Refer to table 1 and 2 |
| 3. Conclusion and Recommendation for Implementing NDTS | Training institution must be readiness based on critical success factor define from this study to implementing NDTS effectiveness. | 1. Develop an instrument  
   2. Measure the readiness level of training institutions.  
   3. Develop the guideline and recommendation for training institution in implementing NDTS. | Analyses from finding of study. | Refer to table I and 2 |
BIBLIOGRAPHY


Carpentry Worksyop, HEART TRUS/NTA Training Centre Jamaica – The concept of quality management in vocational training


Gill Indermit & Dar Amit (1996)-Based on "German Dual System, Lesson For Low and Middle Income Countries". Prepared for the Bank, ILO study on “Constraints and innovations in Reform of VET”


http://www.teluq.uquebec.ca/chaireecosavoir/pdf/NRC03-04A.pdf


Kamarainen, Attwell and Brown (2002) – CEDEFOP *Transforming Of Learning in Education And Training*. Key qualification revisited - p-93, 156, 208


ILO. Retrieved January 13, 2006, from


*Learning Partnership* (2001)- How can small companies and educational institutions work together in coping with the challenge of change. Supported by the European Commission Leonardo da Vinci Programme - p-17

Martens (2005, August)- *How to Develop The Best Training Initiatives*


Mc Shane Steven L, Von Glinow Marry Ann (2002)– *Organizational Behavior*


NDTS Seminar at Legend Hotel, Kuala Lumpur-22-26 May 2006- *Learning Approach for NDTS*


Stahl Thomas et.al -1993 (4)-*The Learning Organization*- A vision for Human Resource Development

Vargas Zuniga Fernando - *Quality Management in Vocational Training* - Their use of standard and their different application (ILO- International Labour Office + SDC-Swiss Agency For Develop And Cooperation)

WINBERG, C. 1997. Learning how to research and evaluate the teaching and learning series
The Readiness Level Of Vocational Training Institution in Malaysia For The Implementation Of National Dual Training System

ANNEX
Description Level (NVTC/PPD 2005) Annex 1

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Competent in performing a range of varied activities, most of which are routine and predictable.</td>
</tr>
<tr>
<td>2</td>
<td>Competent in performing a significant range of varied work activity, some of the activities are non-routine and required individual responsibility and autonomy.</td>
</tr>
<tr>
<td>3</td>
<td>Competent in performing a broad range of varied work activities, perform in variety of contexts, most of which are complex and non-routines. There is considerable responsibility and autonomy and control or guidance of others is often required.</td>
</tr>
<tr>
<td>4</td>
<td>Competent in performing a board range of complex technical or professional word activities performed in a wide variety of context and with a substantial degree of personal responsibility and autonomy. Responsible for the work of others and allocations of resources in often present.</td>
</tr>
<tr>
<td>5</td>
<td>Competent in applying a range of fundamentals principle and complexes techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of other and for the allocation of substantial resources feature strongly, as do personal accountability for analysis and diagnosis, design, planning, execution and evaluation.</td>
</tr>
</tbody>
</table>

The Difference Between Conventional And Competence Based Training Approach.

<table>
<thead>
<tr>
<th>Training Approach</th>
<th>Conventional Training</th>
<th>Competence Based Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Role Of Instructor</td>
<td>Instructor handle the lectured / demonstrate</td>
<td>Instructor as a facilitator or moderator</td>
</tr>
<tr>
<td>Learning Process</td>
<td>Learning control by instructor</td>
<td>Learning control by trainer</td>
</tr>
<tr>
<td>Topic Of Subject</td>
<td>Topic of subject identified by instructor</td>
<td>Topic of subject identified by trainee.</td>
</tr>
<tr>
<td>Learning Material</td>
<td>The trainees follow learning material at one time</td>
<td>The trainees follow different material at one time</td>
</tr>
<tr>
<td>Training Objective</td>
<td>All the trainee started/ended at one time</td>
<td>The trainee started and ended at different time.</td>
</tr>
<tr>
<td>Training Content</td>
<td>Content based</td>
<td>Competency based</td>
</tr>
<tr>
<td>Time Evaluate</td>
<td>The trainee evaluate at one time</td>
<td>The trainee evaluate at different time</td>
</tr>
<tr>
<td>Concept Of Training</td>
<td>Summative evaluation</td>
<td>Formative evaluation</td>
</tr>
<tr>
<td>Assessment Method</td>
<td>Norm referenced</td>
<td>Criterion Referenced</td>
</tr>
</tbody>
</table>

(Developing Competency Based Curriculum Models, Australia)
Comparisons between NOSS Based System and NOCC (Work Process Based System)  

<table>
<thead>
<tr>
<th>No.</th>
<th>Criteria</th>
<th>NOSS Based System</th>
<th>NOCC (Work Process Based System)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Where to implement?</td>
<td>Institution based training</td>
<td>Work based training</td>
</tr>
<tr>
<td>2.</td>
<td>What is the learning materials used for training?</td>
<td>Curriculum based on Job Title – Modular System from Anglo Saxon System</td>
<td>Curriculum develop based on work process</td>
</tr>
<tr>
<td>3.</td>
<td>Role of personal</td>
<td>By trainer in institutes</td>
<td>By coach and skill workers in companies</td>
</tr>
<tr>
<td>4.</td>
<td>Teaching method</td>
<td>Student centered</td>
<td>Self-Reliance Learning, Action-Oriented; Student Centered</td>
</tr>
<tr>
<td>5.</td>
<td>Social competence</td>
<td>Not real work condition and make more difficult to teach</td>
<td>Applicable for work-based training Innovation</td>
</tr>
<tr>
<td>6.</td>
<td>Instructional systems design</td>
<td>More theory</td>
<td>More practical, Real Job Application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declarative knowledge, Scientific knowledge</td>
<td>Procedural knowledge, Situated learning, Know how</td>
</tr>
<tr>
<td>7.</td>
<td>Summary</td>
<td>Institution based</td>
<td>Process knowledge can be understood as the result of a process of constructing personal competence out of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>i. Depend very much on instructors</td>
<td>i. experiential as well as theoretical knowledge;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii. Environment is not as in companies</td>
<td>ii. contextual factors, such as the labour process in the workplace, and non-contextual factors such as a personal identity as a professional practitioner or the general and scientific knowledge embedded in the facts used;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(context with real job)</td>
<td>iii. Actual machines are not existing (difficult to adapt technological change)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>iii. Actual machines are not existing</td>
<td>iii. Ways of implicit knowing as well as explicit communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(difficult to adapt technological change)</td>
<td></td>
</tr>
</tbody>
</table>
### Annex 4

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Teacher Readiness</th>
<th>Curricula Readiness</th>
<th>Facilities Readiness</th>
<th>Cooperation and Agreement industry</th>
<th>Quality Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical Success Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Apply modern method of learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Skill and knowledge combine to train student (Professionalisation know how)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Skill of teamwork and networking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Modern pedagogical skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Management, organization and communication skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Learning environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>ICT development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Changes in organization of teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Up to date vocational skill related to modern technologies and work practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Activity and ability of teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Teacher ethic.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Process of work</td>
<td></td>
<td>1. Conducive classroom</td>
<td></td>
<td>1. Defining the training needs</td>
</tr>
<tr>
<td></td>
<td>Learning and training process</td>
<td></td>
<td>2. Resources center</td>
<td></td>
<td>2. Design and planning training</td>
</tr>
<tr>
<td></td>
<td>Regulation system</td>
<td></td>
<td>3. Workshop/Lab</td>
<td></td>
<td>3. Supply of training</td>
</tr>
<tr>
<td></td>
<td>Actuality of content</td>
<td></td>
<td>4. infrastructure</td>
<td></td>
<td>4. Evaluate training outcome</td>
</tr>
<tr>
<td></td>
<td>Participation in development</td>
<td></td>
<td>5. Hostel</td>
<td></td>
<td>5. Monitoring and evaluate activities conduct</td>
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<td>Openness, readiness for modernization</td>
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<td>Flexibility, regional / local addition.</td>
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<td>4. Develop and improve of teaching and training program in cooperation with industries</td>
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<td>5. Evaluate of educational program cooperation</td>
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<td>6. Dialogue between training institution and industries</td>
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