

Chapter II

Review of Related Literature

Introduction

There are four main areas of concern in this study, these are: the Competency Assessment and Modular Certification (CAMC) in vocational subjects; the role of classroom assessment; theories and models of implementation, and change and factors influencing educational reform. This chapter will review international literature on the concept of classroom assessment, models of implementation and change and factors influencing educational reform. The Chapter begins with an overview of the Competency Assessment and Modular Certification (CAMC) In Vocational Subjects, in Malaysia. The second section of this review will focus on areas related to the role of classroom assessment in teaching and learning, and authentic assessment reform. Even though the overall purpose of the study was to understand the implementation of school-based assessment of CAMC in vocational subjects, it is necessary to first understand the role of classroom assessment in teaching and learning, and authentic assessment reform in general. The third section will focus on models of curriculum implementation and change in general, and the degree of implementation. Finally, the fourth section of this chapter will review the factors influencing educational reform.

Competency Assessment and Modular Certification (CAMC) of Vocational Subjects in Malaysia

Competency Assessment and Modular Certification (CAMC) in vocational subjects was introduced in selected academic schools in Malaysia in 2002. This section begins with the background of CAMC, followed by the vocational subjects, the approaches to the implementation CAMC and the final part of this section discusses the implementation strategy of CAMC.

Background

On 23 June 1999 the Cabinet approved the offering of Industrial Technology subjects in secondary academic schools, based on a memorandum entitled “Expansion of Technical and Vocational Program” proposed by the Minister of Education. In order to meet the demand for a technical and vocational workforce due to rapid economic growth, the Ministry of Education introduced vocational subjects in secondary academic schools. This program was the continuation of the ‘Integrated Living Skills’ subject. The objective was to provide an extension of the knowledge and skills pertaining to craft-work or technology, involving electrical wiring, plumbing, furniture-making and so forth. This knowledge and skill could help students secure suitable employment and to venture out on their own on a small-scale, or to continue training at a higher level.

The vocational subject program in secondary academic schools at form 4 and 5 level, offered a group of twenty-two subjects based on skills. These subjects are clustered

into four fields, namely: information technology, engineering, agriculture, and home science. The various subjects were planned and offered in stages from 2002 till 2005 and the synopsis of each subject are explained (Refer Appendix A).

Concepts of Competency Assessment and Modular Certification (CAMC)

The concepts of CAMC discussed here are based on competency assessment, and its features, modular certification and its principles.

Competency Assessment

Competency is acquired by mastering a unit of tasks which integrated knowledge, skills and attitude to using tools, materials and specific techniques, to complete an assignment related to a certain job (Ministry of Education, 2002b). Competency can be observed and measured. Competency Assessment is a process of obtaining evidence and judging the students' competency level in carrying out an identified task (Ministry of Education, 2002b).

Evidence is derived from any form of response – from the students' knowledge, process and products, written or oral. All these can be taken as evidence to show a student's competency in a certain task. 'Standard' refers to a previously identified and fixed, minimum level of quality and quantity. Students have to achieve this level to show their competency. The criterion statement described what a student should know and be able to perform.

At the international level, Competency Assessment is nothing new. Several assessment and educational agencies were already practicing it. Among them were the Scottish Qualifications Authority (SQA), the Victorian Curriculum and Assessment

Authority (VCAA) and the New Zealand Qualification Authority (NZQA). The Scottish Qualifications Authority (SQA) defined Competency Assessment as a process of determining whether someone has acquired the skill and knowledge they need, to be awarded a Scottish Vocational Qualifications (SVQ). An assessor measured the evidence of a candidate's competence against the standard. The Victorian Curriculum and Assessment Authority (VCAA) outlined Assessment Competency as a process of collecting evidence and making a judgment on whether competency has been achieved. The New Zealand Qualification Authority (NZQA) stated that Assessment Competency aimed at assessing the ability to apply a particular knowledge, skill, attitude and value to a standard of performance required in a specific context.

Features of Competency Assessment

In the effort to obtain evidence and to judge the level of effective competency, Competency Assessment should be flexible and be individualized to enhance learning (Ministry of Education, 2002b). 'Flexibility' referred to the time or duration of the assessment done. Each student learnt at a different pace. Given time and opportunity, they should be able to achieve the desired competency level. The assessment process is not confined to a rigid examination timetable. Assessment was done when students were prepared. This approach is known as 'assessment on demand' (Ministry of Education, 2002b).

The focus of this type of assessment was on individuals and not groups. This was possible because the student and the assessor are certain of the expected level. His/her personal mastery achievement score was awarded without comparison to other students

(the score is absolute and not relative). This approach is student-centered (Ministry of Education, 2002b).

Criterion-referenced assessment is used in Competency Assessment to determine students' performance, by comparing obtained evidence to the criteria statement (Ministry of Education, 2002b). This differed from Norm-referenced Assessment, where students' performance is compared to between them.

In implementing criterion-referenced assessment, the criteria are formulated based on subject or module-based objectives. The criteria outlining the standard to be achieved are spelt out clearly to teachers and students. By doing so, teachers and students are aware of the desired evidence, and how it is scored. The score obtained from this assessment indicated the objectives achieved. Through this process, students knew if they had achieved the learning objectives or otherwise. Students who had not achieved this objective could make arrangements with the teachers to continue their mastery of the skill. On the whole, this approach was able to enhance a student's learning.

Modular Certification

The modular method is a method of organizing learning. The activities are so arranged to achieve a desired, overall learning and are divided into modules. The objective, content and expected learning outcomes are stipulated clearly in each module. Students have to carry out stipulated activities to achieve the objectives. There are many advantages here, to teachers and students alike. Students are clear on what they have to master or achieve in a short span of time. This approach motivates them to learn as they are able to see the progression of their success. It also builds their confidence with the

knowledge that they have obtained from school. Modular Certification is recognition of candidates who have been assessed and certified to have achieved a certain level of competency, in a certain module (Ministry of Education, 2002b). The competencies are explained in their certificate, in the form of printed statements, based on their level of mastery achieved in each module.

The modular approach in certification can also enhance the effectiveness of learning. Teachers can focus more on the weaker students without having to slow down the learning pace of the brighter ones. As a result, the whole class will achieve success. The only difference was that the degree of success varied. This situation made learning fun and meaningful. This approach also promoted co-operation in learning. This could be realized because the modular approach is individualized. The brighter students can be assessed first. When they had mastered the skills, they assisted or demonstrated to their peers, to help the weaker ones to obtain their certificate.

The modular approach in certification also helped clarify and refine a student's learning goals. Each student knew his or her ability. Students would be able to plan their learning strategy based on their ability. They will be more responsible and pro-active in their learning, with reduced dependence on their teachers. Therefore, the teachers' workload is lessened. This afforded teachers the opportunity to assist and ensure that their students achieve the necessary mastery standard.

The implementation of modular certification was an ongoing process. It was not a linear approach whereby remedial efforts could be carried out throughout the teaching and learning process.

Principles of Modular Certification

The effectiveness of modular certification based on curriculum based modules, the award of the certificate based on criteria, positive report, overall module certification, reporting of skills mastered, and module mastery performance, can influence the performance of vocational subjects in the Malaysian Certificate of Education (Ministry of Education, 2002b). To ensure the suitability of the certification and education program, the modules used in the teaching and learning process would be those required for the basic modular certification.

Criteria-based vocational certificates are awarded based on standards. Students are awarded the certificate based on their mastery of the skills specified for a module. This is done based on previously set criteria. Students, who showed evidence of quality and quantity above the level defined in the statement of criteria, are deemed qualified to receive their vocational certificates (Ministry of Education, 2002b).

Modular certification used the positive report approach (Ministry of Education, 2002b). Only evidence that proved their competence in a certain module, was reported ; skills that had not been mastered, were not. Modular certification awards certificates that showed a student's overall competency in a particular module. This certificate is endorsed and issued by the Malaysian Examinations Syndicate and is certified by the principals of the respective schools (Ministry of Education, 2002b). The vocational subject certificate is a document of credentials that informs on the student's proficiency and is not based on grades (Ministry of Education, 2002b).

Students' ability in obtaining the module certificate in terms of the number of modules that they are competent in can influence the students' grades in their Malaysian

Certificate of Education in certain vocational subjects (Ministry of Education, 2002b). In certain subject, students who are competent in more modules will have better opportunities to get better grades in the national certification system.

The Vocational Subjects

In this k-economy era, there are increasing demands for a technical and vocational workforce, especially in the skilled and semi-skilled area. Realizing this, vocational subjects are being introduced to produce a group of individuals in our society, who are knowledgeable and trained in several identified vocations. A suitable program with effective teaching and learning methodologies should be prepared to cater to those who are interested and inclined towards this field (Ministry of Education, 2002b).

Assessment System of the Vocational Subjects

All vocational subjects used the modular approach in the teaching and learning process. Variations in the offered programs were accompanied by a variation in the assessment system. For vocational subjects to be more meaningful, assessment should not be a general linear, achievement system. The Competency Assessment and Modular Certification has two types of assessments, the school-based assessment and the central-based assessment (Ministry of Education, 2002b). The major elements assessed in the CAMC are knowledge, skills and attitudes.

The modular approach needs a different assessment system than the one currently practiced by the Malaysia Examinations Syndicate (MES). Otherwise, the introduced initiatives or innovations may fall into the normal practice with the emphasis on

examinations. Therefore, the Malaysia Examinations Syndicate (MES) needs to formulate a new approach.

Vocational subjects need a flexible and individualized assessment system to promote learning. Otherwise, learning vocational subjects will be similar to learning academic subjects. In line with this, it is suggested that an assessment system based on candidate competency (Competency Assessment), combined with the modular-based certificate (Modular Certification) be introduced for all the twenty-two vocational subjects currently taught in secondary schools.

The assessment system practiced by the Malaysia Examinations Syndicate is based on achievement. Students are tested at the end of their study at primary, lower secondary and upper secondary levels. The competency assessment system involves processes of evaluating a student's competency. This approach differs from achievement assessment in that it depended only on what was specified in the curriculum. Competency assessment not only fulfills the aims of the curriculum, but also takes into consideration the expectation of the certificate-holder that it indicated his or her competency in a certain field of work.

If what is stated in the certificate reflected only their success in school but not in the real world, the success of the vocational subject program would be questionable. Competency assessment for jobs encompasses the whole spectrum of ability and relevant skills, including reasoning and social skills.

Individual competency is one's ability to carry out a job or a task. By giving instructions, counseling, opportunities and suitable time, most individuals can become competent in a certain skill. In this system, assessment was carried out based on what was

taught. The level of knowledge and skill indicating whether a student was competent or not, is clearly stated in the criteria or standard statements. All criteria or standards to be achieved to be certified competent have to be made known to the students at the beginning of a schooling session.

Modular certification is a new innovation in the education and vocational field.. Both Modular certification and non-linear assessment are the best and the most suitable in this information era. In the effort to fulfill the needs of Vision 2020, advancement in education needs an assessment approach and certification different from the existing one. The world is venturing into the Modular certification for both vocational and academic schools (Ministry of Education, 2002b).

Every module is a component in a certain subject and can be assessed individually or in groups. This depends on the key skills required for a certain subject. Besides the report in the Malaysian Certificate of Education, a Vocational Subject Certificate will be issued to recognize the student's competency in the vocational subjects (Ministry of Education, 2002b). For students who are not competent in all the modules for a certain subject, or who have not completed their schooling, the Vocational Subject Certificate will be issued at the end of the learning program. Students did not have to wait for the Malaysian Certificate of Education to be issued.

This modular certification is more meaningful to students and employers because it gave a clear picture of a student's ability, since the student is assessed based on established standards or criteria. The statements in the certificate are able to provide information on what a student can perform. The competency assessment system and the modular certification focused on producing and training groups of employees who have

attained a highly effective and productive level. Table 2.1 shows the differences between the present assessment and CAMC.

Table 2.1

The Differences between the Present Assessment and CAMC

Present Assessment	CAMC
<p>Total syllabus-based Assessment is carried out based on the whole syllabus.</p>	<p>Module-based Assessment is based on the content of a module.</p>
<p>Linear An assessment that measures a student's achievement at the end of a learning session of a subject.</p>	<p>Modular An assessment that is ongoing throughout the teaching and learning process of a module.</p>
<p>Norm-referenced A student's performance is compared to another student in a particular group.</p>	<p>Criterion-referenced A student's performance is referred to a fixed standard or criteria statement.</p>
<p>System-centered A student sits for the examination according to a fixed timetable.</p>	<p>Learner-centered An assessment is carried out whenever the student is ready to be assessed.</p>
<p>Malaysian Certificate of Education A document that reports a student's final grades for the various subjects in the Malaysian Certificate of Education.</p>	<p>Malaysian Certificate of Education and Vocational Subject Certificate Malaysian Certificate of Education – A document that reports a student's final grades for the subject in the Malaysian Certificate of Education Vocational Subject Certificate - A comprehensive document that reports on the module that a student is competent in.</p>
<p>Assessment of Learning An assessment with the intention of testing a student's level of achievement at the end of a learning session.</p>	<p>Assessment for Learning An ongoing assessment that is able to enhance the quality of learning.</p>

Approaches in the Implementation of Competency Assessment and Modular Certification (CAMC)

The Modular-based approach to learning introduced in vocational subjects used modules which contained the aims and objectives. They outlined the desired outcomes a student who has undergone the teaching and learning process, should achieve. Through vocational subjects, the subject-matter learned is part of the preparation towards a vocation (Ministry of Education, 2002b). Therefore, the threshold of mastery of knowledge, skills and attitudes has to be shown. This is not only to master what has been taught, but also to achieve the level accepted by the respective industries. Therefore, appropriate behaviors and attitudes, related to the job requirements, also needed to be instilled, for assessment.

A modular-based approach to learning needed an assessment which is administered continuously throughout the teaching and learning process (Ministry of Education, 2002b). This approach would also enable students to complete a module, based on his or her capacity and capability. In order to obtain adequate evidence to determine a student competence, a holistic system of assessment is required (Ministry of Education, 2002b).

Taking into account the modular-approach to learning, a system of assessment which combined school-based assessment with a centralized assessment was applicable. In line with this, the certification system is also based on the student's competence achieved in each module of the subject.

The mechanisms used to realize competency assessment and modular certification, for the purpose of assessing students' performance in vocational subjects, in secondary academic schools in Malaysia, is as follows (Ministry of Education, 2002b):

1. Designing and planning
2. Registration
3. Identification and Collection of Evidence
4. The process of Competency Assessment and Modular Certification
5. School-based Assessment
6. Centralized Assessment
7. Scoring, Grading and Certification
8. Quality Control
9. Appeals and Re-examination

Designing and Planning

Designing an assessment instrument for vocational subjects is done in five phases. The first phase is conceptualization, the second, determining the instrument, the third phase involved formulating the instrument, the fourth involved testing its feasibility, and the final phase was to fine-tune the instrument.

Conceptualization is a process involving the collection and combination of information to identify what needed to be assessed. It starts with determining the assessment objectives, with reference to the aims of the vocational subjects program and the objectives of individual subjects. The objectives of each module in the subject are identified based on the elements and aspects that are to be assessed. The criteria

statement thus determined, contained the standard that must be achieved by the candidate. This is followed by determining the instrument that is most suitable to obtain evidence for each of the subjects that has been identified. Based on this assessment design, an outline is formulated, to be used as a guideline in constructing the instrument. Research is carried out to determine the suitability of the instrument. The instrument is then fine-tuned.

Registration

Registration of candidates for vocational subjects is similar to that of the other subjects in the Malaysian Certificate of Education (MCE). Students who have completed the Lower Certificate of Education are allowed to take the subject, but only if they were from government secondary schools or from fully-aided government schools (Ministry of Education, 2002b). Registration must be done using the Malaysian Certificate of Education Forms and Evidence Forms, which confirm that the candidate had fulfilled the registration requirements for vocational subjects. In order to sit for the centralized examination for the Vocational Subject, each candidate is required to be competent in at least 50% of the overall Form 4 module or its equivalent. The forms must be certified by the State Director of Education. Special candidates must get prior written approval from the State Education Director before registering for the vocational subject. Registration began from January to the 28th of February of the following year (Form 5) (Ministry of Education, 2002b).

Identification and Collection of Evidence

Any form of measurement done in schools involved the collection and evaluation of evidence. The assessment of vocational subjects emphasized evidence which reflected whether a student had mastered a particular knowledge, skill and attitude as stipulated in the objectives of the subject.

Since the required evidence involved process, product and knowledge, it would be unfair if students were assessed only at the end of the lesson. In competency assessment, various relevant evidence, will reflect or show the student's mastery of that knowledge, skill and values. These are collected and evaluated.

Identification of evidence is done based on the statement of criteria formulated for each aspect. Students' responses which are produced in various ways, forms the evidence which will be assessed for the purpose of evaluation. One or more pieces of evidence can be used to determine whether a student is competent in an assignment.

There are three types of evidence used in the evaluation process in schools. They are product, process and knowledge. Product evidence is the most common.

'Product' refers to any work done by students while doing an assignment, such as reports and other such work. There are two types of product evidence.

The first is 'permanent' products such as, answer scripts, practicals' reports, drawings and artifacts. They are kept and re-used as and when the need arose for obtaining evidence for a student.

Second, 'non-permanent' evidence which are, for example, food, or acting ability, fluency in reading quick or agility in mental arithmetic. This evidence is evaluated as and when it is completed.

‘Process’ evidence is in the form of processes. For example, the manner in which a student does a particular work can be construed as evidence. Evidence that supported the student’s ability by exhibiting the respective skills involved can be collected either through direct observations or recordings. Process evidence can be divided into two types.

‘Direct’ evidence refers to evidence obtained when a teacher evaluates a student’s ability in doing a specific work, through observation.

Second is ‘indirect’ evidence, on which a teacher can use indirect evaluation such as the student’s clarifications in either oral or written form to observe how he or she carried out that work.

‘Knowledge’ evidence required students to give evidence on the type of mastery, how it was done, why and what would need to be done if the situation changed in a particular subject. In other words, the knowledge that is being assessed is knowledge based on procedures or methods. This could also be based on prior experience in the competency that is to be mastered.

In addition, the evidence provided by the students must have the following features (Ministry of Education, 2005):

1. Validity

Evidence that is produced should be relevant and reflect the achievement of standard, as stipulated in the statement of criteria.

2. Concurrency

Evidence should be able to prove that students are able to complete a particular task according to current standards.

3. Authenticity

Students are able to prove that the evidence collected is of their own work.

4. Consistency

Evidence which is collected should prove consistency in behavior and repeatable when evaluated by different assessors.

5. Sufficiency

Evidence collected is sufficient to show the student's ability.

The decision to award competency is done after all evidence is collected and assessed. The evidence collected from the students is gathered in portfolios. All the evidence produced by the candidate is collected in a portfolio (Portfolio of Evidence). The portfolio is a collection of evidence which is used as a reference during the process of assessment and moderation.

Fischer and King (1995) defined the portfolio as a visual presentation of a student's accomplishments, capabilities, strengths, weaknesses and progress over time. Evidence in the portfolio will be seen by the assessors, the internal and external moderators. It can be used by students to seek jobs. The determining of competency is done based on evidence collected through the school-based and centralized assessments.

The process of Competency Assessment and Modular Certification

Each vocational subject has its respective modules. Each module contains its own learning objectives. The objectives of each module are spelt out in a number of units or

activities. Each learning activity has its own standard, or the minimum level of achievement required, for each of the skills involved. Each unit or activity needs to be carried out by student in the learning process to achieve the objectives of the respective modules.

The criteria for competency for each module should be identified before the assessment process. The assessment objectives of a particular module are derived from the learning objectives of the module, taking into consideration the aims of the subject.

Each competency or element that will be assessed is referred to as a knowledge, skill or value element, with certain aspects. Aspects for each element *i.e.* knowledge, skill and value, explains the scope of the competency or that parameters that are to be assessed. Several statements of criteria are determined for each aspect that is to be assessed. The statement of criteria, or criteria aspects in its entirety, describes the standard or the minimum level of competence to be achieved by the student. The standard is based on the standard of achievement stipulated for each of the learning activities in the module. The statement also identifies the evidence or responses that students are required to produce.

The most suitable instrument to obtain evidence for each aspect has to be identified. The instrument that will be used depends on the type of evidence that is whether the evidence is in the form of a process, a product or knowledge. For scoring purposes, evidence exhibited by the students will be compared to the criteria aspects. Based on this comparison, the assessor will decide whether the candidate has achieved the standard stipulated in the associated statement of criteria. If the evidence produced is sufficient and conformed to the stated standard, the candidate is considered competent.

Students must conform to the standards for all the criteria aspects, and recognized as competent in each of them, to be recognized as competent in the elements. They then need to be competent in all the elements of a module, to be recognized as competent in that module. In other words, the competency score for all related criteria aspects will show the competency score for each of the elements assessed. If a student obtains a competent score for all the elements that he or she is assessed on, the student will be certified competent for the whole module. Recognition of this achievement is stated in the Vocational Subject Certificates.

A student's performance in a school-based assessment is depicted by the percentage of competence in the respective modules. The score for the school-based assessment will be combined with the score for knowledge evidence (central-based assessment) using the formulated Matrix System, as the end grade for that subject in the Malaysian Certificate of Education (MCE Grade) (Ministry of Education, 2002b).

School-based Assessment

The school-based assessment, known as competency assessment, is a process of collecting evidence and judging the level of learners' competency in specific tasks, based on criteria and standards identified for that task. The process and product evidence for each particular learning module is assessed to determine whether a learner has acquired a satisfactory level of competency in the task. This assessment is conducted by teachers who have been appointed to teach vocational subjects.

The competency assessment is flexible; there are no rigid schedules to be followed. Furthermore, learners are given adequate time and options to attain the

competency level, based on their ability and readiness to be assessed. Hence, assessment can be done at any time suited to learners. In other words, this is ‘assessment on demand’, practiced when learners are assessed only when they are absolutely prepared for it.

Besides flexibility, the focus of CAMC is on the individual. Learners are assessed based on their personal achievements according to stated criteria, without comparison to other learners’ achievements. Their achievement scores are not relative, but absolute ones. The CAMC is therefore a learner-centered assessment.

CAMC has great potential to enhance and enrich learning because of its criterion-reference test. Learners have the opportunity to improve their achievements based on stated criteria when they are informed of their level of competency. Towards the end of the modular assessment, learners are awarded with a certificate that encompasses all the modules in which they are competent. This Vocational Modular Certificate is conferred on learners before the last day of school in form 5. The certificate denotes the learner’s level of competency, described positively, in the modules completed.

The module mobility system in CAMC is described in Figure 2.1. This figure shows the flow of the assessment module in learning vocational subjects. Students will go through Module 1 (M1) and undergo assessment M1. If the students are competent, they move on to Module 2 (M2), and so forth. If they are not competent in Module 2, they will be given a chance to prepare themselves for re-assessment. For this purpose, the assessor provides feedback on the mistakes committed by the student, prior to the re-assessment.

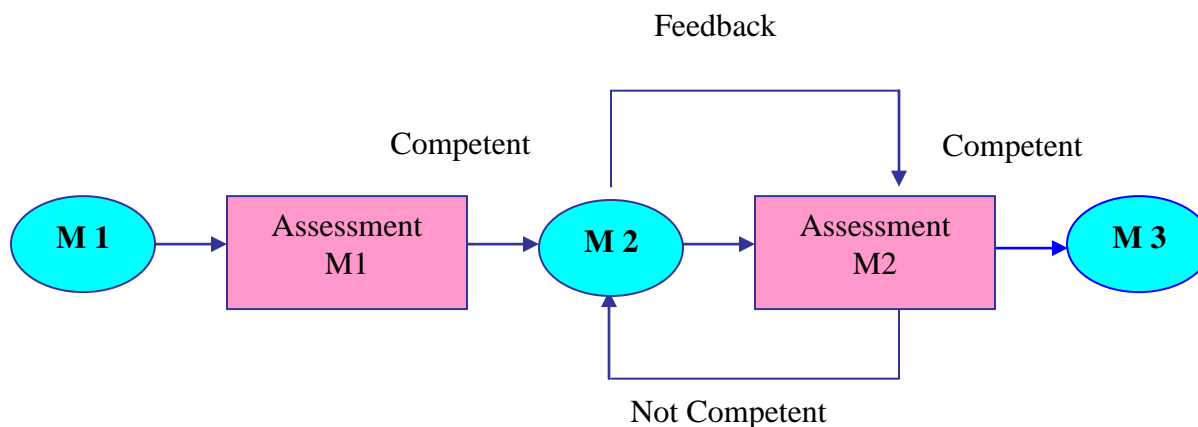


Figure 2.1. The movement of the assessment module in learning vocational subjects.

In school-based assessments, students can be re-assessed when they are not certified competent. The methods for re-assessment are shown in Figure 2.2. If a student is not competent in one of the modules, let's say Module A, due to a lack in one competency element (say E2) in the module, the student is allowed to be reassessed. The student has to repeat only E2 and not the whole module (Module A). The competency element (E2) is also present in other modules (Module B). Though not competent in Module A, the student can be assessed through learning Module B. This can be done only if Module A is not a pre-requisite for Module B. A student who is competent in E2 in Module B is automatically competent in E2 of Module A. Only then can recognition for Module A be made. In other words, a student can continue with subsequent modules, while waiting to be re-assessed on elements from earlier modules.

However, if Module A is a pre-requisite for Module B, the candidate needs to first be certified competent in Module A, before attempting module B. The candidate has to be re-assessed for E2 until deemed competent, either in module A or through another

independent module – (Module C) which also contains E2. Then the student can proceed with Module B and so forth. The student has to go through all the competency assessments in the subsequent module.

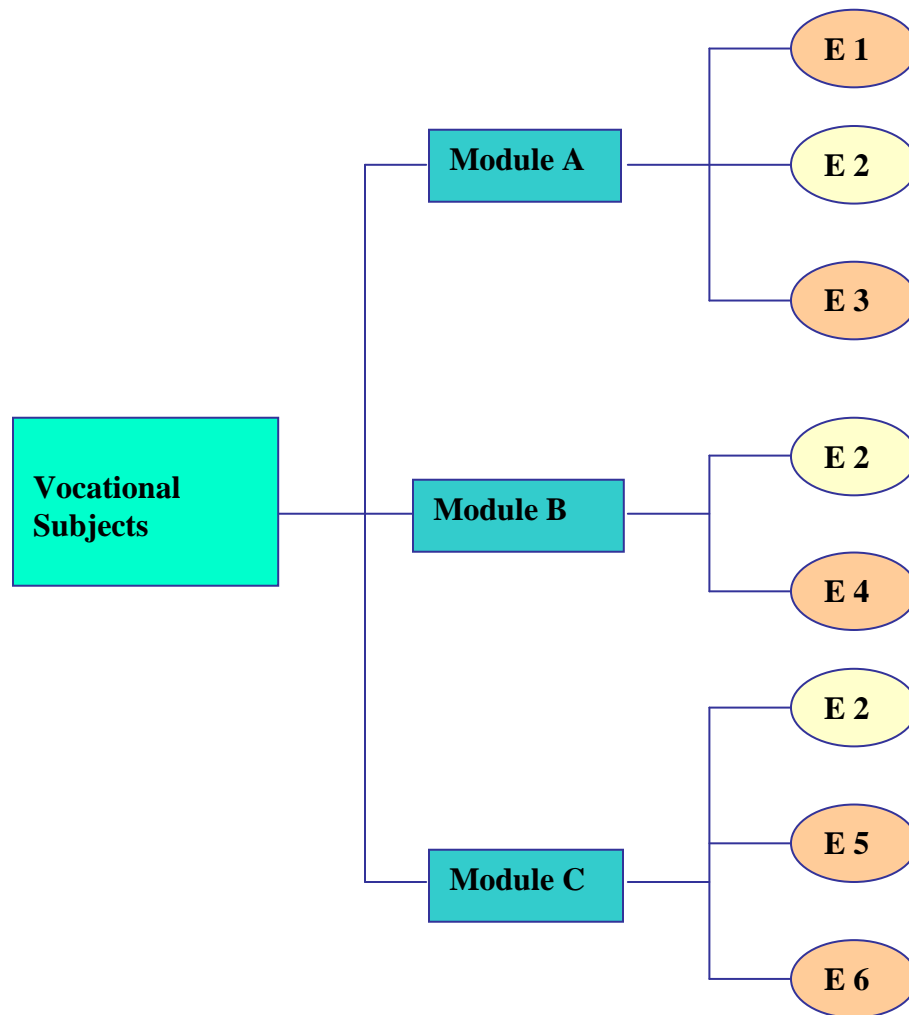


Figure 2.2. Methods for re-assessment

Centralized Assessment

The central-based assessment for vocational subjects is a written examination at Malaysian Certificate of Education (MCE) level, conducted by the Malaysian Examinations Syndicate according to a schedule. The objective of this assessment is to assess learners' competency based on their knowledge and experience in accomplishing the tasks set out in the modules (Ministry of Education, 2002b). A grade is awarded and recorded in the MCE certificate, similar to other subjects. Table 2.2 shows the differences between the school-based assessment and the centralized assessment of CAMC.

Table 2.2

Differences Between School-Based Assessment and Centralized Assessment

No.		School-based Assessment	Centralized Assessment
1	Construct assessed	Skills and Values (competency)	Application of Knowledge and Skills
2	Evidence	Process and Product	Knowledge
3	Instrument	Checklist (Assessment Document for Vocational Subjects in Secondary Academic Schools)	Written Exam (Subjective)
4	Assessor	Subject teacher	Malaysian Examination Syndicate
5	When to assess	During the process of teaching and learning	According to Examination Timetable

Scoring, Grading and Certification

The scoring and grading system used in competency assessment, is referred to as the fixed criteria or standard. Evidence produced by students is assessed and a score is given by comparing the evidence to the statement of criteria for each of the aspects assessed. There are two possibilities of scores: Competent or Not Competent. Students have to be assessed competent in all aspects of a module, to be recognized as competent in that module. The final centralized assessment grade shown in the Malaysian Certificate of Education will be determined based on the following requirements shown in Table 2.3 and the grading requirement for centralized assessment is shown in Figure 2.3.

Table 2.3

The Final Centralized Assessment Grading Requirements

Grade	Explanation/Indicator	Criteria
1A	Excellent	At least 75% competent in the module and obtained a score of 65 in the centralized examination
2A		
3B	Credit	At least 60% competent in the module and obtained a score of 40 in the centralized examination
4B		
5C	Achievement	At least 50% competent in the module and obtained a score of 25 in the centralized examination
6C		
7D	Achievement	At least 30% competent in the module and obtained a score of 10 in the centralized examination
8E		
		At least 50% competent in the module and sat for the centralized examination
		At least 30% competent in the module and sat for the centralized examination

Source : Ministry of Education (2002b)

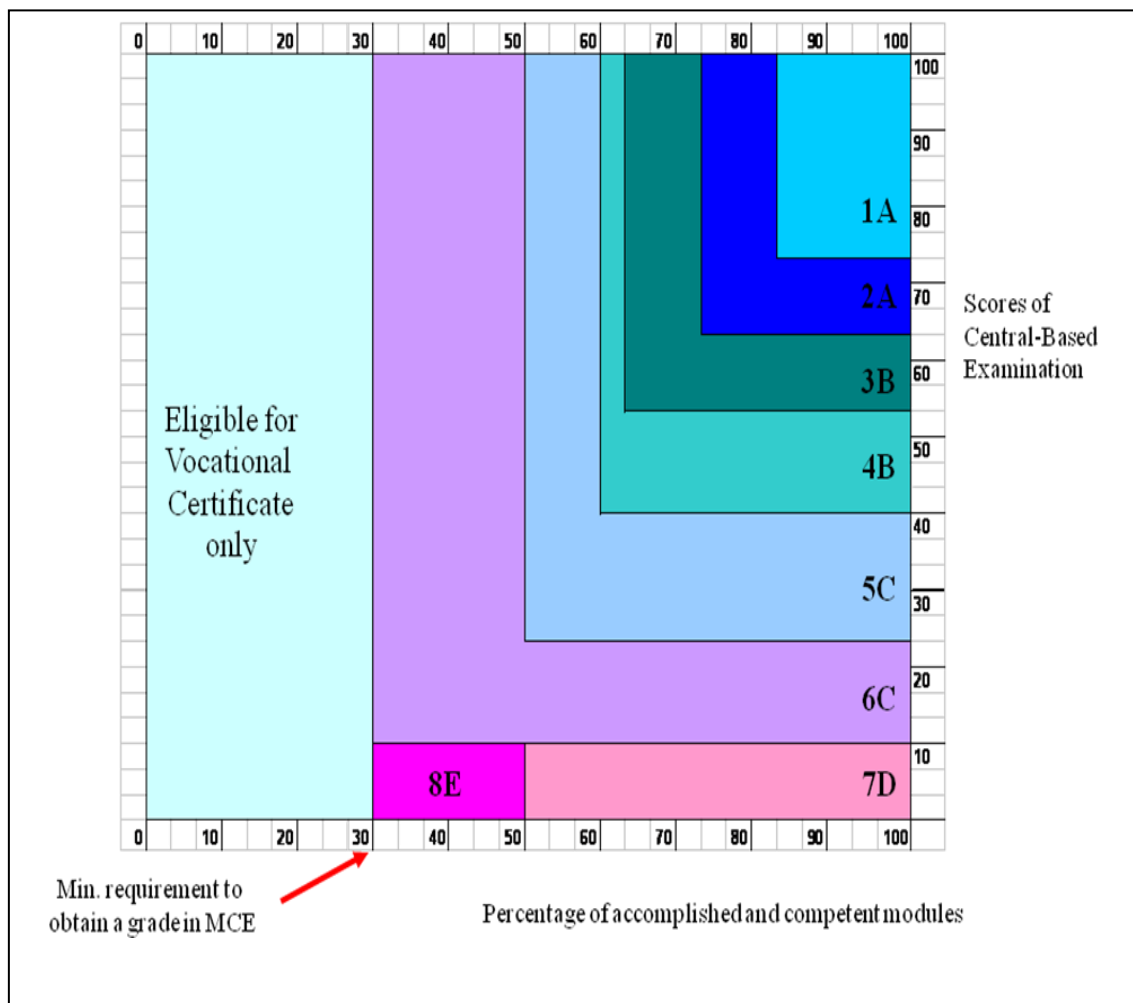


Figure 2.3. Malaysian Certificate of Education Grading System
Source : Ministry of Education (2002b)

Quality Control

In order to determine whether a school-based assessment was valid and reliable, only students who are competent and qualified were issued modular certificates. Students who were not competent did not receive any certificates. Therefore, a system for quality control needs to be established and administered. Nuttall and Thomas (1993) stated that the results of the assessment should be consistent on comparison across assessors and occasions. It should be consistent from center to center, and on a national basis. Quality

control in the implementation of competency assessment and modular certification involves monitoring and assessment moderation (Ministry of Education, 2002b).

Monitoring is the process carried out to obtain information on the implementation according to the principles and procedures outlined in competency assessment. This involves the identification of problems and the effectiveness of the program. Monitoring can be carried out by the school Inspectorates, officers of the Malaysian Examinations Syndicate or the State Education Department (Ministry of Education, 2002b).

Assessments in schools need to be carried out in line with the fixed standards and the assessors who give scores need to be moderated. Assessment moderation exists in the system to ensure fair judgment of all candidates' work. It should be accurate and consistent between different assessors and examination centers.

The Department of Education and Science / Welsh Office (1985) defines moderation as the process of aligning standards between different examinations, components or (most frequently) centers and teachers responsible for the assessments of their candidates.

Assessment moderation is done in two stages: internally and externally (Ministry of Education, 2002b). Training was given to assessors, internal and external moderators to ensure that all parties involved with assessment had sufficient knowledge and skills prior to conducting the assessment moderation. Internal moderation for school-based assessment is the process of moderating school vocational subjects' assessors. Internal moderation is the responsibility of the examination center. It is valid and conducted by internal moderators, who are appointed by the examination center. The internal

moderator is also responsible for quality control at that examination center. The number of internal moderators appointed depends on the number of subjects offered by the center.

External moderation for school-based assessment is the responsibility of the Malaysia Examinations Syndicate which aims to ensure that assessments in examination centers and the activities of internal moderation are done in a consistent manner. Quality control systems need to be established in schools and administered as effectively as possible to ensure reliable assessment.

Appeals and Re-Examination

Candidates who are not satisfied with their module scores given by an assessor, can appeal to be re-assessed. Appeals can be made to the assessors, internal moderators or the school principal. It should be done before the module scores reach the Malaysian Examinations Syndicate. Candidates, who are not satisfied with their grades for the Vocational Subjects in the Malaysian Certificate of Education, can apply for re-examination. However, only re-examination of their written paper will be entertained.

The Implementation Strategy of CAMC

Several mechanisms have been applied to ensure the success of the CAMC. The modular approach has been adapted where modules were developed based on the curriculum objectives, to ensure that learners acquired the relevant competencies they need, to be employed in the future. Therefore, the criterion-reference test (CRT), which used the objectives' standard and mastery level, is applied. Learners are tested on their ability at a specific level by performing tasks of a certain degree of difficulty suited to the

required level. Criterion-reference tests are needed to promote meaningful learning as the scores obtained show valuable information about learners' performance and the level of competency. Moreover, the CRT demonstrates how learners could improve their level of competency in certain fields. The CRT is a concise assessment to help learners achieve success without highlighting their failures. In order to ensure the success of the CAMC, thorough research, planning and implementation strategies are needed. Hence, the following steps were by the MES to ascertain a compelling CAMC.

First, a concise CAMC Concept Paper was produced after a comprehensive and detailed research which was carried out with the support and cooperation from various related bodies. In addition, a School Based Assessment Document for each vocational subject taught in schools, was produced as a guide to an effective and efficient implementation of CAMC for each subject.

Secondly, in order to enhance the understanding and knowledge of those involved in implementing CAMC, knowledge of the CAMC was disseminated to the various departments in the Ministry of Education.

Thirdly, competent assessors were appointed to ensure successful implementation of the CAMC in schools. Hence, conscientious appointments have to be made. The Malaysia Examinations Syndicate (MES) appoints the National Chief Assessors and Internal Moderators, while school principals appoint the assessors at school level.

Fourthly, as since competency assessment needs competent assessors, training of assessors is essential to ensure that the implementation of CAMC complied with the allotted specifications and standards.

Finally, besides training, monitoring and moderation are equally important in the implementation of CAMC to ensure that its principles and procedures are followed as designed. The effectiveness of CAMC can be detected through this monitoring system, while moderation, helped retain the accuracy and consistency of the assessment in the various assessment centers.

The Malaysia Examinations Syndicate is responsible for the production of and management of the Central-Based Assessment. The Malaysia Examinations Syndicate confers two types of certificates on learners who have completed both the School-Based Assessment and Central-Based Assessment. The implementation of CAMC for vocational subjects in academic secondary schools in Malaysia is relevant, appropriate and timely, as the demand for highly-skilled and knowledgeable workers is on the rise. CAMC equipped learners with sufficient knowledge and skills, and provided them with opportunities for brighter prospects in the future, may it be in further studies or their career.

This section looked at the concept and the implementation of Competency Assessment and Modular Certification (CAMC) of vocational subjects, which was introduced in selected secondary schools in Malaysia since 2002. It also discussed the school-based and the central based assessment of the CAMC. Hence, it gave an overview of how CAMC was being implemented in schools. The focus of this study is, however, the implementation of CAMC. The next section of the literature review looks at the role of classroom assessment.

The Role of Classroom Assessment

The second section of this literature review discusses the concepts of classroom assessment and authentic assessment reform. With this purpose in mind, this section of literature review has been divided into three subsections. The first, ‘classroom assessment’, introduces classroom assessment and its concepts. The second subsection is on ‘the role of classroom assessment in teaching and learning’, and describes a number of studies on a range of concerns about the role of classroom assessment in teaching and learning. The third subsection discusses recent trends in assessment.

Classroom Assessment

McMillan (2004) defined classroom assessment as the collection, evaluation, and use of information to help teachers make better decisions. Assessment was more than testing and measurement, familiar terms used extensively in discussing how students are evaluated. According to McMillan (2004) the four components in implementing classroom assessment are ‘purpose’, ‘measurement’, ‘evaluation’ and ‘use’. These components are illustrated in Figure 2.4, which shows the sequence of the components, beginning with the identification of purpose.

The first step in any assessment is to clarify the specific ‘purpose’ or ‘purposes’ of gathering the information. Traditionally, assessment was thought as a way to measure what students have learned and to grade them, but there are other reasons for assessment such as answering questions like, “will the assessment improve student performance?”, “is it possible to track students’ progress in learning?”, “has the assessment motivated students to learn?”, and “does the assessment provide a realistic estimation of what

students are able to do outside the classroom?" besides providing feedback to students (McMillan, 2004). He further stated that all the reasons mentioned above needed to be considered in order to fully integrate assessment with instruction.

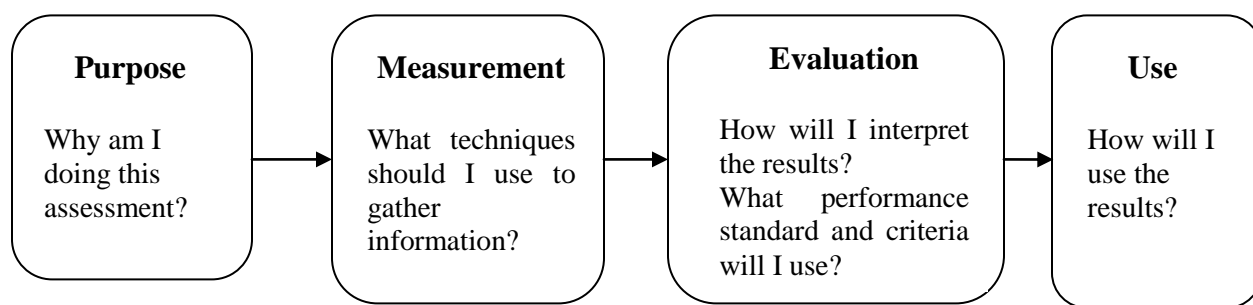


Figure 2.4. Components of classroom assessment

Source : McMillan J.H. (2004) Classroom Assessment: Principles and practice for effective instruction (3rd ed.). Boston. Pearson Education. Inc.

The term ‘measurement’ has traditionally been defined as a systematic process of assigning numbers to performance (McMillan, 2004). Measurement is a process by which traits, characteristics, or behaviors are differentiated. According to McMillan (2004), the process of differentiation can be very formal and quantitative, and a variety of techniques can be used to measure a defined trait or learning target, such as tests, ratings, observations and interviews.

The third component is ‘evaluation’. This involves interpretation of what has been collected through measurement, in which value judgments are made about performance. According to McMillan (2004), teachers’ professional judgments played an important role in evaluation. He stated that an important determinant of how teachers evaluated performance was the nature of the performance standards they employed – as performance standards are used to determine whether a performance is “good” or “bad”.

He also stated that criteria played an important part in the evaluation process because they are the specific behaviors or dimensions that are used as evidence to determine the success in attaining the standard. He went on to say that both standards and criteria communicated to students, the teacher's expectations of them. These expectations were important in motivating students and in setting an 'academic achievement' climate in the classroom.

The final stage of implementing assessment is how the evaluations were used. The use of test scores and other information is closely tied to the decisions teachers must make to provide effective instruction, for the purposes of assessment, and to satisfy the needs of students and parents (McMillan, 2004).

The Role of Classroom Assessment in Teaching and Learning

Shepard (2000) illustrated the shared principles of contemporary curriculum theories, cognitive and constructivist learning theory and recent trends in classroom assessment in Figure 2.5. Her overlapping figures signified that the changes from older behaviorist theories of learning and motivation, curriculum designed for social efficiency and principles derived from scientific measurement, all overlapped to provide a new set of ideas to guide classroom assessment.

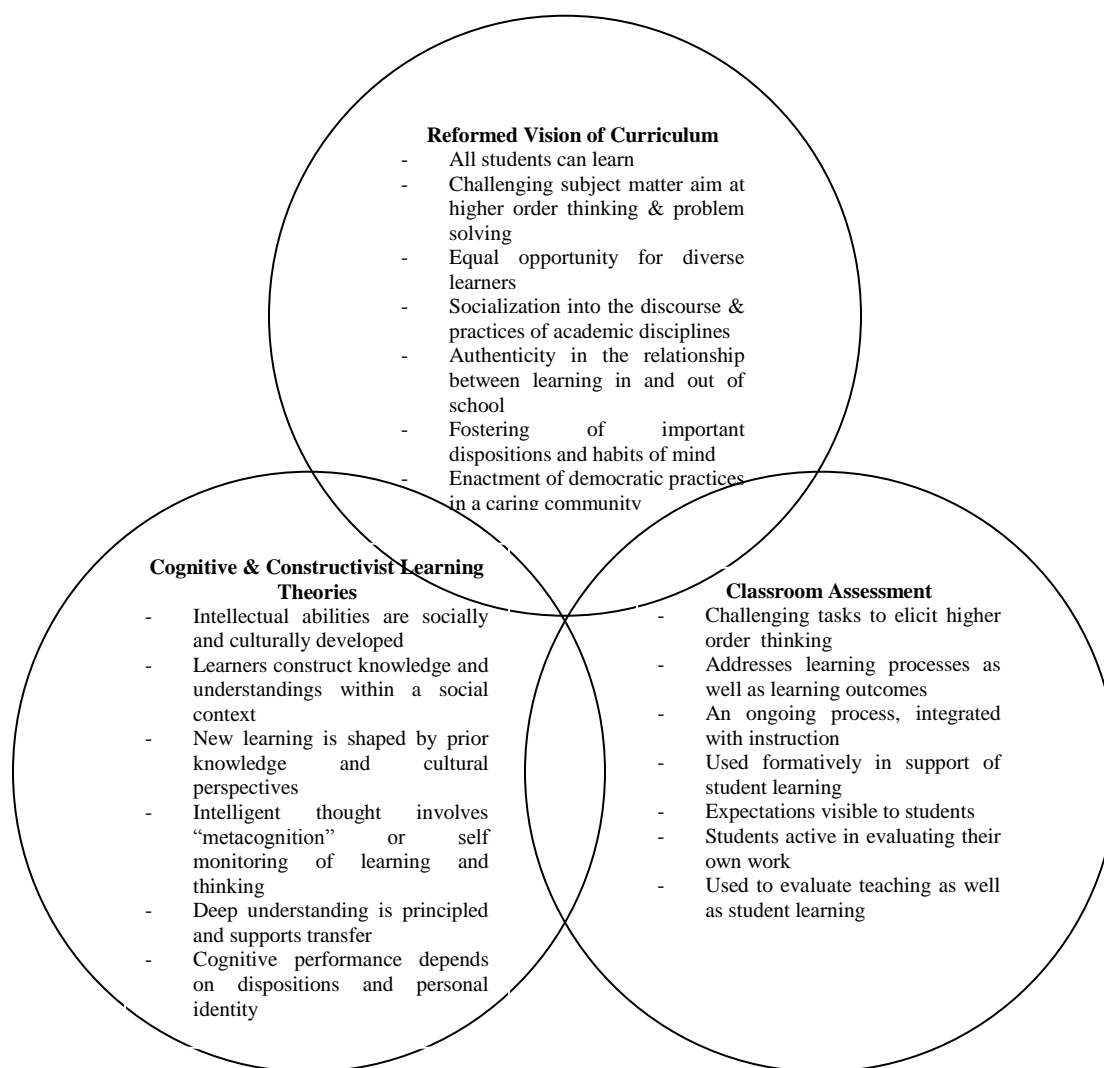


Figure 2.5. Shared principles of curriculum theories, psychological theories and assessment theory characterizing and emergent, constructivist paradigm.

Source: From *The Role of Classroom Assessment in Teaching and Learning* (p.17), by Lorrie A. Shepard, 2000, CRESST/University of Colorado at Boulder. CSE Technical Report 517.

Although the changes in principles of curriculum, learning and motivation are now fairly well established, classroom assessment practices were only beginning to change (McMillan, 2004). McMillan further stated that recent high-stakes testing at the state level, pushed many educators back towards behaviorist and scientific measurement

theories. The research from cognitive learning and curriculum theories has laid the foundation for significant changes in classroom assessment, because as we discover more about how students learn, we realize that assessment practices as well as instructional practices, needed to change to keep pace with this research (McMillan, 2004).

In order to develop a classroom assessment model that supported teaching and learning according to a constructivist perspective, it was important to see how a re-conceptualization of assessment followed changes in learning theory and concomitant changes in epistemology (Shepard, 2000). Figure 2.5 summarizes key ideas in an emergent, constructivist paradigm. According to constructivist theory, knowledge was neither passively received nor mechanically reinforced; instead, learning occurred through an active process of sense-making. The three-part figure was developed in parallel to the three-part dominant paradigm to highlight changes in curriculum, learning theory and assessment, respectively.

Cognitive and Social-Constructivist Learning Theories

The constructivist paradigm takes its name from the fundamental notion that all human knowledge was constructed (Shepard, 2000). As noted by Philips (1995), this statement applied to both, construction of public knowledge and modes of inquiry in the disciplines as well as the development of cognitive structures in the minds of individual learners. This means that scientists built their theories and understandings, rather than merely discovering laws of nature. Similarly, individuals made their own interpretations and ways of organizing information and approaches to problems, rather than merely taking in pre-existing knowledge structures. However, an important aspect of

individual learning was developing experience with, and being inducted into, the ways of thinking and working in a discipline or community of practice. Both the building of science, and individual learning, are social processes (Shepard, 2000). Shepard stated that although the individual must do some private work to internalize what was supported and practiced in the social plane, learning could not be understood apart from its social context and content.

Reformed Vision of Curriculum

The elements of a reformed vision of curriculum set the direction for the kinds of changes, contemporary educational reformers were trying to make in the classroom. Some of these principles were part of the wider public discourse, familiar to policy makers and journalists as well as educators and researchers; others were articulated by a smaller circle of education reformers (Shepard, 2000). Shepard's framework, as in Figure 6, is intended to illustrate how learning theory and curriculum reform come together at the classroom-level, to reshape instruction and assessment. She stated that significant changes could occur in classrooms, with corresponding changes in the community and at other levels of the educational and political system.

McLaughlin and Talbert (1993) identified multiple, embedded contexts of teachers and classrooms that could either constrain or facilitate educational change. These include subject matter cultures, state and local authorization, the parent community and social class culture, teachers' expectations of teachers at the next level of schooling, and professional contexts including teachers' development needs. Newmann (1996) used authenticity as a key principle of curriculum reform. He stated that authentic achievement

involved tasks that were significant and meaningful like those undertaken by scientists, musicians, business owners, crafts people, and so forth. Authentic pedagogy was more likely to motivate and sustain students in the hard work that learning required, because their intellectual work had meaning and purpose (Newmann, 1996).

Classroom Assessment

There are several principles identified in Figure 2.5 that falls into two main categories, having to do with transformation of both the substance of assessments and how they are used. According to Shepard (2000), the substance of classroom assessments must be congruent with important learning goals. She stated that the content of assessments should match challenging subject matter standards and be connected to contexts of application. She also insisted that the assessments mirror important thinking and learning processes, especially modes of inquiry and discourse, as they were valued and should be practiced in the classroom.

The purpose of assessment in classrooms must also change fundamentally so that it was used to help students learn and to improve instruction, rather than be used only to rank students and to certify the end product of learning (Shepard, 2000). She felt that to serve this purpose, it should be required that specific principles of classroom assessment make visible to students the expectations and intermediate steps for improvement, and that students be actively involved in evaluating their own work. It is of no doubt that such a view of assessment is an ideal, and rarely observed in practice. According to Shepard (2000), efforts to pursue this vision of assessment practice must contend with the powerful belief system associated with scientific measurement. She noted that all the

changes called for by the reform agenda, required new knowledge and great changes in teaching practices. However, she argued that changing assessment practices was most difficult because of the continued influence of external, standardized tests and because most teachers had little training beyond objective writing. They were also too familiar with traditional item formats they used to help them gauge how to assess their students' understanding.

Recent Trends in Assessment

Recently, many studies showed that testing at the end of instruction was being supplemented with assessment during instruction. This was to help teachers make decisions and could be referred to as alternative assessment. According to McMillan (2004), alternative assessments included authentic assessment, performance assessment, portfolios, exhibitions, demonstrations, journals, and other forms of assessment that required the active construction of meaning, rather than the passive construction of isolated facts. These assessments engaged students in learning, and required thinking skills. Thus, they were consistent with the cognitive theories of learning and motivation as well as societal needs to prepare students for an increasingly complex workplace.

Another trend was the recognition that knowledge and skills should not be assessed in isolation. It was necessary to assess the application of knowledge and skills together. One of the most important advances, in both instruction and assessment, was the emphasis on authenticity (Wiggins, 1998). Authentic instruction and assessment focused on knowledge, thinking and skills revealed in real life settings--outside school--that produced the student's best rather than a typical performance. To accomplish this,

students needed multiple authentic opportunities to demonstrate their knowledge and skills and obtain continuous feedback. This kind of emphasis resulted in greater student motivation and improved achievement. In this way authenticity effectively integrated instruction, assessment and motivation.

According to Wiggins (1998), authentic instruction and assessment emphasized the following: students were assessed on what was taught and practiced in ways that were consistent with assessment methods; the focus was on solving problems and accomplishing tasks like those done by professionals in the field; standards or criteria for success were public, shared with the students; assessment occurred over time to provide meaningful feedback so students could improve, and lastly, learning and assessment contexts were similar to 'real life'.

Another important trend was to involve students in all aspects of assessment, from designing tasks and questions to evaluating their own and each other's work. There was a change of emphasis from the teacher providing assessment tasks and feedback, to promoting student engagement in the assessment process. This was best accomplished when there was a continuous flow of information about student achievement, and not merely checks on student learning (Stiggins, 2002). That is, assessment for learning becomes as important as assessment of learning. Stiggins (2002) identified eight ways for facilitating assessment for learning, namely: (a) understanding and articulating in advance of teaching or learning targets; (b) informing students about learning goals in terms that students understood, from the very beginning of the teaching and learning process; (c) Becoming assessment literate and able to transform expectations into assessment exercises and scoring procedures that accurately reflected student

achievement; (d) using classroom assessment to build students' confidence in themselves as learners and help them take responsibility for their own learning; (e) translating classroom assessment results into frequent descriptive feedback, providing students with specific insights on to how to improve; (f) continuously adjusting instruction based on the results of classroom assessment; (g) engaging students in regular self-assessment, with standards held constant so that students could watch themselves grow over time; (h) actively involving students in communicating with their teacher and parents about their achievement status and improvement.

Student engagement in assessment was closely related to another recent trend, could also be termed as formative assessment (McMillan, 2004). Formative assessment was information that is provided to students during instruction to help them learn. It is contrasted with summative assessment which reported students' performance at the end of a unit of study. Recent research has found that effective formative assessment enhanced student learning (Black & Wiliam, 1998; Brookhart, 2001). Students were able to compare actual performance with targets and make adjustments when they received feedback about their progress.

McMillan (2004) argued that what was needed was a balanced approach to assessment, in which appropriate techniques are administered and used in a credible way for decision-making. He further noted that assessment technique must be matched to purpose, and must be conducted according to established quality standards. Some recent trends, such as making standards and criteria public, were helpful procedures regardless of the assessment employed. They would improve traditional as well as newer types of measurement by engaging students in the entire assessment process. These and other

recent trends in classroom assessment discussed above are summarized in Table 2.4.

Table 2.4

Recent Trends in Classroom Assessment

From	To
Sole emphasis on outcomes	Assessing of process
Isolated skills	Integrated skills
Isolated facts	Application of knowledge
Paper-and-pencil tasks	Authentic tasks
A single correct answer	Many correct answers
Secret standards	Public standards
Secret criteria	Public criteria
Individuals	Groups
After instruction	During instruction
Little feedback	Considerable feedback
“Objective” tests	Performance-based tests
Standardized test	Informal tests
External evaluation	Students self-evaluation
Single assessment	Multiple assessments
Sporadic	Continual
Conclusive	Recursive
Assessment of learning	Assessment for learning
Summative	Formative

In summary, the recent trends in educational assessment to implement authentic or performance-based assessment, were predicated on the assumption that constructing a response to a realistic problem, such as writing an essay, demonstrating how to solve a mathematical problem, or participating in a group multi-disciplinary social science

simulation problem, required students to show higher-order cognitive skills such as application, analysis, synthesis or evaluation. It was reported that the adoption of performance assessment practices gave teachers more insight into student learning requirements.

This section has explored the concepts of classroom assessment and authentic assessment reform. It also introduced the role of classroom assessment in teaching and learning, described a number of studies on a range of concerns regarding the role of classroom assessment in teaching and learning, teachers' conceptions of assessment and the recent trends in assessment. The next section will discuss the theories and models of implementation and change.

Theories and Models of Implementation and Change

This third section of this literature review discusses educational change, teachers' roles in the implementation of educational change, teachers and educational change and the degree of the implementation model. With these purposes in mind, this section has been divided into four subsections. The first is on educational change, describing key factors in understanding change in schools and teachers' change process. Second, looks at teachers' roles in the implementation of educational change and studies related to the implementation. The third subsection regarding teachers and educational change summarizes the development of theories of educational change over the last 40 years. The final subsection discusses the degree of implementation of the model and the dimensions used to measure it.

Educational change

Fullan (1982b), a key person in the change literature, described key factors in the understanding of change in schools. He provided five kinds of identifiable and measurable outcomes of the change process: (a) degree of implementation and degree of teacher change; (b) attitude toward innovation and perception of strengths and weaknesses of the change; (c) impact on students by assessment of learning, on teachers' benefits by professional development and growth, and on organizational change by increased peer collegiality; (d) continuation of site-based management (e.g. budget); and (e) attitude toward school improvement and attitude toward making changes. Fullan (1985) cited four case studies by Showers, Huberman, Stallings and Little and summarized the results by inferring seven key factors; first, change is a process, not an event, that happened over time; second, anxiety and uncertainty were common in initial changes; third, assistance was needed; fourth, changes occurred through practice and feedback; fifth, the teacher needed to understand the rationale and reason for implementing the new strategy; sixth, organizational conditions of administrative support and peer norms helped toward successful implementation, and finally seventh, successful change occurred through interaction with peers and administration.

Another important influence on change in teacher behavior was, the opportunity to practice new skills and receive feedback on performance. The simplest form of practice occurred in the classroom where the teacher has the opportunity to practice and receive immediate feedback by observing the effect on students (Sparks, 1983). A more formal practice for feedback included peer coaching. Researchers tested teachers' modes of thinking during a study of coaching. Sparks (1983) theorized that teachers' mode of

thinking ranged from concrete, rigid thought to flexible behavior. Among the study's findings was that teachers who were flexible thinkers, were more capable of using the recommended models of teaching as the researchers intended.

Another model of teacher change suggested that significant change in the beliefs and attitudes of teachers was necessary when they gained evidence of change in the learning outcomes of their students. This perspective on teacher-change was based on the concept that change is a learning process, determined to a large degree by their classroom experiences (Guskey, 1986). The model in figure 2.6 below illustrates this process of teacher change:

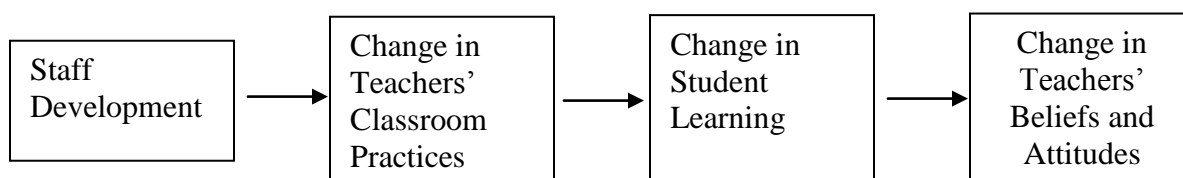


Figure 2.6. Teacher change process

Some broad factors of an educational change influencing the implementation process are; the characteristics of the change, the strategies used to implement the change, the characteristics of the teachers who will implement the change, the school environment where the change was implemented, and outside environment factors that encroached on school decisions (Waugh & Punch, 1987). Specific experiences could also increase the capacity of individuals to manage change and cope better with the ambiguity

of change. What seemed to get lost in the process of educational change was the understanding that change was highly personal (Fullan, 2001).

Teachers' Roles in the Implementation of Educational Reform

A review of literature on recent educational reform revealed the long-standing failure of states or governments in trying to force teachers to change their practices (Cuban, 1990; Darling-Hammond & McLaughlin, 1995; Fullan & Miles, 1992). Their reports concluded that if higher-level governments mandated policy initiatives, it was unlikely that local educators or school teachers would implement those policies in compliance with the expected spirit, expectations, rules, regulations or program components. Approaches in policy implementation found in these studies are traditionally categorized into two poles; top-down and bottom-up.

The 'top-down' approach is defined by the following characteristics: emphasis on the role of implementation in policy-making, focus on only those who were formally involved in the implementation of a specific program, analysis done only at the top and hardly at the delivery-level implementers, and choices in implementation were structured by state or government mandates (Elmore & McLaughlin, 1981; Fullan, 1994; Van Meter & Van Horn 1975; Weatherly & Lipsky, 1997; Winter, 1990). On the other hand, the 'bottom-up' approach was defined by the following characteristics: involvement of local implementers and clientele in policy-making; focus on negotiation among parties concerned for a mutually satisfying policy, and emphasis on delivery-level activities as indicators of success of reform (Goggin, Bowman, Lester & O'Toole, 1990; Palumbo & Calista, 1990; Pressman & Wildavsky, 1973).

Fink and Stoll (1998) contended that the failure of top-down approaches reflected on the involved practitioner rather than external knowledge, and the emphasis shifted from educational management as the focus of change, to changes in educational process. However, Reynolds, Hopkins and Stoll (1993) argued that the 'bottom-up' or process oriented approaches did not often lead to improvement in student performance. In addition, there have been studies (Goggin et al., 1990) which pointed out that both approaches could develop significant weaknesses. Each tended to ignore that portion of implementation reality as explained by the other, and neither addressed the question of the relative influence of these different sorts of variables on policy as it is converted into action. They further explained that both approaches also did not conceptualize the process in a fashion that was likely to explain clearly how these different factors interactively affected implementation in a dynamic fashion.

Odden (1991) outlined the evolution of implementation knowledge and theory in three stages, spanning the past four decades. Research conducted in the first stage (late 1960s to early 1970s) revealed that there was inevitable conflict between local orientations, values, and priorities and the state or government initiated programs. Pressman and Wildavsky (1973) contended that the disciplinary distinction between policy formulation and implementation often found in the top-level-down approach was fatal to the course of reform. The change required in reform policy was viewed as a problem of the delivery personnel because policy was transformed at each point in the process as and how individuals interpreted and responded to it. Thus, what actually was delivered or provided under the reform policy, depended finally on the individuals at the end of the line who had considerable discretion in the implementation process. They

further stated that in policy reform implementation, personal and organizational resources were severely limited and often inadequate. Odden (1991) cited various studies (Derthick, 1976; Ingram, 1977; Pressman & Wildavsky, 1973), which pointed out that the lack of capacity and will, in both the state or government and the local implementers, as the fundamental problem of the often 'top-down' policy implementation at this stage. Other problem areas included, faulty program design, and more importantly, the policy's relationship to the local institutional setting.

In the second stage (late 1970s and early 1980s), the understanding of how government program implementation worked, began to change and emerge. Based on studies and research conducted during this stage (Farrar & Milsap, 1986; Hargrove, 1983; Peterson, Rabe, & Wong, 1986), Odden (1991) concluded that higher-level government programs would eventually be implemented locally, the initial conflict would be worked out over time, and the opportunity for bargaining and negotiation would ultimately produce a workable program for both parties, the government and the local implementers. Another conclusion was that the state or government initiatives did impact local practices – questionable felt all the same.

Reforms in the third stage (late 1980s and 1990s) were found to emphasize not only efforts to implement the programs but also on ensure they really worked, as studies by Elmore & McLaughlin (1981), Fullan (1982a) and Huberman & Miles, (1984) revealed that claiming programs were implemented was not the same as claiming that they were effective or that they solved the problems for which they were created. Unlike the early reforms of the 1960s to early 1980s, Odden (1991) reported that reforms at this stage had a tendency to focus more on the overall education system, rather than on

specific programs or particular groups of target students. Efforts were geared towards the comprehensive reform of curriculum, the teaching profession and the traditional school organization. Thus, the implementation issue was not whether all or any of the programs were implemented, but whether they had worked together to improve the quality of local schools and classrooms.

Any attempts at reforms, particularly mandated ones, often failed due to resistance to local implementation and the failure of policy-makers to take into consideration the complexities of change, and the complex nature of the teaching profession. In various studies and reports (Cuban, 1984, 1990; Darling-Hammond & McLaughlin, 1995; Fullan & Miles, 1992; Hoban, 2002, Odden, 1991), issues of school and teacher resistance to mandated changes were addressed, and the merits and weaknesses of 'top-down' versus 'bottom-up' implementation strategies were debated.

In various venues and educational systems, reports on failures of reforms were seen as related to the teachers' roles in the interpretation of policy and its implementation. Darling-Hammond (1997) reported that in the context of education reform in the United States, even the most challenging and thought-provoking performance-based assessments will fail to transform schools if they were extremely mandated and delivered. Cuban (1984) stated that new state education standards and mandates would make local school districts, schools and classrooms better as most of the previous changes brought about were superficial, unsustainable and often with long-run continuation of very few innovations. McIntosh (1995) pointed to change fatigue, as well as teacher-resistance, as causes of failure in reform in Victoria, Australia. Likewise in the United Kingdom, reports showed that reforms had harmful impact on teachers' health

(O'Leary, 1996) and their work environment, and also caused many to look for new jobs other than teaching (Casey, 1995; Fisher, 1995; Travers & Cooper, 1996).

In contrast, Palumbo and Calista (1990) felt it was wrong to place all the blame on delivery-level implementers, for the failure in implementation. To further explain their view, three alternative reasons were provided; first, early research was based on the assumption that policy implementation could be separated from formulation and design of the policy. Secondly, researchers often assumed that problem-definition and policy-design were clear and unambiguous; while in fact they were more often the products of political conflicts identified through bargaining with all concerned parties involved. Thirdly, the definition of implementation in most studies failed to take into account other organizations and factors involved, such as private agencies, target groups and related socio-economic, cultural and political conditions, besides the state or government agencies.

In addition, a number of studies showed that from the early 1980s onwards, many positive signs emerged as reform policies were implemented by local administrations. Odden (1991) citing from various studies, contended that not only did the local administration quickly and faithfully implement the key elements of state or government education reform programs, but they also went beyond the stated requirements and standards. By the 1990s, scholars were making suggestions that, all in all, educational reform occurred best with both top-down and bottom-up approaches, where the larger system provided direction and support. The actual change process was to be left to schools and teachers as policy implementers, through school-based decision-making and school development planning (Fink & Stoll, 1998). Significant suggestions on

contributing factors included the following; focus on process, an orientation towards action and ongoing development, an emphasis on school-selected priorities for development, a view that the school and teachers are at the forefront of education policy implementation and central to the consequences of reform, and an understanding of the importance of culture.

In this study, the context of the current educational assessment reform, within Malaysia's historical background of the educational system and with teachers as key implementers, was considered a crucial factor in the success of policy implementation of the most comprehensive school-based assessment in general, and school-based assessment of CAMC specifically. Taking into consideration the context of the current assessment reform program being implemented in Malaysia now, most policies particularly those related to the school-based assessment were brought to the attention of the schools and teachers in a top-down manner. Teachers have so far had little to say in policy development. They were informed about the expected results of the policies, and how they were to implement those policies, along with standardized and specific instructions and deadlines.

Teachers and Educational Change

There has been a considerable amount of literature on educational change over the past few decades, ranging from their rationale and strategies to areas where changes were expected. The theories of educational change can be benchmarked by governing ideas of how changes could be most effectively adopted, and how they could best be tuned to

teacher learning. Hoban (2002) summarized the development of these theories of educational change over the last 40 years--as depicted in the following Figure 2.7--on how the approaches have moved from a one-step linear process to a linear, concerns-based process of teacher learning, and then to a more multi-faceted approach.



Figure 2.7. A one-step linear approach for educational change

The one-step linear approach as shown in Figure 2.7, was the common practice of many teacher development programs during the 1960s and 1970s. Teachers were viewed as technicians and innovations were adopted through the traditional training staff development model, where teachers were instructed on what they were expected to do, in content-based workshops. Though this one-step linear approach offered certain advantages, there were also a number of limitations and loopholes in this technical view of professional development, similar to what Schön (1987) proposed as the notion of 'single-loop learning'. Among the advantages were that teachers would be provided with new content about a practice or theory previously unknown to them. These content-based workshops were quite convenient and economical and did not require much time. Moreover, if the content was rather simple and somewhat related to the teachers' existing beliefs and practices, these workshops actually facilitated teacher learning and also provided them with opportunities to meet colleagues from other schools.

Fullan (1992) stated several limitations to this one-step linear approach, like ignoring the differences in the school contexts among the participants, and assuming that teachers would find the content clear and interesting enough for them to understand and fully adopt into their practices.



Figure 2.8 Linear process of the Concerns-based Adoption Model

Figure 2.8 depicts the change in approach when the one-step linear approach to teacher learning failed to deliver real changes in teaching practices. Fullan (1982b) proposed this linear process, with the underlying assumptions that change was a process not an event, and was highly personal. Although this model offered more autonomy to teachers who were the primary focus of intervention for change in the classroom and took into consideration more of their self-oriented concerns, it assumed that innovations were simple and ignored the fact that innovations could be multi-dimensional and teachers could be concerned over other aspects as well (Hoban, 2002). In brief, this model was far too individualistic, ignoring other factors that influenced teacher learning and the chances of innovation adoption, such as social context.

In the 1980s, after unsuccessful efforts for educational change using these linear models to control the change process, a multi-faceted approach was proposed. Fullan (1982a) proposed that for any change to be successfully planned and implemented, it was

necessary to have a combination of factors to create supportive conditions. Change processes happened in different phases, that were independent of one another and different factors operated in each phase. However, this approach was still dominated by the assumptions that teachers are technicians, and by identifying independent components of educational knowledge and skills, education change could occur as teachers adopted new ideas into their existing beliefs and practices.

In the 1990's, the focus of educational change was on the complex view of how the interconnected elements involved in teaching and learning, had a dynamic effect on one another (Hoban, 2002). Hoban stated that these elements included influences related to the institutions and the personnel involved in the multi-dimensional and complex process of change, such as the government and local agencies, school administrators, community leaders, and teachers and learners themselves. Thus, it was worthwhile to explore how change, particularly mandated ones, were interpreted by teachers and what it really meant to them.

In this study, the chosen unit of analysis in the research is the teacher with the focus on their implementation, perceptions, receptiveness and beliefs associated with their experiences with teaching, and related changes in the beliefs and conceptions about their practices.

The Concerns-Based Adoption Model (CBAM)

A framework that has implications on the practices of professional development acknowledges that learning brings change, and supporting people in change is critical for learning to 'take hold'. One model for change in individuals, the Concerns-Based

Adoption Model, applied to anyone experiencing change, that is, policy-makers, teachers, parents, students (Hall & Hord, 1987; Hord, Rutherford, Huling-Austin, & Hall, 1987; Loucks-Horsley & Stiegelbauer, 1991). The model holds that people considering and experiencing change evolved, noticeably in the kinds of questions they asked and in their use of that change. In general, early questions were more self-oriented: “What is it?” and “How will it affect me?” When these questions were resolved, questions emerged that were more task-oriented: “How do I do it?” “How can I use these materials efficiently?” “How can I organize myself?” and “Why is it taking so much time?” Finally, when self- and task concerns were largely resolved, the individual focused on impact. Educators asked: “Is this change working for students?” and “Is there something that will work even better?”

Table 2.5

Typical Expressions of Concern about an Innovation

Stage of Concern	Expression of Concern
6. Refocusing	I have some ideas about something that would work even better.
5. Collaboration	How can I relate what I am doing to what others are doing?
4. Consequence	How is my use of innovation affecting learners? How can I refine it to have more impact?
3. Management	I seem to be spending all my time getting materials ready.
2. Personal	How will using it affect me?
1. Informational	I would like to know more about it.
0. Awareness	I am not concerned about it.

The 'concerns' model identified and provided ways to assess the seven stages of concern, displayed in Table 2.5 above. These stages have major implications for professional development. First, they pointed out the importance of attending to where people are and addressing the questions they asked, when they ask them. Often, we get to the 'how-to-do-it' before addressing self-concerns. We focus on student learning before teachers were comfortable with the materials and strategies. The type and content of professional development opportunities can be communicated by ongoing monitoring of the teachers' concerns. Second, this model suggested the importance of paying attention to implementation over several years, because it took at least three years for early concerns to be resolved and for later ones to emerge. Teachers needed to have their self-concerns addressed before they were ready to attend hands-on workshops. Management concerns could last at least a year, especially when teachers were implementing a school year's worth of new curricula, and also when new approaches to teaching required practice, where each topic brought surprises. Over time, help will be needed to work out and then reinforce good teaching, once the use of the new practice smoothed out. Finally, with all the demands on teachers, it was often the case that once their practice becomes routine, they did not have the time or space to focus on what, and if, the students were learning. This often required re-prioritizing of the organizational setting, as well as stimulating interest and concern about specific student learning outcomes. It is known that everyone has concerns, for example, administrators, parents, policy-makers, professional developers and that acknowledging and addressing them were critical to progress in any effort at reform.

Professional developers who know and use the ‘concerns’ model design experiences for educators, are sensitive to the questions they ask at the time they are asked. Learning experiences evolved over time, took place in different settings, relied on varying degrees of external expertise, and changed with participant needs. Learning experiences for different role groups varied in who provided them, what information they shared, and how they were asked to engage. For instance, addressing parents’ and policy-makers’ question "How will it affect me?" obviously will look different from their respective view-points. The strength of the ‘concerns’ model was in its reminder that attention must be paid to individuals and their various needs for information, assistance, and moral support.

Traditionally, those who provided professional development to teachers were considered to be trainers. Now, their roles have broadened immensely. Like teachers in classrooms, they have to be facilitators, assessors, resource brokers, mediators of learning, designers, and coaches, in addition to being trainers when appropriate. Practitioners of professional development, often teachers themselves, have new and wider variety of practices to choose from, to meet the challenging learning needs of educators in today's education reform efforts.

Studies Using the CBAM: Stages of Concern

The CBAM has been determined to be the “definitive tool in the development of in-service training for a change process involving an innovation adoption” (Hall & Loucks, 1978, p. 8). As part of this researcher’s literature review, studies utilizing CBAM involving implementation of innovations in education, were evaluated, such as the study

conducted by Broyles and Tillman (1985). The innovations that were the subject of some of those studies included microcomputers (Cicchelli & Baecher, 1989), Tech Prep (Long, 1994) and Industrial Arts (Linnell, 1991) are described as follows:

Broyles and Tillman (1985) utilized CBAM (Stages of Concern Questionnaire-SoCQ) to provide a theoretical base for developing in-service training for an innovation. Broyles and Tillman conducted twenty-three training workshops utilizing CBAM. Trainers from exemplary programs, sponsored by the National Diffusion Network, conducted the workshops. The trainers observed the workshops to evaluate the training. Their study indicated that content topics such as introduction, skills organization, and theory were beneficial to teachers' concerns after training was conducted. Additional studies indicated that in-service training factors, such as specific configuration of instructional content and training delivery had not been explored to any great extent. The resulting data concluded that training and learning activities and content of staff development were influenced by SoCQ scores. Generally, the results of research on in-service education did not include descriptive studies. Therefore, little was known about what actually occurred during teacher training.

Another research study by Cicchelli and Baecher (1989), utilizing CBAM (SoCQ), focused on teacher concerns about the use of microcomputers in the classroom. Seventy-eight teachers in elementary, junior-high, and senior-high schools completed a SoCQ concerning the innovation of microcomputers in the classroom. Results yielded reliable data on the seven stages of concern, demonstrating that the highest Stages of Concern were in Stages 0, 1, and 2, while the lowest Stages of Concern were those of Stages 4, 5, and 6. According to Cicchelli and Baecher (1989), during the study,

microcomputers in the classrooms represented a dynamic change to the teachers and administrators. This study investigated the “personal” concerns of the teachers because of the change process and validated those concerns.

With the change in curriculum from industrial arts to technology education, Linnell (1991) used the CBAM SoCQ to determine the stages of concern of technology education teachers (TET) in North Carolina. The results and conclusions of the study indicated that a majority of the TET had positive feelings about the change, TET were personally concerned about the new curriculum, their knowledge of the subject, and the management of their responsibilities. The state’s support for the new curriculum, and TET profile progression of their concerns followed Hall’s, and Rutherford’s predicted wave pattern. A goal of this study was to provide a basis for recommendations of appropriate procedures to facilitate the implementation process.

Another research study, by Long (1995), also determined the concerns of Tech Prep teachers at the secondary level in Virginia, as measured by the CBAM (SoCQ). Long conducted the study on 322 individuals consisting of administrators, academic teachers, vocational teachers, and guidance counselors, involved in implementing Tech Prep programs for two years or more. Based on the CBAM theory and the mean scores of the Stages of Concern, Long concluded that the teachers were becoming experienced users of the Tech Prep concept. Long further concluded that staff development should relate to strategies necessary to increase student outcomes, and seek cooperation and coordination from others.

Several models or procedures are available for measuring curriculum implementation. The Concerns Based Adoption Model (Hall & Hord, 1987) is probably

the most commonly used model. According to Cheung et al. (2006), it is unfortunate that this model emphasizes only teachers' behaviors, or specifically their stages of concern and the use of the curricular materials. They added that little attention had been paid to other dimensions to measure the degree of implementation, such as alterations in the classroom climate, users' knowledge of the curriculum innovation, and users' attitudes towards the innovation. In addition they said, this model did not provide guidelines for implementation researchers to address the relevant methodological issues in a coherent and systematic manner.

Degree of Implementation (DOI)

Scheirer and Rezmovic (1983) reviewed 74 studies on the measurement of degree of implementation (DOI) in nine disciplines (e.g., criminal justice, education, mental health). They concluded that an adequate scientific basis had not been established for the construct of DOI and only 10 of the 74 studies were found to have examined the construct validity of their measures.

The Scheirer and Rezmovic (1983) review also revealed that although about three-quarters of the 74 studies used more than one method for measuring the DOI, only 21 studies compared findings from the different methods. Most of the comparisons, however, were made qualitatively and judgmentally. Therefore a rigorous assessment for method-specific bias or inter-method consistency of measurement of the DOI was not possible. In the review of 11 implementation studies, Yin (1982) also found that multiple sources of information were commonly used, but the way the varied evidence was later merged was not a formalized procedure and did not seem to follow any methodological

guidelines.

The DOI model as suggested by Cheung et al. (1996) consisted of three hierarchically related concepts. Each dimension of the DOI construct was broken into attributes, and these further into content areas (refer Table 2.6).

Attributes are those relatively independent features that need to be considered in order to measure the DOI along a particular dimension. Content areas are the basic domains of specification for measuring an attribute, and are the ultimate theoretical bases for the construction of measuring instruments. Information on the dimension, attributes and content areas was collected from four sources: a meeting conducted by means of the nominal group technique; interviews; review of the literature; and the prior experience with school-based assessments.

The five dimensions measuring DOI, the attributes for each dimension and the content areas developed by Cheung et al. (1996), explained in Table 2.6, were adopted and adapted in the development of the instrument for the present study.

This model claimed to be the best model to measure the degree of implementation (DOI) of school-based assessment schemes for practical science (Cheung et al., 1996). Cheung et al. contended that a comprehensive measurement of the DOI construct cannot be achieved unless data was collected on all five dimensions. The construct validity of the survey data was evident through confirmatory factor analysis and multitrait-multimethod analysis.

Table 2.6

Degree of Implementation of School-Based Assessment

Dimension		Attributes		Content Areas
1	Logistic Arrangements	1.1	Supplies of materials	Quantity and quality materials and apparatus; and availability of teaching modules and references.
		1.2	Record-keeping	Assessment marks/grades; portfolio; evidences (process and product) Files (teacher and admin); monies allocated for running assessment scheme.
		1.3	Availability of information about school-based assessment from teachers.	Information about methods of assessment and scoring system; moderation; the role of school-based assessment in the teaching and learning process; and benefits of school-based assessment.
2	Use of assessment activities	2.1	Making assessment	Means of collecting information on students' practical performance; and means of grading assessment.
3	Quality of relationship between assessment, teaching and learning	3.1	Implementation of unobtrusive assessment procedures as an integral part of the normal teaching and learning process	Practicability of conducting unobtrusive assessment procedures by teachers in lab; and awareness of the conduct of assessment by students
		3.2	Influence of assessment on the normal teaching and learning process	Teacher feedback; opportunities for teaching and learning; and link between practical work and theory.
4	Knowledge of the characteristics of the assessment scheme	4.1	Understanding of the assessment requirements	Methods of assessment; scoring system; and moderation
		4.2	Understanding of the philosophy of the assessment scheme	Design rationale; and the role of assessment in the teaching/learning process
5	Attitude towards school-based assessment	5.1	Attitude based on evaluations of the management of school-based assessment	Structure of the assessment scheme; assessment practice; time management; moderation procedures; information and role conflict
		5.2	Attitude based on evaluations of the outcomes of school-based assessment	Students' learning outcomes (cognitive, psychomotor and affective); lab environment; formative functions; workload; enjoyment; teacher professionalism; and fairness-accuracy.

In this model a total of five dimensions were found to be necessary and sufficient, for the conceptualization of the DOI construct for this study (Cheung et al., 1996). The five dimensions are explained as follows.

Logistics Arrangement

This dimension refers to the supply of teaching aids, filing of written records by teachers and students and the extent to which specific important information about a given school-based assessment scheme has been discussed in class (Cheung et.al.,1996). One of the most important dimensions of the implementation support system is the technical support provided. According to Greenberg, Domitrovich, Graczyk and Zins (2005), this support included the structure, equipments, training, content, funds and any ongoing support required for successful implementation. They also included additional technical assistance materials to be provided in the implementation process.

Use of Assessment Activities

This dimension refers to the teachers' degrees of use of different assessment methods and grading strategies, as well as the students' participation in various assessment activities (Cheung et al., 1996). Teacher knowledge, gender and teaching experience were found to be significant predictors of teachers using assessment activities (Chamblee, 2002).

Quality relationship of Assessment, Teaching and Learning

This dimension considers how teachers implemented school-based assessment during the normal teaching and learning process, according to curriculum developers'

conceptions and ideologies (Cheung et al., 1996). Cheung et al. further noted that the DOI was inferred by measuring the extent of unity of assessment with curriculum and pedagogy, and the presence of any adverse effects of the implementation of internal assessment on teaching and learning.

Knowledge of the characteristics of the assessment scheme

This dimension takes into account whether teachers understood the requirements and philosophy of a given school-based assessment scheme (Cheung et al., 1996). According to Greenberg et al. (2005), indicators of implementer-readiness include whether teachers had adequate skills to carry out the new educational reform, felt positive about a program, valued what it contributed to the educational setting and were committed to its goals. Teachers' confidence in the effectiveness of a new program and in their own knowledge and skills, affected their ability to implement a program successfully (Greenberg et al., 2005).

Attitude towards school-based assessment

This dimension concerns teachers' opinions about the continuous assessment they do on practical work in schools, their attitudes based on the evaluations of the management of school-based assessment and the outcomes of the school-based assessment (Cheung et al., 1996).

In summary, the degree of implementation (DOI) model by Cheung et al. (1996) discussed above consists of the five dimensions which are used in this study to measure

the degree of implementation of CAMC. The proposed attributes and content areas are used as a guide in the development of the instrument to measure DOI in this study.

This section has looked at issues of educational change. First, it introduced educational change and its importance. Then, it described teachers' roles in implementing educational reform. Thirdly, it described teacher and educational change and the approaches in the change process. Finally, this section discussed the models used in measuring teachers' concerns in educational change and the degree of implementation model. The following subsection will discuss factors influencing the implementation of educational reform.

Factors Influencing the Implementation of Educational Reform

This fourth section of the literature review discusses factors influencing educational reform. With this purpose in mind, this section has been divided into three subsections. The first subsection discusses studies related to teachers' receptivity to system-wide change and the selection of general variables in measuring teachers' receptivity to CAMC model. The second subsection discusses studies related to quality assurance in assessment, and the final subsection discusses studies related to teachers' conceptions of assessment.

Teachers' receptivity to system wide change

This subsection is about teachers' receptivity to system wide-change and is divided into two parts. The first part discusses studies related to teachers' receptivity to

system-wide change. The second discusses the selection of the general variables measuring teachers' receptivity to CAMC.

There is a very large amount of literature on educational change spanning the last 40 years, referring to many topics and areas of change. Some examples are major change, minor change, curriculum change, administrative change, innovations, school reform, professional development to bring about change, school improvement, the politics of change, teacher unions and educational reform (Hargreaves, Liebermann, Fullan & Hopkins, 1998a, 1998b). There are also descriptions of systematic models of change or reform, case studies of change, qualitative dynamics of change and some quantitative studies of educational change. Some of these studies were performed at either one or several schools. Some, like school-based curriculum development, were performed at schools that had volunteered or had won a grant to implement the change. The large majority of studies on change are qualitative and non-theoretical (Giacquinta, 1973; Hargreaves et al., 1998a, 1998b; Waugh & Punch, 1987), with many of the studies being descriptive or analytic. There was comparatively little quantitative research that measured teachers' receptivity to system-wide change in a centrally-controlled education system of a democratic country (Waugh, 2000).

The type of changes considered in this study refer to major educational changes planned and implemented by a central education authority that is, the MOE, across an educational system controlled by a central authority and involved considerable differences in teaching methods, resources, subjects, content and assessment for teachers in their classrooms. In this type of planned, system-wide educational change, teachers have to implement the change in their classroom therefore, their receptivity (involving

their attitudes and behaviors) was important to successful change. Administrators in the central or district educational education office design system-wide change ; but since teachers implement it, there either has to be laws forcing the implementation of the change, or acceptance by teachers and the community that the change should be implemented because it was good for students and teachers (Waugh, 2000).

Teacher receptivity to system-wide change is likely to be a complex process. Based on the change studies in Western Australia, there were at least two reasons for this (Waugh, 2000). First, teachers have varied opinions about education, McAtee and Punch (1979), found that teachers with more progressive attitudes to education were more likely to have more positive attitudes towards the change and vice versa. Teachers with more traditional attitudes to education were more likely to have less positive attitudes towards the change. Waugh and Punch (1987) found that teachers' attitudes towards the Certificate of Secondary Education System were related to their feelings towards the previous system, that is depending on whether they had supported the previous system or not and the reverse. They also found that teachers' perception of the non-monetary cost benefit of change (that is, the extra work to be done by the teacher versus the perceived benefit to the teacher) was positively related to their attitudes to the Certificate of Secondary Education System. Another finding was that if teachers perceived the change to be practical in their classrooms, they tended to be supportive of the change. It should also be noted that teachers of different subjects had different philosophies to the teaching of their subjects (for example teaching science was different to teaching English or social studies or physical education, and mathematics was different from vocational education).

The second reason for the complexity in teacher receptivity of system-wide change was that there were a variety of schools set up under different education philosophies, within both the government and independent sectors (Waugh, 2000). According to Waugh, in Western Australia the government system catered to about 70 percent of secondary school students, and the independent system to the remaining 30 percent. He stated that the independent schools are strongly independent government schools and publicly maintain their independence and status. These schools were often religious-based and provided an education that parents wanted for their children. He further noted that any major system-wide change had to be acceptable to both independent and government schools in Western Australia. He held that it was not always easy to structure a system-wide change that would suit all schools.

Hence it could be difficult to understand the process of the formation of teacher receptivity, for every teacher, in detail. It ought to be possible, however, to isolate the most important variables or aspects, and build a model that provides considerable help to educational administrators involved in system-wide change (Waugh, 2000). Waugh further noted that it was possible to make some periodic measures of teacher receptivity, as the change was implemented, to un-earth any possible problems in implementation as they arose. This, he said would be a considerable advance on the current method of planning and implementing system-wide educational changes in a centrally controlled educational system.

Several studies were reviewed on the effects of teachers' receptivity in educational reform. Collins and Waugh (1998) study investigated teachers' receptivity to a proposal to relocate Year 7 primary classes to secondary schools in the Western

Australia Catholic school system. In this study, they found that receptivity to be related to teachers' general belief in the reform. In Canada, a study by Datnow and Castellano (2000) on teachers' responses to 'success for all' (SFA) as a whole-school reform model, found that teachers supported and made adaptation to the reform because they believed it to be beneficial for students.

Teachers Receptivity to system-wide change model

Various versions of the model have been used to study teachers' receptivity to the implementation of system-wide change. McAtee and Punch (1979), used three general variables: 'knowledge', 'perceived participation' and 'general attitudes to education', to collect data on teachers' attitudes to the Achievement Certificate System in 1974, four years after its implementation in 1970. They were able to account for 27 percent of the variance in attitudes with these three variables. Waugh and Punch (1987) expanded the model to include eight more general variables:- 'beliefs on general issues of education', 'overall feelings towards the previous system', 'alleviation of fears and uncertainties', 'practicality in the classroom', 'beliefs about important aspects of the change', 'support for new teacher roles', 'non-monetary cost appraisal of the change' and 'comparison of the change with the previous system'. They collected data in 1980, three years after the Certificate of Secondary Education System was implemented in 1977, and were able to account for 43 percent of the variance in attitudes towards the change.

The Waugh and Godfrey (1995) study created six general variables related to teacher receptivity to system-wide educational change in a centralized educational system and applied them to the Unit Curriculum System, implemented in Western Australia in

1990. The central idea was to build on two previous studies, and to explain teachers' receptivity to the Unit Curriculum which had been in full operation for two years. Their results are important for three reasons. First, the general variables were very useful in understanding and interpreting teachers' receptivity. Second, the general variables give pointers to researchers about possible causal relationships between, and among, the variables and third, the general variables were helpful to educational administrators because they suggested how system-wide changes could be tailored to maximize their receptivity in the implementation stage.

Teachers' receptivity to system-wide change, in terms of their perceptions of the important general variables affecting receptivity, could provide important insights into the way that teacher relates to the change (Waugh & Godfrey, 1995). Waugh and Godfrey claimed that these perceptions could be used to help administrators in implementing new proposals. They noted that in all probability, teachers would not implement major curriculum, assessment and certification changes in a centralized educational system, exactly as proposed by the administrators, but would adapt various aspects of the changes. They further noted that teachers adapted changes to suit themselves, their classroom and their schools. Their study suggested that administrators could maximize teacher receptivity and reduce the adaptations that teachers might make, if the changes incorporated the following six general variables. The six general variables to measure teachers' receptivity, as suggested by Waugh and Godfrey (1995), are discussed below.

Perceived cost benefit

Administrators should tailor their change proposal so that teachers perceived gains of non-monetary cost benefit as a result of implementing the change. This benefit could be in the form of increased satisfaction with teaching, better student learning, better matching of courses with student needs, interest and abilities and easier school administration (Waugh & Godfrey, 1995).

Practicality in the classroom

Administrators should tailor their proposals so that they are suited to, or adaptable to the different teaching styles for different subjects. Some subjects are process-oriented such as English; some are content and sequence-based such as mathematics, while others are practical-oriented such as technical and vocational subjects or the performing arts. According to Waugh and Godfrey (1995), sufficient resources should be allocated to allow teachers to implement the change in each subject and at each school, following as faithfully to the new plan as was possible. They also noted that teachers had to be able to manage the day-to-day running of their classrooms, and any new plan needed to allow them to do that with minimum problems; otherwise the teachers were likely to make major compromises the plan.

Alleviation of fears and concerns

Administrators should set in place strategies and mechanisms for teachers to raise their concerns about the plan and to have those concerns answered. According to Waugh and Godfrey (1995), this could be done in a number of ways, such as regular school

meetings, supportive senior staff who can give advice informally, and meetings with change agents and head-office administrators.

Participation in decision making at school

According to Waugh and Godfrey (1995), the school principal and senior staff should arrange for teachers to take part in decisions about the change which affected the school and, in particular, their classrooms. It would seem that teachers were more likely to implement a new plan with less compromise if they had a say in how it is implemented in their classrooms. The resources and methods of the change should be such that they could easily be used in the classrooms or, if there were problems, the resources could be adapted by teachers without compromising the main aspects of the change (Waugh & Godfrey, 1995).

Perceived support from senior teachers and principal

According to Waugh and Godfrey (1995), teachers were more likely to have positive attitudes towards a change if the principal and senior staff were publicly seen to support the change, in their communications and actions at the school. This meant that, while the senior staff should communicate the advantages and benefits of the change, they should do so in an objective way without making exaggerated claims.

Perceived improvements compared with the previous system

Waugh and Godfrey (1995) noted that to elicit teachers' feelings with regards to the previous system, teachers were more likely to have positive attitudes towards a

change if it was perceived to offer clear advantages over the previous system. They further noted that independent change agents, head-office administrative staff or senior school staff should clearly explain to the teachers, the advantages of the change using various methods, such as regional meetings, school meetings, brochures and displays.

Quality Assurance in Assessment

This subsection discusses the quality assurance process of students' assessment. With this purpose in mind, this subsection has been divided into five parts. The first part introduces assessor competencies and its importance. The second part deals with students' assessment and its importance. The third part describes a number of studies on a range of concerns about the quality of student assessment in vocational and technical education. The fourth part reviews the international models, discusses quality assurance models for assessment process as employed in three countries: the United Kingdom, New Zealand and Australia. The final part discusses the approaches to quality assurance in assessment, and details the various approaches used in assuring the quality of the assessment process.

Assessors' competencies

The level of expertise required in carrying out assessment in Vocational and Technical Education (VTE) has been well acknowledged. VTE assessment demands a substantial amount of knowledge and skill in judgment on the part of assessors, and a considerable degree of responsibility is entailed in making these judgments about students' performance (Docking, 1997; Jones, 1999). The inconsistencies in assessment

practice, limitations in assessor training and the lack of ongoing professional development has had an influence upon assessment outcomes. According to Clayton, Roy, Booth, and House (2004) these factors when combined with the ineffective quality assurance processes, were likely to have a detrimental effect on the confidence of the stakeholders involved in VTE. Poor assessors' judgment of student competence will have significant consequences towards the credibility of the VTE system (Fechner & Hill, 1997). In supporting this view, Docking (1997) suggested that incorrect judgments were possible and was also likely to be significant.

Smith (2000) found in his study that there was inadequate support for the actual performance of assessment, as distinct from the general principles for conducting assessment. The associated training provided to assessors was of poor quality and doubtful validity. Smith concluded that the training of assessors and verifiers was an essential component of quality assurance, because assessment and verification were in themselves, professional processes requiring special expertise. Clayton (2002) recommended that professional development, forums and networking be organized as they were important in supporting and helping assessors conduct valid, reliable, fair, flexible and cost effective assessments.

Students' Assessment

A reliable, relatively cheap way by which individuals can convince others that they possess certain qualities, is clearly vital to the efficient operation of labor markets. A skill qualification is one way, and can be thought of as a credible signal, usually conveyed in some form of certificate, to the effect that a person does possess the

qualities they claim to possess. According to Chippman (1998), there were a number of stages in the production of a qualification for an individual. The main stages were design and development, delivery, assessment and certification. He further elaborated that these stages were frequently coordinated within a vertically integrated organization and were technologically separable. They could be and are, at times, performed by independent, separate organizations. Whether performed collectively or individually, he said, it was arguable that both the organizations involved and their clients, would have significant interest in the credible processes of quality assurance at each of these stages of production. A person may be qualified but may not possess a corresponding qualification.

Blackmur (2004) argued that in terms of efficient labor market priorities, assessment and certification were the prime candidates for external quality assurance. According to him, individuals were forced to trade exclusively in the market for these particular services and there was a requirement that these markets function effectively. Under these circumstances, he contended, assurances by education and training providers must be given that they conducted assessment and certification in accordance with appropriate standards.

A comprehensive definition of assessment includes the process of gathering, interpreting, recording and using information from a student's response to an educational task (Harlen, Gipps, Broadfoot, & Nuttall, 1992). A vast range of ways of assessing could be identified by combining different means of getting information, with various kinds of tasks. For example, written tests and practical tasks set internally or externally. According to Harlen (1994), the reason for choosing one over another of these assessment methods related to the requirements for optimum dependability. Assessment

was essentially an attempt to get to know about a student's achievement and to find out the nature and quality of his or her learning, strengths and weaknesses, interests and aversions, motivation and approaches to learning.

Research has demonstrated that assessment had an enormous impact on both what student learnt and how they went about it. Assessment methods and requirements probably had a greater influence on how and what students learnt, than any other single factor. Boud (1985) reasoned that this influence could have greater importance than the impact of teaching materials. Black and Wiliam (1998) emphasized that during the last two decades, much research was conducted, which demonstrated the influence of assessment on what was taught, how it was taught, what students learnt and how they learnt it. Resnick and Resnick (1992) added that assessment was an essential tool in education reform. Based on this discussion, which emphasized the importance of assessment in education, the next subsection explores the importance of assuring the quality of the assessment process.

Quality assurance of the assessment process

The Australian National Training Authority (ANTA) (1998), defined quality assurance for assessment as a planned and systematic process of ensuring that the requirements of the assessment system, competency standards and any other criteria, were applied in a consistent manner. As is the case in Malaysia where the credibility of CAMC – in particular the school-based assessment process – was called into question through a series of unpublished reports from the staff of MES itself, similar issues were also noted in other countries. Several studies conducted in Australia and the United

Kingdom brought forth a range of concerns about the general quality of assessment in the vocational and technical education (VTE) sector. Initial concerns about the quality and consistency of VTE assessment were raised by Schofield (1999a, 1999b, 2000) in her investigations of the trainee-ship systems in Queensland, Tasmania and Victoria. In the Queensland review, Schofield (1999a) reported low levels of employer satisfaction with the assessment undertaken by registered training organizations, and a clear lack of credibility in the adequacy of the assessment of trainees' skills. Similar concerns were also highlighted in the report of the Tasmanian review where it was noted inconsistency in the conduct of assessments, stemming from problems with training packages and assessors' competence. From these investigations Schofield concluded that the quality of assessment in VTE needed attention.

Other studies in quality assurance of assessment in VTE were conducted by Smith (2000) who undertook a study in Queensland, and by Booth, Clayton, House and Roy (2002) who undertook a study to determine the confidence of the practitioners in their own practice of assessment and decision making. The findings of both studies indicated similar problems in the conduct of VTE assessment, in both workplaces and institutions. Smith found that assessors were placing too much of emphasis on summative assessment and the quantity of evidence they collected, rather than the quality of the evidence and the training itself. In addition, he noted that generally practitioners had not been provided with sufficient assistance on how to deliver quality training or to undertake assessments with any degree of quality. Smith's study also highlighted the need for a review process to enhance the consistency of the approaches to assessment, the process of assessment as well as the final judging of student competence.

In the Booth et al. (2002) study, they found that many practitioners were concerned with the lack of consistency in assessment practice and decisions, the new demands placed upon their assessment with the introduction of training packages and the lack of rigorous quality assurance processes. Their study also revealed that assessors were concerned about the quality of assessor training and the lack of ongoing support and professional development.

In summary, in an attempt to assure quality of students' assessment, various concerns were identified by a number of authors, which included factors like: low level of employer satisfaction with student assessment, a dis-proportionate emphasis on summative assessment and the quality of evidence, lack of assistance, support and professional development activities for assessors, lack of consistency in assessment practice and assessment decisions, and lack of current technical and assessment knowledge of assessors. The next subsection provides an overview of how these concerns can be eliminated or reduced, by exploring three different international models of quality assurance systems for the process of assessment in vocational and technical education.

International Models of Quality Assurance Systems for the Assessment Process in VTE

There are several models of quality assurance for the assessment process in VTE in place. This subsection examines the models used in the United Kingdom, New Zealand and Australia. The researcher acknowledges that using just three models may impose a limitation to this review, however, this was more due to the fact that detailed descriptions of models from other countries were not available.

United Kingdom

In describing the quality of assessment in the United Kingdom, Clayton, Booth and Roy (2001) stated that the current system was centralized and highly regulated with prescribed forms of moderation to ensure quality outcomes. The Qualifications and Curriculum Authority (QCA, 1999) stated that the credibility of any assessment system depended on fair, accurate assessment and effective quality assurance. Effective quality is seen as the critical element in building the confidence of all stakeholders involved in National Vocational Qualifications (NVQs). Clayton et al. also emphasized that in the United Kingdom, the quality assurance system had generated a highly regulated approach to assessment, with a dual layer of monitoring – internal and external verification – making up the quality assurance strategy.

Maxwell (2001) said that linkages across training organizations were needed since the internal verification process was carried out internally and did not address the consistency of assessment across training organizations. He added that formal procedures of agreement between assessors should be established, to check for compliance by mandatory internal verification. These are monitored within the training organizations by appointing internal moderators who are required to keep records of the verification transactions and which are subjected to an audit on a regular basis, or at the time of registration review.

Studies by Black (1993), Lester (1996) and Konrad (1999), highlighted some of the issues and concerns that these authors had with the highly regulated approach adopted for assessment of NVQs in the United Kingdom. Their studies focused on the quality control nature of the United Kingdom system, which included increasing external

monitoring, external verification and standardization. Lester (1996) proposed a quality assurance approach to replace this inclination towards the quality control nature of the system, as he believed that increasing quality control measures would have detrimental outcomes, even if public confidence increased. In his recommendation, Lester encouraged ongoing professional development activities for assessors and internal verifiers to ensure the desired outcomes of the quality assured assessment system. He also noted that internal verifiers in the United Kingdom did not possess adequate knowledge and training to for effective monitoring.

New Zealand

Compared to the United Kingdom model, the New Zealand Qualification Authority (NZQA) adopted a less rigorous approach to implementing the New Zealand National Qualification Framework. According to Clayton et al. (2001), the Standards Setting Bodies was responsible for establishing the standards of units for assessment. These bodies along with training organizations, have the responsibility for ensuring that assessors participate in the designated processes that ensure validity and consistency in assessment. According to them, assessors were required to complete appropriate training, and all assessments conducted against unit standards, drawn from specific industry sectors and moderated through processes established by the relevant industry's training organizations. In discussing internal moderation, they also mentioned that the focus was on achieving consistency between assessors judging the same unit standard, within an organization. The NZQA also required training providers to develop their own quality assurance systems.

The approach taken by NZQA according to Maxwell (2001) was a compromise between internal and external verification. He discussed the arrangement in New Zealand, where the inter-provider moderation required that each provider established links with one another – known as a link provider – to undertake external moderation within the same domain and level of training. This consensus or group moderation, he highlighted, was carried out to determine comparability of assessment decisions across a range of training providers. Training providers were required to submit samples of assessments to the link provider for examination. Maxwell also stated that where the link provider could not approve or verify these materials, the samples were forwarded to a Moderation Coordinator, appointed and trained by NZQA moderation services, for verification. He further mentioned that NZQA had also appointed a National Moderation Coordinator, who was responsible for training the moderation coordinators, and check-moderating samples of the moderation coordinators' decisions. There was also a national network of subject moderators that evaluated the assessment system for accreditation purposes. The New Zealand model, according to Clayton et al. (2001), depended very much on the availability of resources to support the system of monitoring and evaluation.

Australia

In Australia, the Australian Recognition Framework (ARF) and the quality assurance arrangements that were in place in all registered training organizations provided the essential framework or guidelines, for ensuring the quality of assessment in the VTE sector. According to Maxwell (2001) the focus of the framework was to make certain that the proper procedures were in place for the expected outcome, rather than

being concerned whether the outcomes were satisfactory. Maxwell also stated that the training providers were required to undergo registration and demonstrate their capacity to undertake assessment, as well as implement internal moderation procedures as part of the process. Self-regulation seemed to be the focus of the policy underpinning VTE delivery and assessment in Australia. Visitation moderation, sampling of students' assessment, monitoring and evaluation of assessment and verification practices, according to Maxwell, were used to judge whether the quality of assessment and verification of the training providers met national standards.

In summary, the three models reviewed above adopted different approaches. The United Kingdom model with its strong tradition of external surveillance was the most regulated, while the Australian model, was the least. New Zealand's approach represented a middle path between the three models.

The next subsection discusses the main approaches to quality assurance in students' assessment, practiced in VTE internationally.

Approaches to Quality Assurance in Assessment

Quality assurance, as noted by Maxwell (2001) was a mechanism where the application of well-defined procedures was expected to deliver the desired outcomes. However, assessment procedures were not always well defined since they needed to be tailored to particular situations and contexts. The judgment of competence, according to Cresswell (2000) was itself not capable of being explicitly defined, in order to ensure that consistency was delivered automatically. Maxwell (2001) also stated that a quality assurance procedure was adopted to monitor and endorse, and where necessary to adjust

or correct, the actual implementation of an activity during its implementation and before its completion. Assessment in VTE, with its prescribed set of procedures, would still require properly trained and professionally committed assessors. The actual assessment procedures and judgments would still need to be checked to ensure that the assessment procedures were appropriate and would result in consistent judgments of competence. Maxwell (2001) highlights that research on assessment warned that different interpretation of meaning, would result in problems in the enactment of competency statements.

A number of authors proposed strategies essential for maintaining the integrity of the assessment being conducted. These included promotion of good practice, consensus moderation (Smith, 2000), the use of exemplars, and networking (Wolf, 1993). Toop et al. (1994) established a framework for an assessment system that included elements of a comprehensive quality assurance strategy, such as screening and training of assessors to ensure assessors' competency, verification of decisions (both internally and externally), appeal mechanisms and processes, and a review of the assessment system.

This literature review will look at three main strategies; competent assessors, moderation, and the monitoring system used in assuring quality of the assessment process. These strategies are discussed individually.

Competent Assessors

In the VTE system, assessors are accountable for their assessments and the associated consequences, especially when they take into consideration the possibility of third party verification. Seigel-Jacobs and Yates (1996) identified two types of

accountability in the assessment process. They are ‘procedural accountability’ and ‘outcome accountability’. ‘Procedural accountability’ required assessors to justify the quality of their assessment outcomes. The authors argued that procedural accountability had more beneficial effects on assessment judgment and quality, than ‘outcome accountability’ because it encouraged assessors to gather and use more information and information-processing strategies, to improve consistency of their judgments. They however concluded that outcome accountability was found to be more detrimental, as assessors tried to represent themselves in a more positive manner, in line with expected views of the stakeholders, which could lead to lower levels of accuracy and thus, poorer assessment decisions.

Maxwell (2001) highlighted the importance of improving the quality of assessors and assessments before inadequacies and inconsistencies became more pervasive and noticeable, and perhaps threatening to the integrity of qualifications. Eraut (1994) noted that evidence showed that once training and regular communication had been established, assessors should be able to ensure sufficient, standardized use of criteria. However, he added that standardization could easily slip if regular training and communication was not maintained.

Moderation

Moderation refers to a particular process of quality control involving the monitoring and approval of assessment procedures and judgments to ensure consistency in the interpretation and application of the performance standards (Maxwell, 2001). Moderation also means social moderation in the sense used by Linn (1996) while Booth

et al. (2002) and Maxwell (2001) used validation as another term for moderation. According to Smith (2000), a moderation system would not only set, propagate and check assessment standards, but would also facilitate the sharing of good practice approaches for assessment across the system.

Maxwell (2001) highlighted the need for every moderation system to identify the main authority for approval purposes, the appropriate balance of rights and power of all participants and the guidelines on resolving differences of opinion. He further stated that moderation was an active process in which assessment judgments are aligned with each other to create consistency of interpretation and implementation of standards across the whole system and was not a process that only checked how much agreement there was on assessors' judgment.

Moderation procedures, as argued by James (1994), were devised to reduce sources of error such as, variation in the demand or opportunity provided by the tasks undertaken by students, differences in interpretation of performance criteria or marking schemes, or the intrusion of irrelevant contextual information in making judgments. Harlen (1994) added that the sources of error were seen to be greatest in circumstances particularly where preserving validity of assessment was most required for quality in assessment. Moderation, according to her, helped achieve uniform interpretation and application of standards in a competency-based assessment system. It also helped establish comparability in identifying, describing and recording skills and knowledge, by allowing for the development and maintenance of standards. A verification process achieves uniformity when assessors work towards a common understanding and use standard concepts, terminology and applications. Thus, verification helped to ensure that

assessment activities yielded valid results. However, actual implementation of verification or moderation procedures in VTE was found to be relatively scarce, particularly in situations of low accountability (Bloch & Thomson, 1994).

Moderation procedures were categorized into two kinds by Harlen (1994). The first category related to adjustments of the outcome of assessment in order to improve fairness to groups and individuals. According to her, this takes place after the assessment had been made and was designed to ensure fairness by adjusting results when there seemed to be inconsistencies or even systematic differences in the way procedures were allowed. The second category related to the process of arriving at a fair assessment for groups and individuals, which could in some cases, extend to learning opportunities as well. This process takes place before the assessment is completed and was designed to improve the process of assessment to ensure that consistency was achieved, rather than to impose the process to correct an inconsistent assessment system. Harlen (1994) also stressed that the overall purpose of both categories was not just to adjust marks and settle disputes, but to improve the quality of the assessment process.

Monitoring

An important feature of the current framework of monitoring in educational institutions is the intensity of the reviewers' scrutiny during the monitoring process, which differed across institutions (Brown, 2000). This variance depended on the monitoring agency's view of the maturity and reliability of a particular institution's internal quality processes. Franke (2002) emphasized that if the monitoring agency found that the quality of a certain program did not meet required standards, a warning would be

issued. The institution, he said, would be given time to take action and remedy problems. If the shortcomings remained upon subsequent inspection, the institution would lose its right to award degrees or diplomas in the subject or program. This approach to quality assurance, according to Van Damme (2000) is typically used in countries where the institutions themselves controlled the quality assurance process. He further explained that the monitoring was a meta-review of the functioning of the quality control mechanisms itself, and was often the responsibility of the government.

Monitoring also affected educational institutions in many ways. Rustin (2000) highlighted that institutions could become scenes of anxiety and persecution, where staff self-confidence and morale were undermined. This concern was also raised by Ramsden (1992) who stated that the regulatory system could create an atmosphere of distrust, and drain staff enthusiasm for innovation. In a study conducted for the British Sociological Association on the impact of the 1992 Research Assessment Exercise (RAE) in the United Kingdom, Warde (1996, as cited in Harvey & Newton, 2004) described that the impact on staff appeared to be a sense of declining morale, a loss of job satisfaction and a decline of collegiality. Highly significant, in Warde's study, no one reported any positive effects of the RAE. Most respondents thought it to be detrimental to quality, both in teaching and research. Warde, however thought that this view contrasted with the self-assurance of the people responsible for the exercise, who proclaimed it an unquestionable success, without even justifying their beliefs.

Another concern of quality monitoring was the time taken in preparing for monitoring events, in particular, the requirement to prepare specific, event-related documentation which academics often considered a burden. Harvey (2000) recommended

that monitoring agencies evaluate on the basis of what institutions had already produced, rather than ask-for detailed documentation for monitoring purposes, as required in the current British system – which he thought to be totally unacceptable. He felt that such activities would divert scarce resources from key tasks like, improving student learning and experience.

Harvey suggested that if, for example, it was revealed during an evaluation that the institution did not provide adequate materials to students about assessment criteria, it should be noted for future action during subsequent visits. Other authors such as Harvey and Askling (2003) also expressed concern that external quality monitoring could inhibit innovation, because it applied conservative or rigid evaluation criteria which tended to lead to uniformity rather than diversity and flexibility. They highlighted the need for a significant connection between internal and external processes, without which the effect of monitoring would only be temporary rather than the desired permanent nature of review-inspired improvements.

Although Kristensen (1997) stated that external monitoring could never stand alone and would never be able to replace valuable internal self-assessment, Smith and Ngoma-Maema (2003) warned that as the pressure to improve quality of education intensified, there was a danger that external evaluation processes could overshadow educational institutions' self-assessment initiatives. The consequences of this, according to them, was that institutions could lose the space to determine what mattered to them and end up responding and adhering solely to the recommendations of external evaluators. The challenge for these institutions was to ensure compatibility between these potentially contradictory roles. In a similar view, Harman (2000) stated that quality assurance also

required achieving a balance between the burdens placed on institutions, and legitimate external information and reporting requirements. He pointed out that what was regarded as a light-touch approach by government, could easily be viewed as an unreasonable intrusion into internal affairs by staff of the institution. There is also perhaps dissatisfaction that quality assurance mechanisms, which put much pressure and added workload to staff, had been introduced at the same time as cuts in funding which created more work and stress. In combination, these two phenomena created a very stressful work environment and it comes as little surprise that collegiality and loyalty diminished.

In reviewing other factors that could be related to quality assurance, Gift and Hutchinson (2007) examined the outcomes of quality assurance programs and found that academic staff were receptive and increasingly, had begun to implement the recommendations of review teams facilitated by the university's monitoring mechanism. In Hargraves, Palmer, Orav & Wright, (1996) study, they found that there were differences in medical practitioners' receptiveness to a new design of intervention. Many of them preferred an internal review to an external one, for them to be more receptive to the change. In addition a number of studies showed quality assurance measures in education shaped teachers' conceptions of the educational reform (Farrugia, 1996; Kember, 1997; Stevenson, MacKeogh & Sander, 2006).

This section has looked at issues of quality assurance of the assessment process. First, it introduced students' assessment and its importance. Then, it described the various studies on a number of concerns about the quality of the assessment process used by the United Kingdom, New Zealand and Australia. Finally, this section discussed the three strategies used in assuring quality of the assessment process: competent assessors,

moderation and monitoring. The following subsection will discuss teachers' conceptions of assessment.

Teachers' Conceptions of Assessment

Researchers have suggested that there are at least three major purposes for assessment; improvement of teaching and learning, certification of students' learning and accountability of schools and teachers (Heaton, 1975; Torrance & Pryor, 1998; Warren & Nisbet, 1999; Webb, 1992). These purposes could lead to different practices and often there could be discord between the purposes. Assessment is understood as any act of interpreting information about student performance, collected through any of a multitude of means or practices. According to Gipps, Brown, McCallum, and McAlister (1995), assessment was a general term embracing all methods customarily used to appraise an individual or group performance. It could refer to a broad appraisal including many sources of evidence and many aspects of a pupil's knowledge, understanding, skills and attitudes, or to a particular occasion or instrument. They further suggested that an assessment instrument could be any method or procedure, formal or informal, for producing information about pupils, as for example a written test paper, an interview, a measurement task using equipment or a class quiz.

The quality of information obtained through assessment could affect the quality of educational decisions (Cronbach, 1970) The quality of assessment information included awareness of any limitations of the assessment information, including the degree of inaccuracy in any measure or any unfair consequences for students (Cronbach, 1970; Hall, 2000; Linn, 2000; Popham, 2000). Unfortunately, many teacher-made or classroom

assessments and intuitive judgments, lacked such quality indicators (McMillan, 2004).

Some models of teachers' conceptions of assessment were developed based on teachers' assessment practices or uses (Brown, 2004a; Gipps et al., 1995; Stamp, 1987). These models, based on types of assessment practices, related to the model outlined in this subsection. Brown (2004) stated that there were four commonly-held conceptions: (a) assessment is useful in improving teacher instruction and student learning by providing quality information for decision making; (b) assessment is about accountability of students through certification processes; (c) teachers or schools are made accountable through internal or external evaluations; and (d) assessment is irrelevant or pernicious to the work of teachers and the life of students.

The Gipps et al. (1995) model classified teachers according to three major types of assessment such as intuitives, evidence gatherers, and systematic planners. 'Intuitives' emphasized professional, impressionistic, and memory-reliant judgment processes of assessing students' performances intuitively, without written records. 'Evidence gatherers' collected written evidence, usually at the end of the work, to demonstrate students' progress, relative to achievement objectives for the purpose of accountability. 'Systematic planners' integrated systematic collection of multiple pieces of evidence of attained curriculum objectives, with planned teaching for the purpose of shaping instruction.

Stamp's (1987) model, developed with multivariate techniques, identified three major conceptions of assessment among pre-service, teacher trainees in Australia. They are: 'cater for the need and progress of individual pupils', 'assessment blocks teacher's initiative' and 'a more traditional-academic summative examination'. The first

conception used assessment in a formative way to identify individual student-learning needs, with the purpose of catering to those individual requirements. The second conception reflected the view that teachers were required to conduct assessment, but that assessment got in the way of students' creativity and intuition, which they felt were just as important as their academic development. The third conception revolved around the use of test and examinations to collect summative information about students, partly in order to motivate them to compete for more marks.

No evidence could be found that proved practices were related to conceptions of assessment, or that there was interaction between the practices or whether teachers mixed the conceptions in their practices. However, it is expected that teachers' conceptions of assessment interacted with each other (Brown, 2004). The nature of teachers' conceptions of assessment is unknown, and it is equally unknown if certain characteristics of teachers or schools, influenced teachers' conceptions of assessment. For example, the types of assessment methods teacher's associated with the term 'assessment', could influence teachers to form different assessment conceptions. The varied assessment methods teachers actually used, and the length and type of assessment literacy training may also correlate to certain assessment conceptions. A teacher's role in a school, his or her length of teaching experience, or gender could also influence the conception of assessment held.

Summary

The present study attempted to test the causal model of teacher's variables on the degree of implementation of CAMC, in vocational subjects. Most of the reviews stated in this chapter were of overseas studies related to this study. As far as the researcher can determine, all related studies have been included. The review on the various areas related to the present study might not be exhaustive enough, but would certainly give a fairly thorough overview of the relationships that exists between the various variables chosen in this study.