IMPLEMENTING COMPETENCY BASED EDUCATION TRAINING IN A TECHNICAL AND VOCATIONAL INSTITUTE IN BRUNEI: A GAP ANALYSIS

by

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ABSTRACT

This gap analysis project examines the root causes to identify and analyze the existing barrier preventing graduates of a technical institution in Brunei; Mechanical Training Centre (MTC). The study applies Clark and Estes' Gap Analysis Model and approach used to define MTC's organizational goals and identify the gap that exists between actual performance level and desired level of performance. Clark and Estes identified these barriers under three distinct factors: lack of knowledge and/ or skills variables; lack of motivation; and, organizational/cultural barriers. Fifty-six instructors had participated in a survey conducted at MTC; in addition, inclusive of ten heads of department/assistant heads were interviewed who had contributed in the data collected in this study. The surveys and interviewed supported in validating the assumed causes that were formulated after conducting scanning interviews and validating assumed causes of the performance gap at MTC in the domains of knowledge, motivational and organization. The validated root causes has lead to assume the inability of the instructors at MTC to apply competency-based education training (CBET) to an aligned industrial-curriculum in Brunei. The surveys and interview validated the knowledge and skills gap related to the four cognitive knowledge processes; factual, conceptual, procedural and metacognitive. The motivational barriers identified at MTC were: instructors not making active choices of teaching a CBET and a lack of self-efficacy. For the organizational and cultural barriers, it was found that two distinct reasons at MTC categorized under cultural models and cultural settings. The cultural models were found for instructors to attitudes of helplessness, 'busy work' or bureaucratic work not aligned to the college vision and mission. The cultural settings gap was due to the lack of equipment and facilities and lack of strategic plan found within the college to teach effective competency-based education training to their students. An

integrated management strategy and solution were developed to close the validated and assumed causes through the learning of the motivational theory and literature review found in this study. Clark and Estes' gap analysis framework was used to provide strategic initiatives and recommendations. Also, Clark and Estes approaches were applied to close MTC's performance gap to ensure 100% of students were able secure job within six months after their graduation.

CHAPTER 1

STATEMENT OF THE PROBLEM

Introduction of the Problem

Youth unemployment is a global phenomenon faced by many well-developed countries (Fillingham, 2012). High levels of unemployment are associated with complex interaction of economic, social and demographic factors (Assaad & Levison, 2013). According to estimates from the United Nation's International Labour Organisation (ILO), the global youth unemployment rate was 12.6% as of 2013 and is projected to rise to 12.8% by 2018 (ILO, 2013a). These figures mean that almost 75 million current job seekers worldwide are between the ages of 15-24 years old. Another study conducted by Fasman (2013) stated that there was a 30% increase in youth unemployment across the Organisation Economic Co-operation and Development (OECD) nations over the past five years. Risberg (2012) reviewed 2011 data from the United States and found that about 1.5 million, or 53.6%, of bachelor's degree-holders under the age of 25 were under-employed and seeking relevant employment. These data suggests that unemployment rates in many nations are a problem among youth.

In the case of Brunei, there is strong indication that youth unemployment turned into a national concern. According to Hong-Huat Lim (2009), 70% of registered job seekers in Brunei were between the ages of 18-30 years old while 90% of the registered jobseekers from the same figure represented school dropouts from secondary or primary schools in the country. These statistics demonstrate that Brunei also experiences unemployment issues among the younger generation, which is similar to the situation in other nations.

Organizational Context and Mission

Mechanical Training Centre (MTC) was founded in 1986 and is one of seven publicly funded Technical and Vocational Colleges categorized as a post-secondary education under the Higher Education sector of the Ministry of Education (MOE) in Brunei. The college is located strategically in the capital city of Bandar Seri Begawan, which is the most densely-populated area in the Brunei-Muara district. The mission of the college is to provide knowledge, skills and values to all graduates for employment and lifelong learning through fulfilling national aspirations of producing a high-quality workforce for a global economy (MTC, 2012).

As of 2014, the MTC population consisted of 754 full-time students, 87% of this student body consisted of males and 13% females. All of the students at MTC consist of Bruneian citizens and only 3% of the total figures composed of permanent residents. There were a total number of 82 full-time faculty members teaching at MTC. In addition, 34 members consisted of administration and support staff. MTC offers qualifications in Diplomas, Apprenticeship schemes, Industrial Skill Qualifications and Skill Certificates 2 and 3. Currently, MTC provides fourteen different programs ranging from automotive, vehicle-body repair and heavy machinery engineering up to various energy industry certified programs. Upon completion of these various programs, the graduates will opt for employment at two levels certification, either at the skilled-worker level or at the technologist level.

Organizational Problem

MTC is currently undergoing major educational reform and transformation under a statutory board of a new Institute of Brunei Technical Education (IBTE). Under this new institute, MTC has a key performance indicator to be achieved by 2017, which is to produce graduates who can attain a minimum of 80% employment after graduation. In April 2011,

according to an employment study conducted by the Research Unit of the Department of Technical Education (DTE) in the Ministry of Education (MOE) in Brunei, only 50% of the graduates who participated in the survey at MTC were employed in areas that appeared to be suitable to their qualifications and field of study. The employment study has identified that the recent curriculum revisions conducted over two years ago for MTC programs had left some confusion among many MTC faculty, particular in the concept of applying performance-based education training or competency-based education training (CBET). Under the new transformation of IBTE, the focus of the development of practical skills emphasized the entire program curriculum should be purely "competency-based" (IBTE, 2013, p. 8).

On these grounds, based on one of MTC's organizational goals, the institution aims to produce graduates who can secure jobs suitable in their field of study within six months after graduation. However, a performance gap appears to exist within MTC's own organizational goals, as almost half of the graduates were still unemployed. A discrepancy gap analysis project was then used to investigate the possible factors that contributed to the gap.

Related Literature

According to the United Nations Population Fund (2013), the world's population is made up of approximately 50% children and youths between the ages of 15-24 years. In 2013, the figure for unemployed people worldwide was almost 200 million and 12.3% of this population consisted of youths. According to International Labour Organization [ILO] (2013a), between 2008 and 2012, many advanced economies, including the European Union, experienced an increase of 2 million unemployed individuals; with a 25% increase in unemployed youths with the figure continuing to rise at a staggering rate. These figures indicate that prolonged youth employment could cause a social inequality gap among youths and adults, potentially, resulting

in distrust in socio-economic and political systems (ILO, 2013b). Countries experiencing persistent high levels of unemployment could also experience depreciation in human capital and withdrawals from the labour market (OECD, 2011). In another report cited by ILO (2012), the crisis of youth unemployment is not only about quantity but also about the quality of jobs declining. Consequently, young workers were falling victim to traps of temporary employment and fixed-term contracts, misconstrued as a pathway towards permanent employment.

For Brunei, a recent study has revealed that the estimated total number of youths who were unemployed in 2011, including those with higher education attainment, was 18,000 (Kamit, 2013). Another study conducted by Brunei's labour department cited by Bandial (2011) suggested that the unemployment figure continued to rise every year and currently, local unemployment accounts for 3.7% of the total labour force in the country. According to Hong-Huat Lim (2009), the youth unemployment crisis in Brunei is a consequence of a mismatch between qualifications of the local labour force and the demand of required skills needed in both the public and private sectors. He added that the youth crisis is further intensified by the low educational attainment of many of the young generation in the country.

"Youth bulge" has been perceived as one of the major contributors to youth unemployment in many developing countries. According to Lin (2012), youth bulge is a common phenomenon in countries where infant mortality rate is successfully reduced whilst mothers still maintain high fertility rates. He suggested that the youth bulge could be used to develop human capital using young people's skill to enhance a country's labour market. Lin (2012) continued to argue that in order to increase productivity in a country would imply absorbing-youths as new competitors to the local workforce. In many oil-exporting countries like

Brunei, there are still inadequate jobs available for youths, due to the high~~er~~ concentration and investment towards capital-intensive industries (Lin, 2012).

Importance of the Problem

If the performance gap were not addressed adequately, the development of human capital in Brunei would be negatively affected in the long run. This would further become one of the possible barriers for achieving Brunei's national goals for its vision in 2035. An increase in youth unemployment has several implications to the future social and economic progressions of a country. According to Podesta (2013), immediate and long-term economic damage caused by high youth employment results in social instability, low economic growth, and lower tax receipts. It has been reported by UNESCO-UNEVOC (2013) that a country's economic growth is affected by youth employment prospects. In a recent study conducted by the ILO (2013a), the youth unemployment crisis has caused an increase in poverty and slow economic growth.

The recent employment study conducted in Brunei's MTC also indicates a high mismatch between the supply and demand of skills required by the local industries, resulting in the high unemployment rate of MTC graduates (DTE, 2011). If this problem were not addressed, the credibility of MTC would be affected in the eyes of many future employers and local industries. Moreover, it is important to solve the discrepancy gap that existed in order to maintain the future prospects of MTC.

Organizational Goal

By January 2016, MTC's organizational main goal is to ensure that 100% of graduates are able to secure jobs after completing their respective courses within six months after graduation. In order to determine whether the goal is achieved, an assessment would be done by measuring the number of graduates who have gained employment after two years. A follow-up

survey will also be conducted to investigate if there is strong indication of the quality of-MTC's education, which is to be measured against the total number of employers who are satisfied with the turnover of MTC's graduates within the time frame. The Department of Technical Education (DTE) in MOE, Brunei will be responsible for tracer studies of all graduates by collecting feedback and information from all relevant industries and employers that have offered jobs to the MTC's graduates.

Stakeholders and Stakeholders' Goals

The key stakeholders for MTC are students, instructors, and administrators. The stakeholders play a significant role in MTC to enable the institution to reach its organizational mission and goals. MTC is committed to delivering the best value in education and training, with exceptional learning experiences to meet the needs of students, industries, and communities.

The first stakeholder was the group of students who undertake their studies at MTC. The students were accountable for completing and obtaining the necessary credits in order to fulfill the course requirements and graduate from their respective programs. Students who graduated should attain all required lifeskills and competencies from their training at MTC. Students who have received good quality technical education at MTC are expected to be highly employable.

The second stakeholder is the teaching staff at this institution. The instructors were composed of the academic staff responsible as deliverers of quality programs at MTC. MTC instructors must demonstrate high teaching proficiencies in the classroom. These teaching instructors were responsible for delivering the knowledge and based on industry requirements. The Human Resource (HR) Unit from the DTE prepares the timetable for the teaching of instructors at MTC. The HR unit at MTC is thus responsible for conducting a six-monthly review that covers factors such as industry demand and proposed number of student intake. The HR unit

ensures that academic teaching instructors at MTC obtain adequate industry exposure to improve their teaching experiences and practices.

The third stakeholder is the administration team from MTC. The team is composed of the principal, deputy principals, department heads, senior managers, industry liaison officers, and program directors. All administrator personnel work directly with instructors to design courses, implement quality assurance, coordinate and support student services. This stakeholder group is important because their main responsibility entails students graduate successfully from MTC. Their other roles included providing the knowledge and expertise to students and assisting in helping create good relationship between local industries and future employers in the country. The industries thus supported the college by providing input and feedback in terms of the design of the curricula of the various programs offered at MTC. The administrators also facilitated and focused on securing a Memorandum of Understandings (MOUs) to be established between MTC and various key industry players in Brunei. Table 1 identifies the three key stakeholders at MTC and outlines their respective organizational goals

Table 1

Organizational Mission, Organizational Global Goal and Stakeholder's Goal

Organizational Mission		
The mission of Mechanical Training Centre (MTC) is to provide knowledge, skills, and values to all graduates for employment and lifelong learning through fulfilling national aspirations of producing a high quality workforce for a global economy.		
Organizational Global Goal		
By January 2016, 100% of students who graduate will secure jobs within six months after graduation.		
Students	**Instructors**	**Administrators**
By January 2016, 100% of the students will score excellently on a mock interview given by employers.	By January 2016, 100% of the instructors will be teaching competency-based approaches in their teaching using a curriculum that is aligned to industry requirements.	By January 2016, MTC will obtain 20 more MOU's with all its industry partners and future employers.

Stakeholder for the Study and Stakeholder Performance Gap

The combined efforts of the three key stakeholders described above are fundamental to ensure that 100% of graduates at MTC will be able to secure jobs related to their respective fields of study. Although each of the stakeholders contributes by assisting MTC in reaching its organizational goal, it was also important to observe any barriers and to identify any causes that contribute to a stakeholders' performance gap. Many research studies accounted for the importance of having instructors who assisted in improving the quality of teaching and raise the level of student's skills and competencies. Instructors who do not meet employers' expectations and failed to help students in reaching minimum levels of competency in their respective training would lead students to low employment after graduation. Consequently, the reputation of MTC as an effective technical training institute would be affected in the long run. Therefore, the instructors are required to teach a curriculum that is constantly aligned to industry standards. In addition to this an industry-based curriculum should predominantly be implemented by applying task-based instructions in their education and training or competency-based education training (CBET) in short. Therefore, the key stakeholders for this gap analysis study were found to the instructors at MTC.

The discussion so far indicates the importance of the course curriculum be constantly reviewed and focused on enhancing both students' academic knowledge and generic skills. A well-developed curriculum should also be taught and integrated with student engagement strategies based on recommendations by local industries in Brunei. The revised and updated course curricula would be embedded with life skills to enable students to adapt and apply multiple skillsets to a wider range of working conditions throughout their working life. Currently, according to a study conducted by Research Unit at DTE only an estimated 50% of

the curriculum at MTC comprised of course material that was tailored to be industry-relevant (DTE, 2011). The goal for the instructor group in the program was to teach a well-developed knowledge and skill-based-curriculum that was aligned to industry needs in Brunei. Additionally, this curriculum enhances students' lifelong learning experiences that were measurable within the course objectives. The goal for the instructors at MTC is by January 2016, 100% of the instructors will be teaching competency-based approaches to applying a curriculum that are aligned to industry requirements. If this gap is reduced, the students at MTC will be fully equipped with transferable lifeskills as a preparation for their future employment.

Purpose of the Project and Questions

The purpose of this project is to conduct a gap analysis to examine the root causes of the low rate of only 50% of the students who graduated from MTC and were able to secure employment opportunities. The analysis focused on the causes and factors that showed possible gaps in the areas of knowledge and skills, motivational, and other organizational issues. The analysis began by generating a list of possible causes and then examining factors that systematically focused on actual and validated causes. While a complete gap analysis would focus on all key stakeholders as mentioned above, for practical purposes the stakeholder that was chosen in this analysis was the group of instructors.

The two questions addressed that guided this study were shown as follows:

1. What was the knowledge, motivational, and organizational needs of MTC instructors to successfully implement a competency based approach in their teaching?
2. What were the recommended solutions to closing the 50% gap in knowledge, motivation, and organization for students, in order to raise employment with local employers in Brunei?

Methodological Framework

Gap analysis research was conducted using a methodical, systematic, and analytical process for finding the potential causes as to why MTC's graduates were unable to achieve 100% employment in their related fields of study after graduation. Clark and Estes' (2008) gap analysis model and approach was used to define MTC's organizational goals and to identify the gap that existed between the actual performance level and the desired performance level. Assumed causes for the performance gap were also generated, based on personal knowledge, learning and motivation theory, and related literature. Focus groups, interviews, surveys, and content analysis was used to validate these causes. Research-based solutions was recommended and evaluated in a comprehensive manner.

Organization of the Dissertation

There are five chapters included in this study. Chapter one describes the organizational problem of only 50% of graduates of a technical college in Brunei named Mechanical Training Centre (MTC) who were able to secure jobs after six months upon graduating. The key stakeholders chosen to address the performance gaps are the teaching instructors. Chapter two provides a detailed literature review concerning youth unemployment, the importance of technical vocational education training (TVET) to economic growth and the usage of competency-based curriculum (CBC) in TVET systems. Chapter three provides detail of the assumed causes for the stakeholders' performance gap to be addressed using data collection methods of instruments, participants within the gap analysis study. Chapter four summarizes all the results collected from the surveys and interview findings identified at MTC. Finally, Chapter five presents all the recommended solutions, data analysis with useful literature in order to close the performance organizational gap existing at MTC. In addition, an integrated strategic solution

was proposed in chapter five, followed by four-level evaluation methods for future research and recommendations.

Keywords

Competency-based education and training (CBET), competency-based curriculum (CBC), competency-based approaches (CBA), Technical Vocational Education and Training (TVET), Vocational and Technical Institutions (VTIs), and Mechanical Training Centre (MTC).

CHAPTER 2

LITERATURE REVIEW

As discussed in chapter one, the purpose of this study was to examine the causes of the low employment rate of graduates at MTC, which is a Technical Vocational college in Brunei. The study will apply Clark and Estes' (2008) gap analysis model to identify and analyze existing barriers preventing graduates of MTC from attaining 100% employment. This chapter also provides a synthesis of the literature on global issues of youth unemployment, importance of technical and vocational education and training (TVET), employment rates of graduate in technical vocational institutions (TVIs) and competency based curriculum in TVET systems.

Global Issues of Youth Unemployment

According to a recent study by the International Labour Organization (ILO), the global youth unemployment rate has been on the rise since 2011 (Asaad & Levison, 2013). The global youth unemployment rate was 12.3% in 2011, increased again to 12.4% in 2012 and continued to grow to 12.6% in 2013 (ILO, 2013a). That was an increase of more than 700,000 over the previous year and it is expected to rise to 12.8% by 2018 (ILO, 2013b). In another report by ILO (2012) over a period of ten years from 1997-2000 even before the financial crisis of 2008, youth unemployment has been increasing over on average by 60, 000 per year.

Youths comprise approximately 40% of the total unemployment worldwide, with almost one-fourth of young people aged between 15-29 years (ILO, 2014). Youths between 15-29 are primarily at interest as evidence indicates that if these youths experience unemployment in their transition to adulthood and work, they were more likely to experience prolonged unemployment in future (Asaad & Levison, 2013). Young job seekers, when compared to adults, are 2.8 times

more likely to be unemployed (ILO, 2014). Studies have revealed that prolonged unemployment results in negative consequence for a person's working life such as lower wages and longer spells of unemployment (Fares & Tiongson, 2007; Arulampalam, Gregg & Gregory, 2001; O'Higgins, 2001). All of these findings suggest that the long term impact of youth employment was a generation at risk of work deficits and distrust in the socio-economic and political systems (ILO, 2013b).

Many countries that have shared high level of long-term unemployment would face higher risk of prolonged unemployment despite any economic recovery (OECD, 2011). Based on these facts, it is possible to infer that youth unemployment has reached unacceptably high levels globally. If these issues were not addressed adequately, youth unemployment would pose further threat to a country's future social, economic prosperity and political stability.

Historical Perspective of Youth Growth and Unemployment

According to Assaad and Levinson (2013), in 1970, youth as a percentage of working age population peaked in earliest Asia reaching approximately one-third of the entire working population. Assaad and Levinson (2013) noted that in most developing countries, the number of young people has been increasing at an unprecedented rate over the period of 1960 to 1990. He added in 2010, the combined regions of East Asia, South East Asia and sub-Saharan Africa, the figures of young population estimated to be at 760 million, which is 63% of the world population and expected to grow to 832 million in 2050. Studies derived from the 2008 financial crisis have shown that youth were the hardest hit by unemployment regardless of any economic growth (Bell & Blanchflower, 2009; Verick, 2009). As explained by Blanchflower and Freeman (2000), youth unemployment has declined in advanced economies from the 1970's into the 1990's. In another study conducted by O'Higgins (1997), between the early 1980s and mid 1990s, across

the European countries, the labour participation of youth has decreased largely, due to the increase of youths attending school full-time (O'Higgins, 1997).

Youth Bulge

Many developing regions in the world, particularly countries in South East Asia, such as Indonesia, Philippines and Brunei, face similar variations in their demographics as a result of as a result of a phenomenon known as the "youth bulge" (Dahiya, 2012). Dahiya (2012) defined "youth bulge" as a 'demographic dividend' associated with the temporary increase in young people age 15-24 years. Assaad and Levison (2013) explained youth bulge as an explosive growth in the developing world where both the number and share of the population of youths increase substantially, compared to other age groups, of both the younger and older. A third definition of youth bulge was a demographic trend where the proportion of persons aged 15-24 in the population increases significantly compared to other age groups (Ortiz & Cummins, 2012). Economists have argued that the youth bulge does not necessarily lead to negative implications for youths, if these working youths can be fully employed, engaged in productive activities, they would contribute to the human capital of a country (Assaad & Levinson, 2013; Lin, 2012).

There are more than 120 million new potential workers entering the world's labour market annually, "90% of this workforce" was derived from developing countries (Ortiz & Cummins, 2012, p. 32). These developing countries were the most vulnerable in terms of political and social instability, in addition to the problem of lack of employment opportunities (Ortiz & Cummins, 2012; Lin , 2012). The literature emphasizes the importance of governments, policy makers around the world to focus on the issues discussed particularly in youth's unemployment. If no immediate actions were made immediately, the implication of this crisis would further erode prior investments in education and health, which would potentially hinder

long-term socio-economic recovery (Tse, Exposito & Chatzimarkakis, 2013; Ortiz & Cummins, 2012).

Growth of Youth Unemployment in Developed Countries

According to ILO (2013b), youth unemployment in 2012 was the highest in the Middle East at 28.3%, and with percentages varying at 23.7% in North Africa, 9.5% in East Asia, and 9.3% in South Asia. Studies have shown that in many advanced economies such as the European Union, young people (aged 15-29) possessing high levels of education were increasingly taking jobs that they were overqualified to do (ILO, 2013a). The figures from ILO (2013a) suggested that many developed economies and European Union as a whole have a higher risk of job mismatch for a population distribution at the bottom of the pyramid. This was reflected by the relatively high unemployment rates for low skilled jobs (ILO, 2013a).

Furthermore, ILO (2013a) reported in Belgium for example, in 2009-2011, the unemployment rates of workers with primary education increased from 30.2% to 31%. Similarly on average index of 28 countries increased from 13.2% in 2010 to 3.7% in 2011, which reflected a "deteriorating position of youth with primary education" in most of these countries (ILO, 2013a, p. 26). As a result, less-educated youths find themselves at the back of the queue doing jobs that they were best qualified to do (ILO, 2013a). It was noted in the International Labour Conference (ILC) report (2012) that developed countries needed to sustain their economic development to balance the effect of declining labour force by ensuring that youths have productive employment. To review, many countries regardless of the economic level or social development, youth's unemployment was caused by deeper issues such as slow economic growth, rigid labour market and mismatch between education and training outcomes (Tse et al., 2013; ILO, 2013a).

Factors Contributing to High Unemployment Rates in Brunei

Brunei Darussalam has a small but wealthy economy due to the abundant natural resources. This small population country has one of the highest levels of Gross Domestic Product (GDP) per capita in Southeast Asia. However, the GDP per capita growth rate has been the lowest in the region and raised the concern of economic unsustainability by the government. According to OECD (2013), structural reforms have been implemented to move away from the hydrocarbon-dependent development. Subsequently, there has been a need to diversify the economy to foster the developments of other higher value-added manufacturing and services sectors. Hong-Huat (2009) stated that the unemployment rate in Brunei was 3.7% in 2008. These types of unemployment figures were best described as frictional unemployment rather than structural employment.

Economists defined frictional unemployment as occurring as a result of people moving from one job to another, due to labour market turnovers (Moffatt, 2014). Structural unemployment was defined as a category of unemployment arising due to a mismatch between job availability in the market and the skills that people possess. This type of unemployment was often due to the rising technological advancements and changes in demands of products that people need (Moffatt, 2014). According to Blanchflower and Freemen (2000), technological changes such as computerization, might be factors that positively impact the demand for youth labour. Another reason for the high unemployment rates of youths in Brunei was the lack of skills in job-searching and Curriculum Vitae (CV) preparation (Cheong & Lawrey, 2009; ILO, 2006). In general, many adults had more experience in finding employment, due to their informal networks and connections compared to young people (ILO, 2006). For educated youths, high unemployment among university graduates was due to the reduction in education standards,

mismatch between graduate skills, and lack of available jobs (ILO, 2012). Higher-skilled people should obtain average or lower unemployment rates when compared to low-skilled people (Bell and Blanchflower 2011; OECD & ILO 2011; Gomez-Savador & Leiner-Kellinger, 2008).

Another study by Scarpetta, Sonnet and Manfredi (2010) reported that untrained youths tend to experience longer-term "scarring" effects of early unemployment problems and were more vulnerable to weak labour market demands. Experts refer the term "scarring" as disadvantaged youths lacking basic education facing failure getting their first job resulting in negative long-term consequences of career prospects (Scrapett et.al, 2010). To illustrate, O'Higgins (2001) reported that when comparing youths and adults, there was a difference between the amount of time spent in the labour markets looking for jobs. Likewise, this was particularly evident for youth with higher education, who preferred to be spending less time searching for jobs in their lifetime (O'Higgins, 2001).

Unemployment Data in Brunei

A recent study conducted by the Department of Economic Planning & Development (DEPD), Brunei Darussalam had revealed that in 2009, 70% of the registered job-seekers in Brunei were between the ages of 18 to 19. Based on this figure, 93% of the unemployment population consisted of school- leavers coming from middle or primary schools. According to Hong-Huat (2009) the major reasons for having the high number of job-seekers experiencing difficulties in securing jobs were due to their educational level attainment, absence of work experience, and job-hopping attitudes. In 2007, the labour force data cited by the DEPD reported that the unemployment rate in Brunei stands at 3.4% (Cheong & Lawrey, 2009).

The latest unemployed data released by the DEPD for Bruneian citizens and permanent residents aged 18-59 years since May 2014 were found to be 11, 546 (BruDirect, 2014). Hong-

Huat (2009) argued that unemployment in Brunei were due to the salary benefit offered by the government are higher than the ones in the private sector. There was also a significant mismatch between the acquired skills and qualifications in the labour force and the demands of the required skills in the private sectors in Brunei (Hong-Huat , 2009). Other problems encountered by many private sector employers in Brunei were that they faced problems with lack of discipline, dealt with negative attitudes, and inefficiency among the locals. In Brunei, many youths tend to view employment in private sectors as temporary whilst waiting for a more stable and secure jobs in the public sectors. These youths viewed the private sector employment as temporary jobs and so they were unable to commit fully to their task in hand (Hong-Huat 2009).

In another employment study conducted by Cheong & Lawrey (2009) in Brunei, it was found that the promotion of skilled and semi-skilled trades as a career path for locals would have a positive impact on the economy. A long-term possible solution for solving unemployment in Brunei requires the creation of more jobs though economic growth and diversification particularly in areas involving entrepreneurship and innovation (Cheong & Lawrey, 2009). With regards to providing appropriate skills and training, the Technical Vocational Education Training (TVET) system should be expanded to cater for the increasing numbers of school-leavers in the country.

As mentioned in the earlier chapter, in 2011, the tracer data released by the Department of Technical Education in Brunei indicated that only 50% of the graduates of the Technical and Vocational Institutions (TVIs) were employed in industries related to their field of study. The latest tracer study data recorded and conducted by the same department reveals that only 64% of the graduates from TVET managed to obtain employment in 2013. According to Law (2007), the real measures for the success of TVET in any system were the employability of graduates,

personnel developments, and any opportunities for further education and career development. In summary, it was important that the goals of TVIs in Brunei should be working towards ensuring their graduates attain 100% employment from the local industries within the country.

Importance of Technical and Vocational Education Training (TVET)

Quality Technical and Vocational Education and Training (TVET) have the potential to close skill gaps and reduce unemployment (Puckett, Davidson & Lee, 2012; UNESCO-UNEVOC, 2013). Lewin (1993) stated that relevant TVET systems could increase productivity and accelerate economic development. More recently, Langhtaler (2013) proposed that as result of global financial crises, TVET has been seen as a key solution for solving unemployment issues particularly among youths since 2008. TVET focused on the transition between the world of learning and career pathways that enable youths to acquire employable skills and overcome any mismatch of future skills challenges (UNESCO-UNEVOC, 2013).

According to ILO (2012), there was a relationship between education, the world of work and the community as a whole. Moreover, TVET system should exist as part of a system of lifelong learning and be adapted to the particular needs of a country and to worldwide technological developments (ILO, 2012). Other similar studies have indicated that TVET yields higher returns than general secondary or other tertiary education due to the focus on providing work-relevant skills (Herschback, 2009; Kuepie et al, 2009). In general, the research has drawn the important roles of TVET in the development of economic workforce and productivity.

Roles of Technical Vocational Education and Training (TVET)

In the era of globalization and rapid technological change, institutions need to constantly evolve and undergo major transformation for improvement (UNESCO-UNEVOC, 2013). The role of TVET in both industrialized and developing countries for the development of their

economy has been increasingly recognized (Abrokwa, 1995; Chung, 1995; Lewin 1993, Qureshi, 1996). The relationship between Technical and Vocational Education Training (TVET) and economic productivity has been confirmed in numerous studies in education, economics and social sciences (Min, 1995). Pucket, Davidson & Lee (2012), found that countries having effective TVET systems could help close skill gaps and meet the labour demands of private-sector employers, reduce unemployment, and increase national productivity and competitiveness. As reported by UNESCO-UNEVOC (2013), TVET institutions need to keep up-to-date with labour market analyses and skills forecasts in order to remain relevant, particularly in developing greater partnerships with private sectors to support their programs.

TVET Goals Towards Skills Development and Economic Prosperity

The quality of a nation's workforce is crucial to its economic growth and social prosperity (Marshall & Tucker, 1992). Lee, Goh, Fredrikson & Tan (2008) stated that the increasing number of young people in the global population and their employment prospects affect the future economic growth of a country, both nationally and globally. Research has also drawn the importance of promoting critical manpower projection and skills development, in order to stimulate the economic growth of a country (Lee, Goh, Fredrikson & Tan, 2008).

As identified by Langthaler (2013), TVET was relevant as a process of lifelong learning, and to continue aligning training developments in the rapidly changing needs of a country. The purposes of TVET involved the studies of "technologies, related sciences, practical skills acquisitions, attitudes, and understanding the knowledge" related to occupations in various economic and social life (UNESCO, 2001, p.7). In brief, the relevance of TVET to employers was to generate real value in education and training and to contribute to the national economy by ensuring that people attain employment and productive work.

Employment Rates of Graduates in Technical and Vocational Institutions

TVET has the potential to tackle youth unemployment due to their orientation towards the world of work and acquisition of employable skills (UNESCO-UNEVOC, 2013). According to Tse, Exposito & Chatzimarkakis (2013), some of the most competitive economies in the world like Germany, have the ability to harmonize vocational and professional aspirations as equal levels of education. On these grounds, TVET systems in any country continue to face challenges in order to meet their manpower demands due to their changing needs of the economy.

Challenges Faced by Technical and Vocational Institutions

Key stakeholders must align their interests and collaborate with the TVET ecosystems by aligning manpower projections and workforce demands to all key economic sectors within a country (Pucket, Davidson & Lee, 2012). As a result, TVET institutions should continuously involve private sector partners in the design and implementation of the TVET curriculum. Furthermore, this becomes challenging for TVET systems to be effective, as all educational system stakeholders, such as government and industry players, should create better partnerships for the purpose of adopting best practices among each other (Pucket, Davidson & Lee , 2012).

According to Law (2007), the focus of TVET today, was more towards its value and responsiveness in a globalized economy. In addition, TVET should be shaped and aligned to economic and social needs of a country that remained distinctive compared to other tertiary education sectors. Likewise, education systems continued to be directed towards preparation for university education even though many students move directly to the labour force (Hienz, Kell, Witzel & Zinn, 1998; Morris, 1996). Hence, all of this challenges caused TVET to be often viewed as inferior to the academic education regardless of student's ability or interest.

Public perception of Technical and Vocational Education Training (TVET) and its Graduates

There has always been negative views by society on TVET and often regarded as the "weakest" link to the total education system in many countries (Law, 2007). The image of vocational and technical programs and their graduates has been valued low by society (Tse et.al., 2013; Hiebert & Borgen, 2002; Chung, 1995). Many parents in society continued to hope that their children aspire to pursue university degrees, which generally created unrealistic expectation and add more burdens for schools to perform better (Law, 2007). TVET was often regarded as second-class education leading to lower status employment (Hiebert & Borgen, 2002; Chung, 1995, Lyons, Randhawa, & Paulson, 1991; Psacharopoulos, 1991, Lewis & Lewis 1985). On the contrary, Law (2007) argued that having vocational education and technical skills were often the source of solving gaps in human resources development. There have been numerous studies that reveal conflicting information and attitudes about public perception of TVET. Most studies have indicated the positive attitudes of parents, vocational students, and educators in comparison to non-vocational students and non-vocational educators (Gilberston, 1995; Phillips, 1981; Slamet, 1987; Small 1984).

Impact of Unemployment in a Social and Economic Perspective

According to Oslo (2010), high unemployment rates have great economic and social impacts, such as short-term and long-term progressive losses of skilled workers to a growing economy. This unemployment factor caused stagnant and sluggish economic growth, undermining social cohesion and risking the stability of a country (Oslo, 2010). ILO (2014) stated that longer spells of unemployment could have persistent effects, such as the diminishing

of longer market attachments and depreciation of skills. This prolonged unemployment status has personal and social implications, including decreased life satisfaction stigmatization (ILO, 2014).

However, TVET improves younger workers' access in obtaining better jobs and more useful employment (Biavaschi et. al, 2010). Lewin (1993) agreed that appropriate TVET should increase productivity and accelerate economic development. The job-training in TVET allows a direct transition from school to work, which generally leads to better pay in the short term. Similarly, the acquisition of skills without certification was restricted to learning on the job, which creates less value for TVET graduates when shifting careers (Biavasaschi et. al, 2010). In a similar study, Neuman & Ziderman (1989), found that TVET is associated with positioning a formal education system with the needs of employment. These studies suggested that the success of school-based training depends on the alignment of skills taught in TVET to the labour market. This was highly dependent on the closer collaboration of employers and Technical Vocational Institutions (Biavaschi et.al., 2010). More broadly, educated and trained workers were better-prepared to learning new skills, in order to climb up the occupational ladder (Middleton, Ziderman, & Adams, 1993).

Competency-Based Curriculum in TVET Systems

Rapid technological development and information transfer has formed new pathways of delivering knowledge to today's learner. Consequently, in order to guarantee today's learners a brighter future, there was a need to design a more improved curriculum in their post-secondary years. This could be achieved by applying competency-based education training (CBET) in the teaching approaches for these types of learners. According to Norris (1991), it was essential for CBET to drive towards more practical orientations, requiring a higher emphasis on the assessment of performance rather than knowledge. Ruby (1992) stated the key feature of CBET

was to divert education and training away from inferring competence from tests of knowledge to the assessment of an individual's capacities to perform in particular contexts. The term 'skills' did seem to be a conceptual problem, unlike "knowledge and understanding" that advocated CBET (Wolf, 1989).

Subsequently, CBET was designing a new well-developed competency-based curriculum (CBC) that focused on enhancing students' academic knowledge, critical thinking, and generic skills (Wolf, 1989). Enniss (2008), proposed that critical thinking was one of the most recommended skills in higher education due to the added value to student's learning outcomes. Schools must foster critical thinking facilities for effective thinking which lead to problem-solving and creativity, enabling learners to articulate knowledge, reasoning, and problem-solving that are essential in the world of work (Halpern, 1999; Smith, 2003).

According to Cooper (2006), the curricula in TVET was designed to encourage and incorporate problem solving and creativity but were less focused on the more complex process of teaching and learning critical thinking. A TVET system has the potential to offer this type of learning in response to the changing needs of employment in response to demands of modern industries. The TVET curriculum's prime focus is emphasizing employability skills (Leven, 2005). Hyslop-Margison & Armstrong (2004), stated that critical thinking in TVET systems represents transferable employability skills that would allow students to become more competent and employable in their working careers. Freeman and Wise (1982) argued that vocational training in high school was not necessarily related to youth success in the labour market. Academic success in high school was positively related to both employment and wages after graduation (Wise and Freeman, 1982). To sum up, TVET needs to apply the right curriculum in order to deliver employability skills to their students by qualified instructors.

Importance of the Instructor

The key success of an educational institution was highly dependent on acquiring qualified and effective instructors. These instructors were the most important part of an institution, as they were the curricula and policy implementers. These instructors held the responsibilities of achieving the goals and success of the institution. There were a lot of researchers that had argued that a strong relationship between the students and the instructors was one of the key factors for increasing students' performances in schools. Evidence indicates a predictive relationship between quality instruction and positive student outcomes (Hamre & Pianta, 2006).

Additionally, an important school-based factor for achieving high student performances has been recognised by the teaching quality of instructors (McCaffrey, Lockwood, Koretz, & Hamilton, 2003; Rivkin, Hanushek, & Kain, 2000). Student learning has been found to be long lasting and cumulative as a result of effective instructors (Kain, 1998; McCaffrey et al., 2003; Mendro, Jordan, Gomez, Anderson, & Bembry, 1998; Rivers, 1999; Sanders & Rivers, 1996). The nature of the relationship between the instructors and the students could also be affected, based on the instructor's self-efficacy beliefs.

Instructors in TVET assume that their role in was to convey information to their students as they continue to learn and grow as professionals and to incorporate updated content and teaching strategies (Kugel, 1993). According to Grant (1988), instructors need to master the subject matter as well as organize and construct their instructional practice. Teaching strategies practiced by instructors could encourage students' critical processes, such as active learning (Duron et al., 2006), cooperative learning (Cooper, 1995), debating, role-playing (Gratton, 2010), problem-based learning (Mimbs, 2005), and writing (Gunnick & Bernhart, 2002). According to Hawley (2007), the teaching and learning processes could be exciting and engaging

if instructors possess the right skills to deliver knowledge effectively and react positively to situations in their lessons. In the United States, TVET programs focused on market demands (Dennis & Hudson, 2007).

Similarly, in the context of Brunei, TVET programs in their technical institutions were offered as the result of collaboration among government, industries, and academia, for the purpose of providing vocational skills related to specific competencies (Haas, 1999). In the case of MTC, the instructors need to impart state-of the art knowledge and skills, which required continuous updating through attachments within industrial sectors (UNESCO, 1997). To summarize, it was important to address the performance gap of MTC instructors as the stakeholder in this study. This was implemented by determining the root causes in knowledge, motivation and organization that prevent MTC instructors from teaching a skills-based curricula. Moreover, this skills-based curriculum should be aligned to industry requirements through learning and motivational theory as reviewed within the literature.

Learning and Motivational Theory

The four main types of knowledge domains stated by Anderson and Krathworl (2001) were factual, conceptual, procedural, and metacognitive knowledge gaps. The six cognitive processes were categorized under remembering, understanding, applying, analyzing, evaluating, and creating. The three motivational 'indexes' stated by Clark and Estes' (2008) were lack of active choice, persistence, and mental effort. Pintrich (2003) addressed these three motivational indexes by underlying solutions related to the variables of self-efficacy, value, interest, attribution, control beliefs, and goal orientation.

The issue of solving organizational gaps, Gallimore & Goldenberg (2001) defined the concept of understanding the root causes of culture with two variables of learning: cultural

models and cultural settings. As previously mentioned, all these theories would be developed and applied as the framework for this study, to address the three domains of the performance gap through knowledge, motivation and organization (KMO). These KMO domains all coexist in the current status of instructors at MTC, a technical institution in the context of Brunei Darussalam.

Instructor Knowledge Issues

Blooms' taxonomy is significant in the fostering of critical thinking, which enabled students to "establish clarity and accuracy, assess relevance, and demonstrate the ability to think in depth" (Brown, 2004, p. 76). The first assumed cause for MTC instructors not reaching their performance goal was the presence of a factual knowledge gap. The assumed knowledge gap in this situation was 'remembering' the latest market trend for job listings currently in high demand in the country. This assumed cause would be to define the dimension of 'factual' knowledge itself.

The second knowledge gap that exists at MTC would be the conceptual knowledge gap. MTC instructors failed to understand the interrelationship among basic elements with a structure of knowledge to enable them to function together (Kranthwohl, 2002). Instructors should have abreast knowledge of applied science and generalization, such as various theories, models, and structures.

The third gap within the knowledge and skills domain would be in the procedural knowledge basis. It was important for these instructors to acquire procedural knowledge of determining the appropriate events of teaching a competency-based curriculum (CBC). The last knowledge gap would be the metacognitive knowledge gap experienced by many of these instructors. MTC instructors did not know how to reflect on their own teaching pedagogies using differentiated instructional methods catering to the needs of their students. Anderson and

Krathwohl's learning taxonomy was used to assess the metacognitive knowledge gap by determining how instructors evaluate their students' progress by using contextual and conditional knowledge solutions to be addressed.

Instructor Motivational Issues

There were three indicators to reflect MTC instructors' behavior for their decision not to teach their students a CBC. These three behaviors for MTC instructors were related to choice, persistence, and effort. (Bandura, 1997; Pajares, 1996; Pintrich & Schunk, 2007). The first index of behavior for MTC instructors would be a lack of an active choice among them, teaching a CBC to their students. Two possible motivational causes for these problems of choice would be low self-efficacy and having low task utility value. MTC instructors exhibited low self-efficacy, as they often doubt their own abilities and frequently avoid difficult tasks when presented. Besides, these instructors would perceive that delivering a CBC required additional mental effort in teaching when compared to using an academic curriculum, which focused less on assessing a student's competencies. The task value variable of MTC instructors would be the lack of extrinsic value or utility, in terms of attaining future goals for their students. Additionally, the instructors at MTC would have difficulty understanding the purpose and comparing any significant difference between using an academic-based versus a CBC. The instructors failed to see that a CBET would be more focused on job performance and not the course's content. In summary, many MTC's instructors were still teaching TVET courses using academic programs, as they have failed to integrate the course content into job-specific tasks.

Another index of behavior of many MTC instructors was the lack of mental effort. In the case of instructors at MTC, they were making negative attributions of students related to their low ability in the classroom. Attribution theory focused on how an individual used information

to understand himself and his environment and other factors, to arrive at a causal explanation in order to form a causal judgment (Fiske & Taylor, 1991; Weiner, 1986). When we applied this concept to MTC instructors, the theory helped to explain the factors of why instructors had negative attributions of the students' low abilities and performances in the classroom. In the perception of many MTC instructors, even if they taught a CBC, they would observe no difference in the final outcomes of their students.

Instructor Organizational, Cultural, and Resource Issues

In MTC, in order to understand the organizational gap in this study, both organizational culture models and cultural contexts needs to be distinguished with one another. MTC 's organizational performance gap was identified as having instructors who were teaching students with an academic-based curriculum that was not industry aligned. The reason for this gap could be due to their underlying values, beliefs, and principles. Also, this was a foundation for the college's management practices and behaviors that exemplify and reinforce basic principles (Denison, 1990). The possible organizational barriers at MTC have resulted in a performance gap by MTC instructors who chose not to use CBC in their teachings. There were currently two cultural model gaps identified at MTC: 1) a strong resistance to change and 2) an acceptance of passivity, social loafing, non-participation, and lack of accountability among colleagues. The performance problems that MTC faced related to cultural settings were more visible in specific work settings. To illustrate, two examples of cultural models expressed by MTC instructors' behaviors were first, a lack of equipment and facilities to teach a CBET and second, missing college strategic visions and goals.

Assumed Causes from the Review of the Literature

Based on the literature review, there were a number of possible factors contributing to the

MTC instructors' inabilities in teaching their students CBET that was not aligned to industry requirements. CBET was viewed as the foundation for reform in vocational and post-secondary education and as the means of increasing skill levels and productivity (Beevers, 1993; Smith & Keating, 1997). According to Kuhlich (1991), there was a growing trend in education toward more competency-based programs of study in many higher-education institutions that had reached a global scale.

Research suggested that discussions of CBET came from all regions of the world (Fretwel & Pritz, 1994; Grootings 1994; Hargraves, 1995; Stennet, 1984 Stevenson, 1992). Bowden & Masters (1993) stated that CBET was consistent with the current views of learning, as the learning process varied from a conception of learning as a process of satisfying pre-specified 'objectives'. Meaningful learning could be achieved by CBET, due to the increasing recognition of a learner's active processes through the construction of relating new information to prior knowledge and understanding (Bowden & Masters, 1993).

Knowledge and skills issues. The word 'competency' was defined as a cluster of knowledge, skills, and attitudes that correlate to the job performance of an individual's role and responsibility, measured against a set of standards constantly being improved by further training and development (Parry, 1996). An effective TVET needs to be in a practical scenario combined with a various blend of teaching pedagogies. The best TVET learning broadly involved hands-on, practical, experiential, and real-world environment learning that comprised constant feedback, questioning, application, and reflection of theoretical models and explanation (Lucas, Spencer & Claxton, 2012).

In the context of MTC, the instructors lack the factual knowledge domain of having industry-specific vocational competencies in their professional work. According to Field,

Hoeckel, Kis & Kuczera (2009), the knowledge and skills of teachers and trainers in TVET institutions need to be constantly maintained and kept up-to-date. The study also revealed the importance of the workplace, because the objectives of TVET required instructors to be encouraged to spend more time in the industry, particularly in the involvement of practical skills training. Many instructors of TVI(s) assumed that they were too busy to update their skills and knowledge if in-service training was not part of their workload (Dalton & Smith, 2004). The second knowledge gap faced by MTC instructors was the procedural gap of inadequate knowledge to design good instructional methods in order to deliver effective CBET in their programs. For instructors to be effective with diverse students, it was essential that the teachers recognized their own worldviews; only then will they be able to understand the worldviews of their students (Bennet, 1993).

Motivational issues. There were a few reasons why MTC instructors had motivational barriers that hindered them from reaching the performance organizational goal. The first barrier validated was that MTC instructors lack the active choice of teaching using a competency-based curriculum (CBC). Competency-based education training (CBET) was seen as the improvement of education and training for the complex contemporary world (Harris et al., 1995). CBET was viewed as a way for promoting improvements between education/training and workplace requirements. In the perspective of behaviorism, competence was broken down into the performance of discrete tasks with functional analyses identified by work roles. The standards of competence were assessed toward the achievement of how CBET was directed (Kerka, 1998). Instructors of MTC must make a decision as to how they should be training students to use a CBC instead of utilizing an academic-based curriculum. These instructors who applied CBET in their teaching had executed an act of choice and had displayed a motivational drive to applying

CBET within their teaching pedagogies.

Thus, motivational domains, such as active choice and persistence, could be measured using feedback forms given to these instructors to determine how much they were using a CBC in their teaching. It was possible that these instructors would only be using CBC for a certain period of time, but it does not guarantee that they have understood the content of the CBC. Alternatively, these trainers might lose attention if CBC content were not perceived of any value or importance to them in the future. This would be the second motivational cause of lack of persistence of inability to achieve the performance goal. Thus, measuring the mental efforts of MTC instructors of applying CBET would face challenges related to validity and reliability (Flad, 2002; Gimino, 2000). Despite these challenges, measuring these three indices of motivation remained the best variable for describing the MTC instructors' motivational drives (Clark & Estes, 2002; Pintrich & Skunk, 2007).

Organizational issues. Both cultural models and cultural settings defined the organizational barriers faced by the MTC instructors, as both challenges would be validated in this study. The cultural settings would be the resistance to change, due to the lack of autonomy in the colleges faced by the MTC instructors. Teaching CBET requires education outcomes that were industry-driven which will be benchmarked against industry-generated standards. The evidence indicated that there was less autonomy for MTC instructors with their own teaching style, to teach students. These instructors were required to abide by industry principles for all the assessment, learning materials, and instructional programs, in order to evaluate their students' attainment of specific competencies.

The cultural settings that were verified in this study would be the lack of equipment and facilities to teach CBET. The main challenges faced by CBET implementers were the cost of

training itself, emphasizing on adequate human resources for facilitation, equipment,laboratories, and other teaching and learning materials for training (Anane, 2013; Kaaya, 2012). The increased number of trainees would have huge cost implications, as many TVET institutions had already faced previous budgetary constraints. Other challenges faced by CBET implementers were the industrial placement that required students to put into practice real work situations to test their acquired competencies. This implied that industries were pressured to provide all these trainees the relevant work experience or industrial attachment due to the limited numbers of industries available to accommodate all of these students (Anane, 2013).

Summary and Conclusion

The focus of this gap analysis research was to investigate the root causes of why MTC graduates have been unable to achieve 100% employment in disciplines related to their field of study. In general, several studies had revealed the importance of supplying effective and employability skills to local youth as ~~the~~ key factors that would lead to desired employability in TVI(s). It was crucial to align all TVET systems to labour force projection for the purpose of solving the mismatch between the economy's demand of proper skills to promote growth, as well as to reduce unemployment. The research from the literature has drawn the conclusion that graduates who undergone education under CBET had developed effective reasoning, analyzing, and problem-solving skills that were required by many industries and prospective employers.

In contrast, TVET cannot solve all the negative social implications of unregulated labour markets, high unemployment, and lack of job security. However, the provisions of appropriate policies of TVET, such as clear vision and strategic planning at the national level, would offer high potential solutions in a longer term. These policies need to include all stakeholders of both the public and private sectors in the curriculum design of TVET and on-the-job training

provisions involving not only industries and companies but also all non-governmental organizations. To elaborate further, one of the most important challenges faced by TVET was to remain relevant. In addition, this requires an education system be to continuously integrate and flexible, in order to accommodate the changing needs of the economy, people, and its society. Thus, for a nation to be able to compete in a global economy, a motivated, skilled, and educated workforce should acquire competencies at work that were focused on productivity and be able to adapt to the changing needs of technology.

In conclusion, based on all the literature, countries that have effective TVET were able to close the skill gaps and meet the labour demands of their industries, reduce unemployment, and increase national productivity and competitiveness. Beside these economic gains, TVET offers higher returns in regard to multiplying effects of societies, keeping students in school, reducing poverty, and fostering lifelong learning for their citizens. The review of the literature in this chapter had presented an importance case to MTC to reach its institutional organizational goal. Moreover, many of the information provided was particularly focused in areas to increase MTC graduates' employability. The methodology in the next chapter seeks to examine the issue that affects the graduates applying the gap analysis model. This model was applied to analyze the knowledge, motivational, and organizational gaps that offer findings as to why these graduates were unable to achieve 100% employment.

CHAPTER 3

METHODOLOGY

Purpose of the Project and Questions

The purpose of this study was to examine the root causes that prevent Mechanical Training Centre (MTC) from preparing all graduates to gain employment in areas that were suitable to their qualifications and field of study. The recent employment study conducted in Brunei's MTC indicates that only 50% of surveyed graduates were employed in their relevant field. Conversely, this suggested a high mismatch between the skills required by local industries and the preparation provided by MTC. If this problem is not addressed adequately, the credibility of MTC among employers and local industries in Brunei will be at stake. This analysis focused on the root causes in the area of Knowledge, Motivation, and Organizational (KMO) that was preventing MTC from achieving this organizational mission. The analysis began by generating a list of possible causes and to examine factors that systematically focused on actual and validated causes. While a complete gap analysis should focus on many stakeholders, for practical purposes, the stakeholder of interest in this gap analysis was the group of instructors at MTC.

The questions to be addressed that will guide the study are as shown below:

1. What are the knowledge, motivational, and organizational needs of MTC instructors to enable them to successfully implement a competency based approach in their teaching?
2. What are the recommended solutions to close gaps in knowledge, motivation, and organization in order to attain 100% employment for MTC students with local employers and industries in Brunei?

Framework for the Study

A gap analysis study was conducted to investigate the potential causes as to why MTC's graduates were unable to achieve 100% employment in their related fields of study within six months after graduation (MTC organizational goal by 2016). The Clark and Estes (2008) gap analysis model was applied to specify MTC's organizational goal and to identify the present gap that exists between their actual performance and the desired level of performance. Clark & Estes (2008) asserted the gaps in performance was caused by three distinct factors; lack of knowledge and/or skills; lack of motivation; and organizational/cultural barriers. Gap analysis begins with a very clear statement of the context of the organizational/institutional problem. The organization's problem was rewritten as the organizational goal followed by the analysis of the stakeholder's goal. Additionally, this must be accomplished in terms of achieving the organization's goal and further solving this problem. The stages of the gap analysis answer seven key questions. The questions were:

- What is the current performance goal within the organization?
- Where is the organization related to this goal?
- What is the size of the gap between the performance goal and the current situation?
- What is causing this gap in the three distinct factors of KMO barriers?
- What solutions have been be implemented in order to close this gap?
- How do we implement the solutions?
- How do we measure progress for improvement?

This gap analysis model utilizes several different approaches of gathering and analyzing data, specifically, qualitative methods such as interviews, document analysis, observations,

quantitative method such as surveys, and mixed methods, which combine both a qualitative studies. According to Clark and Estes (2008), the gap analysis process was shown in Figure 1.

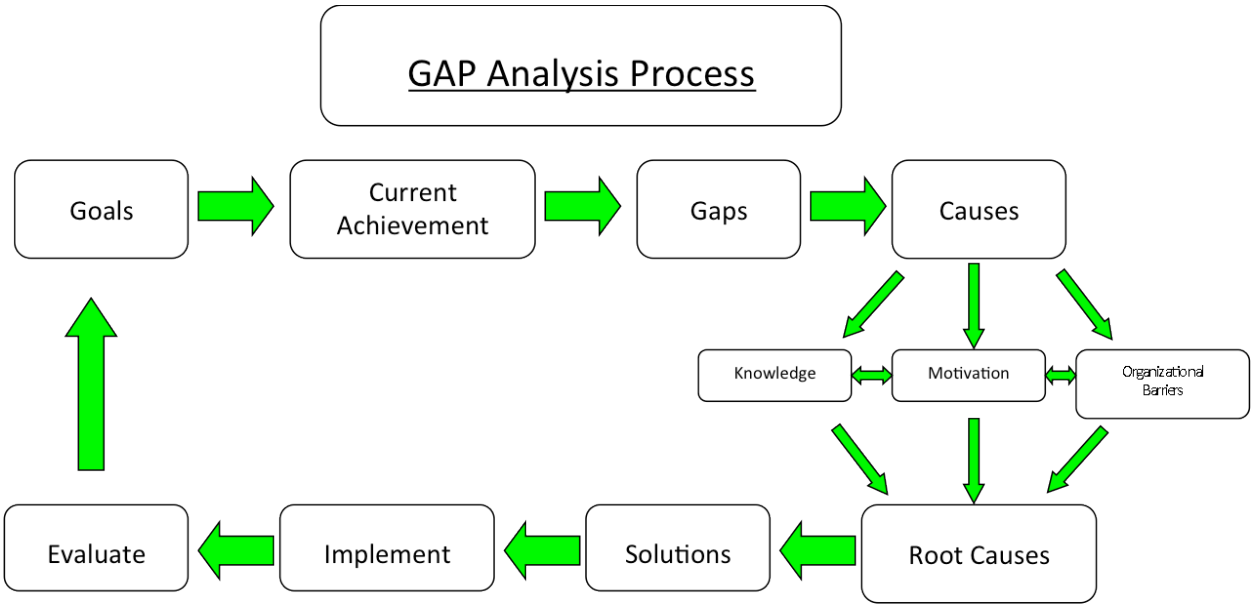

Figure 1. Gap analysis process (Clark and Estes, 2008)

Assumed Causes of the Performance Gap

Gap analysis is very important in solving many performance gap problems. This is because evidence suggests how people in many organizations often jump into conclusions of identifying immediate solutions. Many organizations assumed these solutions would solve a problem without taking necessary steps and sufficient time to analyze the root cause of the actual problem (Clark & Estes, 2008). Studies suggested many of these organizations impose to select and implement wrong solutions. Studies have revealed that 70% of these organizations failed to solve any of their organizational problems. These wrong solutions were being implemented instead had created more harm and forced these organizations to perform worst and hinder their ability to survive (Clark & Estes, 2008). Many of these solutions were presumed and not validated as they actually address other solutions to other sort of problems. Thus, the actual problem of the performance gap within the organizational still remains unclear. Another

advantage of applying this gap analysis framework is that it aids organization in gaining a deeper understanding of the possible root causes that impedes them from achieving their main organizational goals.

In addition, gap analysis assesses many causes supported by decades of research drawing upon learning motivation and organizational theories. The existing literature demonstrates that the performance gap for MTC instructors was dependent on three major domains of: i) knowledge and skills (cognitive variables), ii) motivational variables to achieve a goal(s) and iii) organizational causes (context) (Clark & Estes, 2008). These domains were likely the root causes for MTC instructor's inability to teach a well-developed competency-based curriculum (CBC) that was aligned with industry standards. The foregoing discussion implies that in order for graduates of MTC to attain employment, it is essential that the course curriculum is constantly reviewed by industry partners and focuses on enhancing both students' academic knowledge integrated with skill practices. A well-developed curriculum should also be designed and merged with student engagement strategies based on occupational standards defined by employers and industry sectors in the country. The revised and updated course curriculum will be embedded with life skills for student's life long learning process. This will inevitably allowed MTC students to have the flexibility to adapt and apply multiple skillsets to a wide range of working conditions particularly throughout their working life.

There were many informal conversations and observations with MTC instructors about the distinct factors of KMO and possible assumed causes. This has led to the conclusion that the inability of MTC instructors to teach a well-developed competency-based curriculum, which is a key factor affecting the performance outcome of graduates. It may be said with a moderate level

of confidence that it was a result of this performance gap at MTC as only 50% of graduates were able to secure employment upon six months after their graduation.

Knowledge and skills. As identified by Anderson and Krathwohl (2002), the revised Bloom's taxonomy has a two-dimensional form. First is the knowledge dimension (the kind of knowledge to be learned) while the second identifies the cognitive process dimension (or the process used to learn). For the case of MTC, there were also four challenges related to the different knowledge type: factual, conceptual, procedural and metacognitive. The factual knowledge gap for MTC instructors was the lack of knowledge of the latest market trend for job listings currently in high demand in Brunei. The second assumed cause for conceptual knowledge was the lack of principles of applied science knowledge for many MTC instructors teaching engineering subjects. For the procedural knowledge the possible cause would be the instructor's lack of ability to design good instructional methods to teach a competency-based curriculum (CBC). The last metacognitive knowledge gap would be the lack of instructors' understanding of how to appropriately reflect and assess their student's learning using CBET.

Motivation. The assumed motivational barrier for MTC instructors was the lack of application of competency-based education and training (CBET) in their mode of teaching. Moreover, these instructors were not making an active choice to use a CBC due to two possible factors of low self-efficacy and task value. In the perception of these instructors, applying CBET in the classroom would not make any difference in contributing to the success or improving their student's overall performance. The student's ability to perform well in their training would be as a result of other external uncontrollable factors and not on their teaching efforts of teaching CBET.

Organization. There were two possible reasons why MTC instructors were not using a CBC in their teaching. These were categorized under the cultural model/settings of organizational causes at MTC. The two types of cultural model challenges described at MTC: first the strong resistance to change and second, acceptance to passivity, social loafing, non-participation and lack of accountability in the college. With respect to the cultural settings, MTC instructor's lack of human resources, equipment and facilities in the college to conduct an appropriate CBET.

Summary of assumed causes of knowledge, motivation and organization

The sources of assumed causes categorized under KMO barriers for the case of MTC have already been included and identified in Chapter Two. This table reflects findings that were reviewed in this previous chapter, which was stated earlier in the sections under learning and motivation theory. See the summary of Table 2.

Table 2

Summary of Assumed Causes for Knowledge, Motivation, and Organizational Issues

Causes / Sources	Knowledge (indicate for each if (F)actual, (C)onceptual (P)rocedural or (M)etacognitive)	Motivation	Organizational Processes
Scanning interviews, personal knowledge	▪ MTC instructors do not have enough knowledge (F) and skills in teaching a competency-based curriculum (CBC) ▪ Most instructors do not know what are the latest trend and skillset required based on industry	▪ MTC instructors do not see the purpose of teaching CBET ▪ MTC instructors do not feel the usefulness of teaching a CBET ▪ MTC instructors are not confident of teaching a CBC	Cultural Models: ▪ MTC has strong resistance to change especially in changing from using their standard-based curriculum ▪ MTC instructors have conflict avoidance and hostile attitudes

	standards (F) ▪ Instructors lack the knowledge (C) and skills of applying the science knowledge to their teaching	*(low self-efficacy*) ▪ MTC instructors feel that teaching CBC would seen as an uncontrollable causes and not a result of their CBET (*attribution)*	with one another Cultural Settings: • Lack of resources, equipment and facilities to teach CBC • Lack of communication with other instructors • Lack of effective role models (enthusiasm)

Table 2, continued

Causes / Sources	Knowledge (indicate for each if (F)actual, (C)onceptual (P)rocedural or (M)etacognitive)	Motivation	Organizational Processes
Learning and motivation theory	• MTC instructors do not have the knowledge of the latest market trend for job listings currently in high demand in the country (F) • MTC instructors lack the specific vocational competencies in their professional work (F) • MTC Instructors do not know the principles of applied science and knowledge (C) and generalizations such as teaching "Newton's law of motion" • Instructors do not know how to reflect on their own work using effective teaching strategies (M)	Self-Efficacy ▪ Instructors do not have the self-efficacy in teaching a competency- based curriculum (Extrinsic)-Utility Value ▪ Instructors do not value the purpose of teaching a competency-based curriculum Attainment Value ▪ Instructors do not see the importance of teaching a competency-based curriculum Attribution ▪ Instructors are making negative attributions of students related to low ability and performance	Cultural Models: ▪ Instructors have a resistance to change due to lack of autonomy ▪ Instructors have an acceptance of passivity, social loafing, non-participation, lack of accountability Cultural Settings: ▪ MTC instructors do not have enough resources, equipment and facilities to teach CBET ▪ Instructors have to abide by unnecessary and restrictive rules, policies and barriers from the college ▪ Instructors lack vague or constantly changing college performance goals

Table 2, continued

Causes / Sources	Knowledge (indicate for each if (F)actual, (C)onceptual (P)rocedural or (M)etacognitive)	Motivation	Organizational Processes
Background and review of the literature	▪ MTC instructors lack knowledge (F) domain of having industry specific vocational competencies ▪ Instructors have a knowledge (P) gap of teaching and delivering effective CBET	▪ MTC instructors lack active choice a teaching a CBC ▪ Instructors of MTC have persistence in teaching CBET ▪ MTC lack of mental effort in applying CBET in their lessons	Cultural Setting: ▪ MTC instructors' resistance to change due to the lack of autonomy in their teaching pedagogies due to abiding CBET standards and practices ▪ Lack of human resources, equipment and facilities to teach CBET due to budgetary cuts in the college ▪ Insufficient industries to support students as trainees during industrial placement for real work practice environment

Validation of the Causes of the Performance Gap

This section describes how Knowledge, Motivational and Organizational assumed causes mentioned in this chapter were validated in order to determine what would be the best solutions to apply to all of these problems. Some of the assumed causes may not turn out to be problems and therefore require no propose solutions.

Validation of the Causes of the Performance Gap: Knowledge

According to Anderson and Krathwohl (2001), the revised bloom's taxonomy model states that knowledge is an outcome or product and not a form of thinking. This revision was applied on the taxonomy in use and would be useful as an authentic tool for curriculum planning, instructional delivery and assessment. Based on this literature, the different types of knowledge at four different levels of knowledge domain including factual, conceptual, procedural, and metacognitive. There were six cognitive dimension processes: remember, understand, apply, analyze, evaluate and create. These four types of knowledge category and six categories of cognitive processes will provide guidance for developing solutions to the MTC's assumed causes.

Factual knowledge causes' validation. One of the assumed causes as listed in Table 2 for the instructors not reaching their performance goal was the presence of a factual knowledge gap. The assumed knowledge gap in this situation is 'remembering' the latest market trends for job listings currently in high demand in the country. According to UNESCO-UNEVOC (2013), in order for Technical Vocational Education Training (TVET) providers to deliver training that is continuously updated and relevant for the student's future career prospect, an accurate projection of labour market information and skills forecasting is required. Applying Anderson and Kranthwohl's cognitive dimension of 'remembering' for instructors was assessed using a series survey items inquiring their knowledge with examples questions such as:

1. Please list at least 5 jobs that are currently in high demand in the country. Explain your answer.
2. List out the top 5 career choices for youths based on market trends in the country. Explain your answer.

As explained by Mayer (2011), the cognitive domain process require a learner to recall, restate and remember information after transfer has occurred from 'working' to 'long'' term memory capacity. Requiring the latest information of job listing is necessary for the validation of this factual knowledge gap. Another factual knowledge gap proposed in Table 2 is the instructor's lack of industry specific vocational competencies in their professional work.

According to an OECD report by Field et al. (2009), the key elements of ensuring quality control in a Technical Vocational Institution (TVI) was an outcome from the quality of trainers and instructors within these institutions. The key issues highlighted in the report was the lack of instructors' and trainer's experience in the actual workplace, which was essential. As a strategic objective, trainers and instructors in TVET should be encouraged to be equipped with practical workplace skills to reduce any gap in the delivery of training as a result of inadequate vocational skills and competencies (Field et al., 2009). Anderson and Kranthwohl's cognitive process dimension recommended applying all six cognitive levels of remembering, understanding, applying, analyzing, evaluating and creating to increase the instructor's vocational skills and competencies. The assumed cause was defining the dimension of 'factual' knowledge itself. To assess this assumed cause, investigative question inquired to instructors as illustrated:

1. Please list out the steps of how to conduct Health, Safety and Security Environment (HSSE) test in the work place.

2. Please list out the criteria or steps of how to setup a 3G welding equipment during a welding practical training workshop.

Factual knowledge causes' validation. Instructors were not given enough information that would build on prior knowledge of current market trends of jobs availability in the country. This new information will be organized in or referred to some kind of mental structure (schema). Conversely, this would help MTC instructors to make connections that will encode new information again from instructor's working memory into long-term memory.

Conceptual knowledge causes' validation. Another knowledge gap that had existed within MTC instructors was the facet of conceptual knowledge. These instructors had failed to understand the interrelationship among basic elements with a larger structure of knowledge to enable them to function together (Krathwohl, 2002). These instructors should have the applied knowledge of science and understanding of various theories, models and structures. Moreover, they should also be able to apply this knowledge for example, of Newton's law of motion to demonstrate an understanding through calculations and principles that can be applied in their engineering mathematics subject. These instructors had been trained by experienced trainers to be familiar with these mathematical concepts using audio and visual aid. Their students will be engaged using these concepts, enabling them to learn and apply their knowledge in their exercises during classes.

According to Mayer (2011), prior knowledge plays a significant role in learning such as schemas of organizing structures for connecting knowledge elements and transferring into coherent structures. These would allow more information to be held into the working memory due to the organization of knowledge into a single knowledge element (Mayer, 2011).

Procedural knowledge causes. According to an OECD report by Field et al. (2009), in any TVET program, a good balance between having generic and specific skills is crucial for these graduates to be successful in the workplace. This is due to the need to have the occupational specific skills that will allow them to enter skilled jobs without extraneous additional training when they enter the labour market. These generic transferable skills were necessary the graduate's working career in order to adapt to a rapid changing operating environment at their workplace. The report emphasized the importance of providing appropriate pedagogical and preparation for trainers of trainees and apprentices in the workplace.

A partnership between TVI(s) and industries was crucial to allow instructors to spend more time in industry to update their knowledge and skills and vice versa for industry experts to spend their time in TVI(s) to enhance their pedagogical teaching skills (Field et al., 2009). In short, in order to determine the procedural knowledge gap, an assessment strategy had been prepared to assess instructors' comprehension by classroom observations of redesigning the curricula to make them more relevant to workplace requirements. This was carried out with an analysis of identification of workplace 'competencies' which were organized into a set of 'competency standards' for an occupation. The assessment method to determine this gap was to examine how MTC instructors had taught industrial skills competencies integrated into their teaching curriculum. According to Krathwohl (2002), procedural knowledge is the method of inquiry, criteria of using skills, techniques and methods used to determine subject-specific techniques and methods.

Metacognitive knowledge causes validation. Metacognitive knowledge is a strategic knowledge dimension of general cognition and awareness of an individual's own learning intuition. The assumed cause is that MTC instructors do not know how to reflect on their own

teaching pedagogies using differentiated instruction methods catering to the needs of their student learners. Additionally, an effective teaching method should be conducted in a TVET system as heavily emphasized by industry experts CBET usage. Anderson and Krathwohl's learning taxonomy was used to assess this metacognitive knowledge gap by determining how these instructors evaluate student's progress using contextual and conditional knowledge. MTC instructors were assessed using in-depth interviews, survey forms to be filled up to judge their own teaching effectiveness.

An illustration of an application of assessing metacognition knowledge was to train students to critique each other. Specifically, it was to allow these students to have an activity of developing a rubric for an evaluation of their project/product created using equipment in the workshop. This project/product was evaluated based on the criteria and feedback given by each of the students. Instructors should have been aware that this activity itself was a metacognitive approach to learning. A solution principle to narrow this metacognitive knowledge gap was made by demonstrating to instructors how to apply and design rubrics as an effective teaching strategy. The appropriate approach for a proposed solution was to bring assessment expert coaches to train instructors how to incorporate the use of rubric to consider student's project/product in all lesson plans. The use of these metacognitive strategies would have developed instructors to become self-regulated and self-reflective of their own teaching and learning activities. In future, this process will allow instructors to understand themselves better particularly in measuring their overall performance. A summary is of these validation are shown in the Table 3.

Table 3

Summary of Assumed Knowledge Causes and Validation

Assumed Knowledge Cause*	How Would It Be Validated?
Factual: Instructors did not have the knowledge (f) of the latest market trend for job listings currently in high demand in the country	Using Survey items to: Ask the instructors to list out the trends of job listing and current market demands
Factual: Instructors lack the industry specific vocational competencies in their professional work (f)	Using Interview questions to: Test their knowledge to describe key features of process of practical precautions. Example of "How do you teach Health Safety Security Environment in the workplace?"
Conceptual: Instructors did not know the principles of applied science knowledge (c) and generalizations such example of teaching 'Newton's laws of motion'	Using Survey items to: Describe and list applied skill principles to demonstrate an understanding of teaching an applied science knowledge in their subject
Procedural: Instructors did not know how to design good instructional methods and teach an competency-based curriculum (p)	Using Observation and Survey instruments: Observe a class of teaching instructors to validate how industry skills are integrated in the curriculum. Demonstrate the ability of teaching a competency-based curriculum (CBC)
Metacognition: Instructors did now know how to reflect on their own work using effective teaching strategies (m)	In depth interview of questions: "How do you learn from your past experiences as an instructor?" "How do you use different teaching strategies to teach student how to asses their own work?"

*Indicate knowledge type for each assumed cause listed using these abbreviations: (F)actual; (C)onceptual; (P)rocedural; (M)etacognitive

Validation of the Causes of the Performance Gap: Motivation

Clark and Estes (2008) pointed out that motivation is an internal, psychological process that keeps an individual motivated to continue to behave in a certain way to enable a job to be done. There are three motivational "indexes", or processes are active choice, persistence and mental effort (Clark & Estes, 2008). Motivation theories can be divided into three main types: motivation as "deriving from the individual", motivation as a result of environment, and motivation derived from an "interaction" of the self and environment (Hallam, 2002, p. 225). The motivation variables that were used in this study to guide the analysis of the stakeholder's performance goal would be; self-efficacy, attribution, expectancy-value, emotion and achievement goal theory.

Motivation causes. The first motivation index was "active choice" of task. Active choice refers to an individual's choice of circumstances to a particular situation or task given and how the person view to act upon it with personal engagement and interest. For the case of MTC, there was a lack of active choice among instructors to teach their students a competency-based curriculum (CBC). This motivation indicator indicates that a motivation problem of choice was present within MTC instructors. Two possible motivational causes for this problem of choice were both low self-efficacy as well as task utility value. According to Bandura (1994), self-efficacy is a self-judgment of one's ability to perform a task or ability to execute within a specific domain. The measures of self-efficacy were better predictors of behavior that what a person is actually capable of achieving (Bandura, 1989). People with high efficacy tend to stay committed into achieving challenging goals even in the face of failure (Bandura, 1986; Schunk, 1991). The effects of self-efficacy beliefs were viewed in various ways. The effects were: it influences the choice of tasks one undertakes (active choice), it determines the amount of effort a

person put into a task (persistent and mental effort), and lastly affects one's 'perseverance' in the face of difficult situations which influences a person's resilience over the amount of stress level after being engaged in that particular task (Pajares, 1997; Bandura, 1994; Alderman, 1999).

Subsequently, MTC instructors had exhibited low self-efficacy as they often doubt their own ability and frequently avoid difficult tasks when presented with them. These instructors thought that delivering CBET requires more mental effort in teaching when compared to using an academic curriculum, which focuses less on evaluating student's competencies. The curriculum in a CBET consists of a combination of both professional practice and academic discipline. The task value variable of MTC instructors was the lack of extrinsic value or utility in terms of attaining future goals for their students. The instructors MTC had difficulty understanding the purpose and comparing any significant difference between using an academic based versus a competency-based curriculum. The instructors had failed to see that a CBET was more focused on job performance and not the course's content. Additionally, many MTC's instructors were still teaching TVET as though they were teaching academic programs. Moreover, instructors had failed to integrate the course content into job specific tasks. These instructors should have transformed their traditional role as teachers toward a conception of facilitating and provoking generating applicable lesson to complex situations.

In contrast, MTC instructors did not value teaching a CBC due to the lack of understanding what the outcomes of CBET would influence students. A major purpose of CBET was to make the educational outcomes of formal education and training more appropriate to future workplace needs (Bowden & Masters, 1993). Therefore, for the purpose of validating these assumed causes, both survey instruments and in-depth interview protocols had been used to

investigate these motivational gaps. Table 4 shows examples of the survey and interview questions that had been used to validate these assumed causes.

Table 4

Example of Survey and Interview Questions

Possible causes (Motivational variable)	Survey or Interview Questions
1. Instructors have low confidence in teaching a competency-based curriculum (**low self-efficacy**)	*Survey items* 1. I am sure I can do an excellent job in teaching a competency-based curriculum 2. I am an expert in teaching a competency-based curriculum *Interview protocol* 1. Explain how confident you are in teaching a competency-based curriculum
2. Instructors do not see the value of teaching a competency-based curriculum (**utility value)**	*Survey items* 1. I am sure that using competency-based education training will enable students to be more marketable 2. I believe teaching a competency-based curriculum will benefit the students in future *Interview protocol* 1. Do you see any benefit of teaching a competency-based curriculum to the students

The second motivational index to be considered is persistence. The behavior of engaging any tasks required for goal achievement within a time interval whilst avoiding distractions was defined as persistence. Measuring persistence was as complex as measuring the time taken for a person to pursue a goal. According to Wegner (1997), a direct measure of performance delays has confounded lack of persistence with intrusive, or 'ironic' mental processes. When working memory was overburdened, a lack of persistence would have existed to an individual due to the effect of excessive cognitive load as a result of this ironic mental process.

The third motivational index to be considered is mental effort. Mental effort is defined as "the number of non-automatic elaborations necessary to solve a problem" (Salomon, 1984, p. 231). When deeper cognitive processes were required in order to organize new information upon constructing existing knowledge in the schema of knowledge processes, mental effort becomes an important requirement (Condly, 1999; Gimino, 2000: Ormrod, 2004; P.R. Pintrich & DeGroot, 1990). According to Bandura (1997), an individual's general ability, perception and efficacy beliefs among others will affect their mental effort either positively or negatively. These findings led to believe MTC instructors had been making negative attributions of their students related to their low ability in the classroom.

Attribution theory focuses on how an individual uses information to understand themselves and their environment and other factors to arrive a casual explanation in order to form a causal judgment (Fiske & Taylor, 1991; Weiner, 1986). Individuals will perceive how this causal determinants either external (environmental) or internal (personal factors) to determine their success and failures in life (Pintrich & Schunk, 2002). Furthermore, attributions were classified along three causal dimensions of: "locus of control, stability and controllability" (Pintrich & Schunk, 2002, p. 95). When applied to MTC instructors, the theory helps to explain

factors of why these instructors were making negative attributions of the student's low ability and performance in the classroom. In the discernment of many MTC instructors, even if they teach a CBC, there would observe no significant difference in the final outcomes of students. Both survey instruments and interview protocols were used to validate these assumed causes. The examples questions are shown in Table 5:

Table 5

Table of Motivational Variables of Survey and Interview Questions

Possible causes (Motivational variable)	Survey or Interview Questions
Instructors were making negative attributions of students related to their low ability and performance (attribution)	*Survey items* 1. I do not believe the students will succeed even using a competency-based assessment 2. I don't feel that teaching a competency-based education training will benefit the students in any form *Interview protocols* 1. What are the reasons why students will not perform well during their lessons 2. Give reasons why competency-based education training will not benefit the students

Motivation validation. The two main assumed motivational causes that needed to be validated was self-efficacy and utility value (extrinsic). First, generalizations about MTC instructors to exhibit self-efficacy could be increased by providing clear and accurate feedback focusing on improving their confidence, expertise and skill (Pintrich 2003). Pintrich, (2003)

studies revealed that lack of utility value for instructors could be addressed by providing tasks and activities relevant to improve their understanding of training applying competency-based approaches. Moreover, MTC instructors should focus on the importance of higher level of utility and content and activities to train students for future employment.

Table 6

Summary Table of Assumed Motivation Causes and Validation

Motivational Problem (describe what the motivational issue is)	Type of Indicator (describe whether this is an issue of active choice, persistence, or effort or some combination)	Possible Cause(s)*	How Will it Be Validated?
Instructors demonstrate a lack of active choice to teach a competency-based curriculum (CBC).	Active choice	• They do not see any difference in teaching an academic curriculum versus a competency-based curriculum. (low task value) (P) • Instructors do not believe they were capable of teaching effectively a competency-based curriculum. (Low self-efficacy) (P, T)	• Written 6 point Likert-scale survey items ("strongly agree" to "strongly disagree"): "I am sure I can do an excellent job in teaching a competency-based curriculum." • Interview questions: "How confident are you in teaching a competency-based curriculum?"
Instructors do not value the importance of teaching a CBC	Active choice, Mental effort	• They do not value teaching a competency-based curriculum. (utility value). (P,T) • They did not view the importance of teaching a competency-based curriculum. (attainment value). (P, T)	• Interview questions: "How do you see the value of teaching competency-based approaches in your professional work?"
Instructors are making negative	Mental effort	• They feel that the student's low	• Interview questions: " How can using

attributions of students related to their low ability and performance	competencies in performing a task are due to the lack of student's ability and not their own efforts at instruction. (attribution) (P)	competency-based approaches in your teaching help students to become more marketable?"

*Indicate if the source is Personal Knowledge (P) or the Literature (L) or Motivation Theories (T)

Summary of Assumed Motivation Causes and Validation

Through interview protocols and survey instruments, it was found that the two main reasons for motivational performance gap for MTC instructors were low self-efficacy and utility value for the instructors. Many MTC instructors assumed that the graduates of MTC were continually prepared for entry to the workplace. They were not aware of high number of students who had graduated from MTC had still remained unemployed. Many MTC instructors had assumed that teaching an academic-based curriculum was sufficient for the students to obtain immediate employment upon entering the labour market in Brunei. Introducing CBET to instructors had made them experience low confidence or low self-efficacy if teaching becomes a mandate to utilize a competency-based curriculum. Therefore, a solution was developed based on all of these findings to close the motivational performance barriers at MTC.

Validation of the Causes of the Performance Gap: Organizational/Culture/Context

Gallimore and Goldenberg (2001) addressed the concept of culture and context through two key ideas of cultural models and cultural settings. These two cultural concepts was used to analyze these organizational problems within this study.

Organizational causes and validation

According to Rueda (2011), organizational culture in the context of school, the cultural models would help shape ways how the school should be structured, such as values, practices, policies or reward structures. Organizational culture is linked to organizational effectiveness and factors or activities (Smart & Hamm, 1993; Cameron & Ettington, 1988). Schein (1985) defined meaning of culture as “observed behavior regularities” as basic assumptions and beliefs that are shared with members within the organizations as learned responses to problems in the survival of the group often referred as internal integration. The concept of culture helps to explain all these

irregularities and phenomena within any organization especially in the context of organizational performance gap (Schein, 2004). In the case of MTC, in order to apply the organizational gap, both cultural models and settings were needed to be distinguished with one another. Cultural models are shared mental schema of how the world works or ought to work incorporating behavior both cognitive and affective domains (Rueda, 2011). Cultural models encode shared environmental, what was valued and ideal settings that was being enacted and avoided, who should participate, the rules and purpose of interactions (D'Andrade, 1995: Holland & Quinn, 1997: Shore, 1996: Weisner, 1984). Cultural settings were defined as settings as occurring "whenever two or more people come together, over time, to accomplish something" (Sarason, 1972, p.1). Organizations such as schools have specific types of cultural settings and normally characterized with one or more cultural models (Rueda, 2014).

Organizational causes. The organizational performance gap at MTC was identified as instructors currently not using an academic-based curriculum that is aligned to industry requirements. The reasons could be due to their underlying values, beliefs and principles that served as a foundation for the college's management practices or behaviors that exemplify and reinforce basic principles (Denison, 1990). To illustrate, it was assumed that MTC faculty were not using CBET as part of their teaching practice. There were two cultural model gaps identified; firstly, a strong resistance to change and secondly, acceptance of passivity, social loafing, non-participation and lack of accountability. According to Lindahl (2006), organizational climate can be measured using quantitative survey instruments to gather stakeholder's perceptions of the environment. In MTC context, to validate this assumed cause, survey and interview protocols were used as evaluating instruments. A survey instrument would ask MTC instructors the following questions using a Likert-scale ranging from strongly agree to strongly disagree:

1. Most people in the college do not value change
2. There is a lot of participation among instructors on tasks given to them

In the interview protocols, MTC instructors were questioned about their feelings in making a change in their teaching instructions by applying competency-based approaches (CBA) in teaching and learning. Interview protocols include questions such as:

1. What is the norm of teaching students using standard-based curricula?
2. Is it easy to implement changes in the college policy such as curriculum development?
3. What is valued in the college for implementing change?

Teaching students in Technical Vocational Institutions (TVIs) using CBA had proven to be useful due to the development of high competency standards. According to Bowden and Masters (1993), in CBET, student outcomes were expressed in precise, observable terms; assessment becomes a process of establishing whether the student is able to demonstrate defined competencies. MTC instructors' belief were questioned about their cultural change if they shift their teaching styles using CBA. Clark & Estes (2002) defined this as an organizational barrier that impedes people's ability to be successful in preserving and accomplishing their goals. The performance problems that MTC faces related to cultural setting were more visible in specific work settings. Such examples of cultural settings expressed by MTC instructors' behavior were defined by four possible factors. There assumed cases were:

- lack of equipment and facilities to teach a CBET
- instructors have to abide with unnecessary and restrictive college rules
- lack of autonomy and choice
- missing college strategic vision and goals

To validate these assumed causes, surveys, focus groups, observations and interview protocols was used to assess these cultural setting problems. MTC instructors were asked the following questions in a survey instrument with examples as shown below:

1. I have adequate resources, materials and facilities to teach CBET
2. I have many non-instructional and administrative duties that are burdening which affects my teaching periods
3. I have enough autonomy in my work and not restricted to unnecessary college rules
4. There is a clear strategic vision in the college to reach its performance goals

Organizational validation. Dixon (1994) studied factors that produce success to help organizational change processes succeed (Clark & Estes, 2008). The recommendation for this organizational change processes was to align the structures and processes of the organizational with strategic goals. There were a few assumed organizational causes that have been summarized in Table 6 below revealing a performance gap in the organizational context of MTC. A few solution principles were also summarized in the table with strategic proposals of how to reduce the performance gap at MTC. The main organizational barrier validated was the lack of resources, materials and facilities to teach CBET. MTC management had address the cultural setting problems by shifting priorities of re-allocating funds appropriately more than other activities that focused on preparing students for employment in a TVET system (Rueda, 2011).

Another assumed organizational cause remains that the academic-curriculum currently being utilized did not match to industry standards. This strategy had allowed MTC administrators to work closely with employers and curriculum experts aligning the student learning goals to ensure industry needs were met. With regards to the curriculum, MTC instructors had promoted closer collaboration with local industries to acquire up to date information constantly, keeping

track with rapid changes in technology, environment and future developments of the curriculum content.

According to Bowden and Masters (1993), many higher education universities and institutions often emphasize too much theoretical knowledge at the expense of practical competencies required in professional practice. In today's context, many higher education institutions focused on systematic disciplinary knowledge and methods of critical inquiry and analysis. This was not easily definable in terms of skills training and professional competency. Nowadays, many higher educational goals in these institutions were required to be more inclined towards vocational-oriented competencies relevant in the development of general employment for their students (Bowden & Masters, 1993). A summary of the assumed causes at MTC is shown in Table 7.

Table 7

Summary of Assumed Causes for Organizational/Culture/Context Problems

Organizational Problem	Possible Organizational Cause(s)*	How Will it be Validated?
MTC instructors did not use a competency-based curriculum to teach their students	Cultural Models: • Resistance to change due to lack of autonomy (P, T) • Acceptance of passivity, social loafing, non-participation, lack of accountability (P, T)	Observations Survey items: 1. I feel that I have a lot of non-instructional and administrative duties that hinder my professional work Interview protocols: "Are you burdened with non-instructional and administrative duties besides your teaching tasks?"
MTC instructors were burdened with too many non-instructional and other unnecessary administrative duties	Cultural Settings: • Lack of equipment and facilities to teach CBET	Observations Survey items. 1. I have enough resources, materials and facilities to teach CBET 2. All the resources required by CBET is readily accessible Interview protocol:

		"Do you think that the college has enough resources and facilities to conduct Competency-based education training (CBET)?"
	• Instructors had to abide by unnecessary and restrictive rules, policies or barriers (P, T)	Observations Survey items: 1. I have enough autonomy to complete my tasks and am not restricted by unnecessary college rules or policies Interview protocols: "Do you have sufficient autonomy to perform the tasks given to you by the college administration?"
	• College lack any strategic vision and goals which was constantly changing (P, T)	Survey item: There is a clear strategic vision in the college to reach its performance goals Interview protocols: "Is there a clear strategic vision in the college that is understood by everyone?"

* Indicate in this column if the source is Personal Knowledge (P) or the Literature (L) or Theories related to culture/context (T)

Summary of assumed organization causes and validation

All the strategies proposed were intended to assist MTC in closing its performance gap to ensure all graduates secure jobs within six months after graduation. In this respect, both organizational culture and organizational settings were viewed as two important concepts, which impact on organizational changes through various programs. Identifying organizational barriers that were related to cultural context in achieving performance goals suggests a strong correlation with organizational performances. The key challenge remains in the measurement for validating the cultural/performance relationship by taking into account other cultural variables that were not be necessarily related to organizational processes within the same context.

Participants

The gap analysis study had involved all of the teaching faculty at MTC, constituting a group of fifty-six participants. The sampling used in this experiment was a single-stage sampling. According to Creswell (2014), single-stage sampling procedure is when a researcher sampled people directly and had access to names of the population. These instructors were the academic staff responsible for the creation and delivery of courses at MTC using competency-based approaches (CBA). The Deputy Principal of Education (DPET) and Training was also included as a participant. This was due to his involvement as a manager of all teaching instructors at MTC and as he influenced the 'teaching culture' within the college. Any new policy changes particularly with any latest teaching and learning methodologies implemented in the college was under his direct supervision as the DPET. His other responsibilities include assessing, appraisal and evaluating the performance of all academic instructors at MTC. All fifty-six participants were asked to complete a survey. The participants for the interview component of this study, however, consisted of two heads of department, one assistant head and

the remaining were program leaders and teaching instructors carrying middle management roles at MTC. The selection procedure for the interviewers used a purposeful and saturation method. According to Parahoo (1997), data saturation method was a term applied during gathering to the point at which no data had emerged. The themes identified were extracted after transcribing interview transcripts from the first three interviewers from the interviewed participants.

Procedures

In order to validate the Knowledge, Motivation and Organization (KMO) causes, the procedures used to conduct the study consisted of one-to-one interviews and survey questionnaires with instructors from MTC. These two methods were used to gather data from the instructors' perspectives in order to validate these KMO causes. The participants were given relevant information on filling in the survey instrument one week in advance. All items and questions designed in both the survey and interviews were formulated to ensure participants' responses were analyzed and categorized under KMO causes. A coded running number had been assigned to each instrument in order to maintain the anonymity of the respondents. See Appendix C for details of coding.

Each interviewee was asked in English a set of ten to twelve questions in dealing with the KMO barriers as described in the beginning of this chapter (see Appendix A for interview protocols). Each interview session with the participants had lasted for a period of approximately one hour. The sessions were audio-recorded with the interviewee's permission and later transcribed and coded for further analysis. Interview responses were further coded to identify a specific type of KMO root cause.

The instrument items designed in this survey were generated based on the two research questions of KMO barriers and solutions as described earlier in this study. The instrument items,

format and procedures designed in the survey were based on existing research studies and literature related to technical and vocational education (See Appendix B for survey instrument). The first part of the survey contains a section on the purpose of the survey, instructions, and demographic information. The information required was included in the instrument had contain items which referred to student's teaching qualification level, position, number of years teaching with/without administrative experience, number of training/courses attended throughout the instructor's career. The second part of the survey contained instructions and consisted of three multiple-choice questions for participants to choose the best possible answer. The third section consisted of thirty items that required participants to rank their levels of agreement and disagreement to the question using a six-point Likert-scale. In the last section of the survey, four open-ended questions were included to focus on the instructor's opinion of major factors and barriers, related to TVET. These questions were designed to investigate other possible barriers of planning, suggestions of improvement of knowledge and skills, and recommendations of TVET employability that were not included in the survey or interview protocol instruments.

Data Collection

Data collection for this gap analysis study was achieved through two methods: interviews and surveys. Data generated from both methods had provided greater breadth of perspectives that was necessary for validating the assumed causes within the KMO domains. Moreover, using multiple data collection methods allowed different types of information to be gathered to consider both their strengths and limitations. Applying these methods had provided a broader data set to develop a stronger understanding of the possible causes described in the earlier part of the chapter. Other procedures to ensure that the data collection methods were suitable and reliable to all participants included early piloting of both the survey instruments and interview

questions to a small group of respondents as a trial exercise. This was to ensure the respondents understand the language use, meaning and content of the questions posted and to ensure instructions were clearly stated in both methods of data collection practice.

Surveys

The survey was distributed to participants in-person via paper based between the months of September and October of 2014 upon receiving approval from the University of Southern California (USC) Institutional Review Board (IRB). The plan for distributing the survey was made throughout a three-week schedule via two methods. The first method involved disseminating the survey instrument directly to MTC instructors who had been selected to participate in the study. Instructions and guidelines on completing the survey were included on the front cover of each instrument. The cover page had included the purpose, importance of the study, submission date and request of participants' assistance and full cooperation in returning the instrument after three weeks upon receiving the instrument. This was a standard procedure of administering survey protocols at MTC. The instructors had returned the survey forms to the information desk at the main entrance building at MTC. In the past, survey forms disseminated to MTC instructors have a typical response rate of around 50%. If the response rate using this first method falls below 50%, a second method had been proposed.

This second method ensures a higher response rate by calling upon the assistance of the Quality Assurance (QA) officers from MTC. The QA officers will assist the researcher in administering and distributing the survey during their training session with the MTC instructors. These officers were composed of highly trained personnel who have vast experience in administering survey instruments to respondents. The QA officers focused on all instructors to

complete the survey and collect all their responses anonymously in the study. Once all the surveys were compiled, descriptive statistics was tabulated using SPSS to analyze the data.

Interviews

Personal interviews had been conducted face to face with the selected MTC participants. The interviewees were informed of anonymity of the data collected through the interviews to help alleviate possible concerns of becoming participants in the study. The participants were encouraged to express their ideas and opinions in a relaxed and comfortable setting. Verbal permission had been obtained beforehand from the interviewees for the purpose of data recording. All responses were kept confidential and their responses were only used for research purposes only. Any reporting on findings would not identify any of the interviewees as a respondent in the study. Refer to Appendix A for details of the interview protocol instrument. A high quality digital voice recorder was used to record the interview sessions. The short handwritten notes had allowed for consistency of information to be recorded with the interviewees. Each interview session had taken approximately one hour to complete with each participant.

Role of Investigator

The current role of the investigator in this study as the principal of MTC was to ensure that any key performance goal would be achieved by developing strategic action plans of increasing their graduate's employability. In this way, the investigator had dual roles, one, as an action researcher and two, as the current principal of the college.

According to Locke, Spirduso, and Silverman (2013) qualitative research that involves participants with close knowledge of the investigator introduces a range of strategic, ethical and personal issues. I have posed some concerns about conducting the current study due to my

sustained intensive experience with the participants (Creswell, 2014). These concerns include my possible bias, values and personal interests concerning the research topic or the process involving participants that I work with regularly (Creswell, 2014). This gap analysis study, however, was to investigate effective methods of reaching MTC's organizational goal. Based on this fact, the potential for a conflict of interest for me as the investigator was reduced since this gap analysis was targeting directly on achieving one of MTC's major performance goals. Moreover, all of the participants in this project were aware of this broader background for this project.

Various steps had been undertaken to ensure the study was carried out with a clear rationale way that had reduced any possible perceived pressure to participate or to provide inauthentic responses. The investigator had informed all participants in advance on the purpose of the study as an important part of an action plan for attaining MTC's key performance goal. MTC instructors had realized the need to increase the employability of their graduates for the overall benefit of their students. Additional provisions had also been prepared in order to preserve the anonymity of all participants. Any personal information or questions was restricted and kept solely for the purpose of the study and concealed the true identity of each participants. Furthermore, MTC participants were given the choice to participate voluntarily in the gap analysis study. Even with the assistance of the QA officers for the survey instrument, MTC instructors were still given the autonomy to choose whether to participate or otherwise in any part of this study.

Data Analysis

The data analysis process involved making interpretation of the actual meaning of the data. According to Creswell (2014) this includes preparing for data analysis, getting deeper understanding, segmenting and taking apart as well as putting it all back together. Tesch (1990)

provided detailed guidance for an "Eight Step Coding Process" that I used to analyze the data that was collected through survey and interviews. These codes had identified different types of knowledge, motivation and organization causal categories that assisted in identifying themes emerging from these data collection procedures.

The qualitative study contain semi-structured interviews that comprised of ten to twelve broad, pre-determined, open-ended questions, with subsequent probing questions. For the ease of clarity, each of the interview questions (1-12) was broken down into different codes as shown in Table 8.

Summary of Coding System used in the Survey Instrument and Interview Protocol

Presumed Gaps	Coding Acronym	Presumed Gaps	Coding Acronym
Knowledge Factual	KF	Organizational Resistance	OR
Knowledge Procedural	KP	Organizational Non-participation	ONP
Motivation Self-efficacy	MSE	Organizational Resources	ORE
Motivation Utility Value	MVU	Organizational Autonomy	OA
Motivation Attribution	MA	Organizational Strategic Plan	OSP

The process of summarizing the data from the interviewees had identified patterns or themes through the interview responses from the participants. The data obtained was categorized and matched to correspond with the codes to all possible KMO presumed causes. If a variety of themes emerge, the themes were grouped together or individually in an articulated and systematic way. Observations and assumptions were made based on each category/grouping such as the sentiments of younger participants, which had vary greatly from older participants. The findings written in the interview transcript were summarized particularly with the main themes emerging from the data collected and shared with the first three/four of interviewed participants. This was a method of member checking process implemented in formative stages during the interview process. Using this technique, the participants could verify the data collected by the investigator was interpreted as accurately as possible and no deviation in actual meaning after dictation. Other grouping for comparison in the analysis was also considered such as the possible gender differences and varying levels of enthusiasm among others.

A survey instrument consisting of thirty-three items had been developed to validate the assumed causes of the three KMO barriers. From all the thirty-three items in the survey, all ten codes as shown in Table 6 were used in the analysis. The Likert Scale used in the survey instrument consisted of six types of response i.e. Strongly Agree [1], Agree [2], Somewhat Agree [3], Somewhat Disagree [4], Disagree [5], and Strongly Disagree [6]. For items 4 and 5, the items measured the instructor's knowledge gap within the four domains of factual, conceptual, procedural and metacognitive. Items 6-17 measured the motivational gap of self-efficacy, utility value and attribution. Finally, for items 18-33 measured organizational gaps of resistance, organizational resources, autonomy and strategic plan within the college administration. Data collected through the survey was coded and analyzed using descriptive statistics. This was to

indicate which KMO causes from the above coding scheme determined significant information in explaining the instructor's performance at MTC. Advanced statistical analysis was used to view any significant findings or correlations that will support to understand the causes and/or help inform solutions and recommendations as stated in chapter five. Descriptive and inferential statistics was used to organize, analyze and interpret data using calculations based through application of the SPSS program. Descriptive statistics, which included the analysis of means, frequencies, percentages-value, rank-orders of scores for the variables and standard deviations.

Limitations of the Study

All methodologies have its limitations. However, this gap analysis attempts to answer the root causes of performance gap currently present at MTC. Furthermore, this study only focuses on one key stakeholder, i.e. the MTC instructors, an in-depth investigation of possible presumed causes involving other stakeholders within the KMO barriers should also be pursued. Due to time constraint, these limitations had remained beyond the scope of the gap analysis study. This study had investigated the behavior of the instructors at one institution, which could also create biasness towards providing answers not being a true representation of their actual experience in the college. Another limitation was when the assumed causes and recommended solutions were highly dependent on the assumption that all participants have completely understood all the language, questions and survey items presented to them.

The data collected using the survey instrument also has its own limitation. The data could not reflect the actual intended variable that the researcher had wished to achieve. Hence, the interpretation of the data from the surveys ought be analyzed with caution. Moreover, on measuring motivation variables such as self-efficacy, utility value, and attribution, these variables were highly influenced by the ability of individuals and their prior knowledge that were

related to a specific task (Bandura, 1997; Pintrich & Skunk, 2007). Thus, it was important to acknowledge the different level of participant's understanding to CBET. Additionally, this was to ensure a more accurate picture of their motivational indices of active choice, persistent and mental effort was achieved. In summary, measuring such variables other than the above mentioned was beyond the scope of the proposed study and any statistical analysis made were based on a correlation and not a causational relationship.

CHAPTER 4

RESULTS AND FINDINGS

Introduction

The purpose of this study is to examine the root causes of why only 50% of graduates from Mechanical Training Centre (MTC) can obtain employment in areas that are suitable to their choice of study or program. The framework used in this study is the Clark and Estes (2008) gap analysis model, which is designed to find the root causes of performance in areas of knowledge, motivation and organization (KMO). This model was applied to determine why the graduates of MTC were not able to secure 100% employment upon completion of their course. Each of these three dimensions was assessed to generate the possible root causes at MTC that were later examined and validated at the end of each section. In this chapter, I describe the findings after analyzing the results and identify which assumed causes could be validated or partially validated. In the next chapter, solutions and recommendations will be proposed in order to close the unemployment gap that exists for students graduating from MTC.

Instrumentation

A reliability of both surveys and interview instruments were used to gather information about the inability of instructors to teach a well-developed competency-based curriculum that is aligned with industry standards in Brunei. The survey instrument also provided black spaces to enable these participants to give further comments and feedback for improvements purposes. The University of Southern California (USC) Institutional Review Board (IRB) has approved the usage of both the survey and interview protocol instruments applied in this gap analysis study.

Results and Findings for Knowledge Causes

According to Anderson and Krathwohl (2001), the revised bloom's taxonomy model states that knowledge is an outcome or product and not a form of thinking.

There are four knowledge domains, including factual, conceptual, procedural and metacognitive. Two of these domains, factual and procedural, were identified as possible factors influencing the employment rates of MTC graduates. In this section, I will describe the findings related to these assumed knowledge causes.

Survey Results

In the survey instrument, there were a total of five knowledge items, which were comprised of three factual knowledge and two procedural knowledge questions. The first three items were multiple-choice questions and the remaining two items consisted of a six-point Likert Scale. Table 9 below summarizes the overall results, which reveals that the instructor's surveyed scored lower in factual knowledge, but had mixed results on procedural knowledge. In the next section, I will describe these results in the areas of factual and procedural knowledge in more detail.

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Table 9

Results of the Knowledge Survey Questions

Assumed Cause & Type	Item	Mean	Standard Deviation
Factual MTC instructors do not have the knowledge of the latest trend for job listings currently in high demand in the country	*Multiple-choice item (Q1)* Choose from the list of the highest in demand jobs in Brunei	2.26	1.485
Factual MTC instructors do not have enough knowledge and skills in teaching a competency-based curriculum	*Multiple-choice item (Q2)* Choose from the list below the best definition to describe the term "Performance-based training	2.47	0.905
Factual Most instructors do not know what are the latest trend and essential skillset based on industry requirement	*Likert-scale item (Q4)* I use proficiency-based approaches in most of my teaching in the college	4.63	1.921
Procedural Instructors do not know how to design good instructional methods to teach a competency-based curriculum	*Multiple-choice item (Q3)* Choose from the list below the evaluation method that best describe the term "Performance-based assessment"?	2.68	0.946

Procedural Instructors have a knowledge gap of teaching and delivering effective competency-based education training	*Likert-scale item (Q5)* I evaluate my student's performance using assessments of their actual proficiencies on tasks or skills	4.47	1.264

Factual Knowledge. The first item of Question 1 in the survey was designed to seek the factual knowledge of MTC instructors about the highest in demand jobs in Brunei. Consequently, the results have shown only 4 (21%) of the respondents answered this question correctly. Nevertheless, 10 (52%) of the respondents had chosen the wrong answer and the remaining 4 (21%) participants did not respond to this particular item. In view of this, there is partial validation that a factual knowledge gap existed at MTC based on the results shown in the Figure 2 below. These results need to be cross-checked with the interview data in order to confirm any validation.

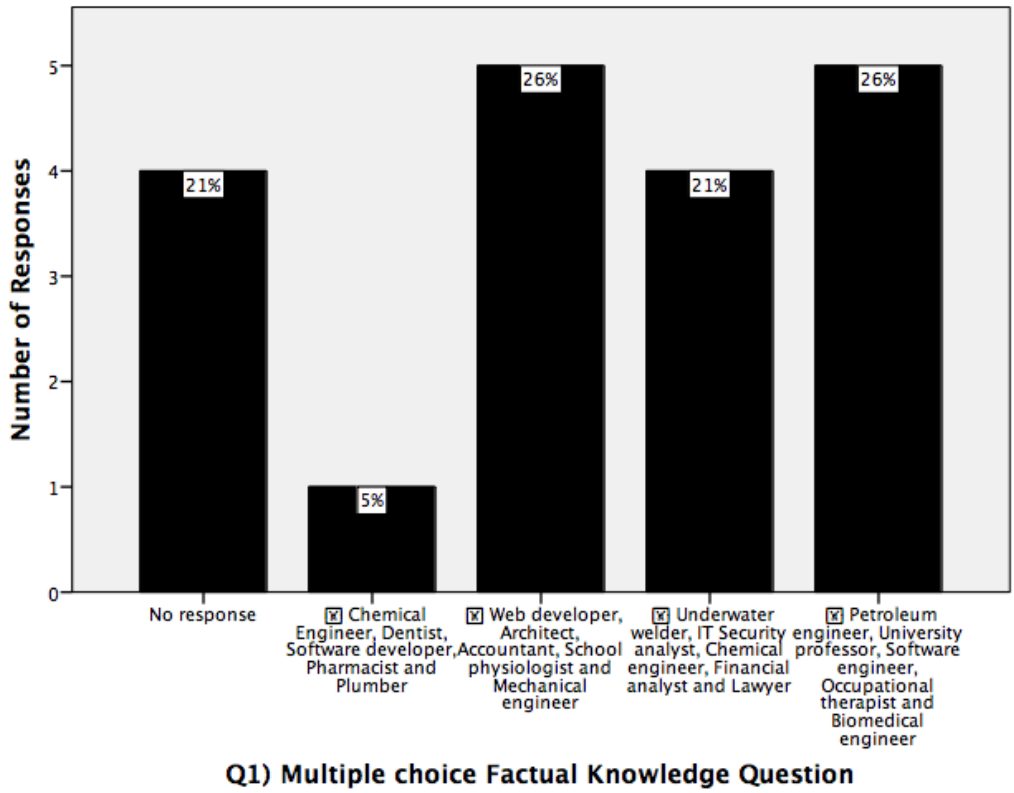

Figure 2. Factual knowledge Question 1: A multiple choice question to choose " the highest in demand jobs in Brunei".

Question 2 asked, MTC instructors to select the best definition to describe the meaning of the term "performance-based training (PBT)". This was designed to demonstrate how many MTC instructors possessed factual knowledge of the terms commonly used to define the phrase used to describe the definition of 'PBT'. The results as shown in Figure 2 show that out of the whole 19 respondents, only 12 (63 %) instructors answered this question accurately. The remaining instructors 7 (37%) answered inaccurately to this question. Judging from the responses, there are still many instructors who are not familiar with the term used to define the meaning of "performance-based training (PBT)". All MTC instructors should have a common understanding of the term, so this suggests additional evidence of a partial factual knowledge gap existing at MTC.

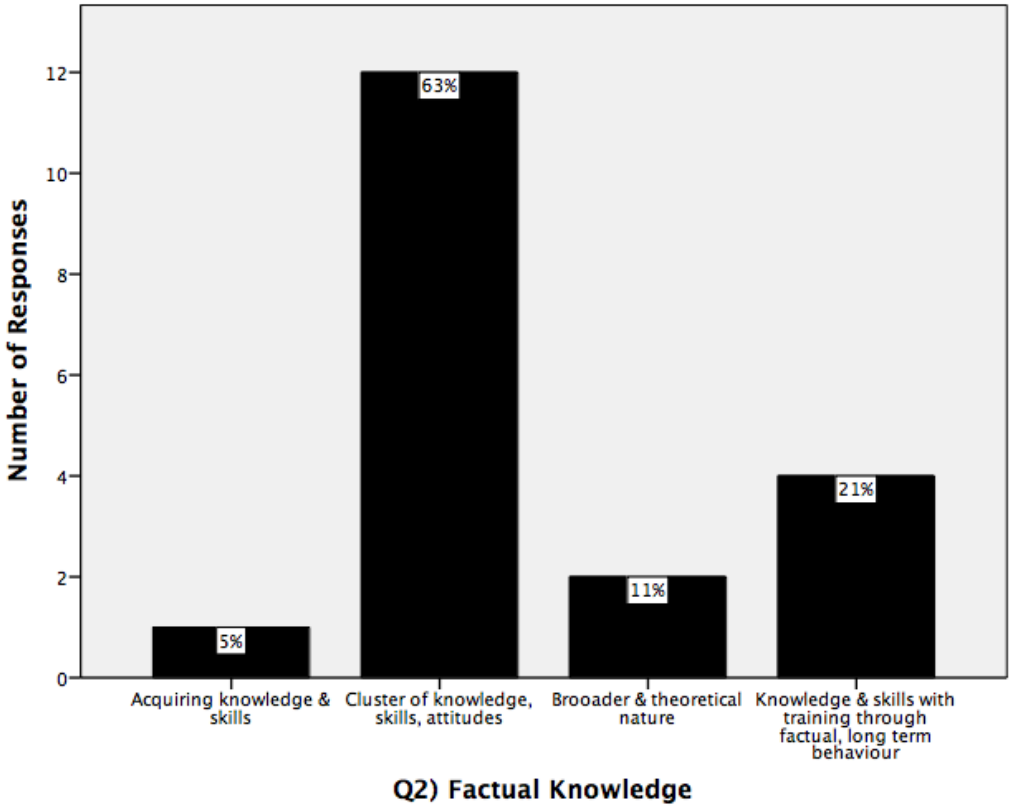

Figure 3. Factual Knowledge Question 2: "Choose from the list below the best definition to describe the term "performance-based training (PBT)".

Another question measuring the factual knowledge was applied in Question 4, which produced a mean value of 4.63 out of possible 5.0. This is a very important item to consider as it suggests the instructors' understanding to describe the meaning of the term used to define proficiency-based approaches in their teaching and learning.

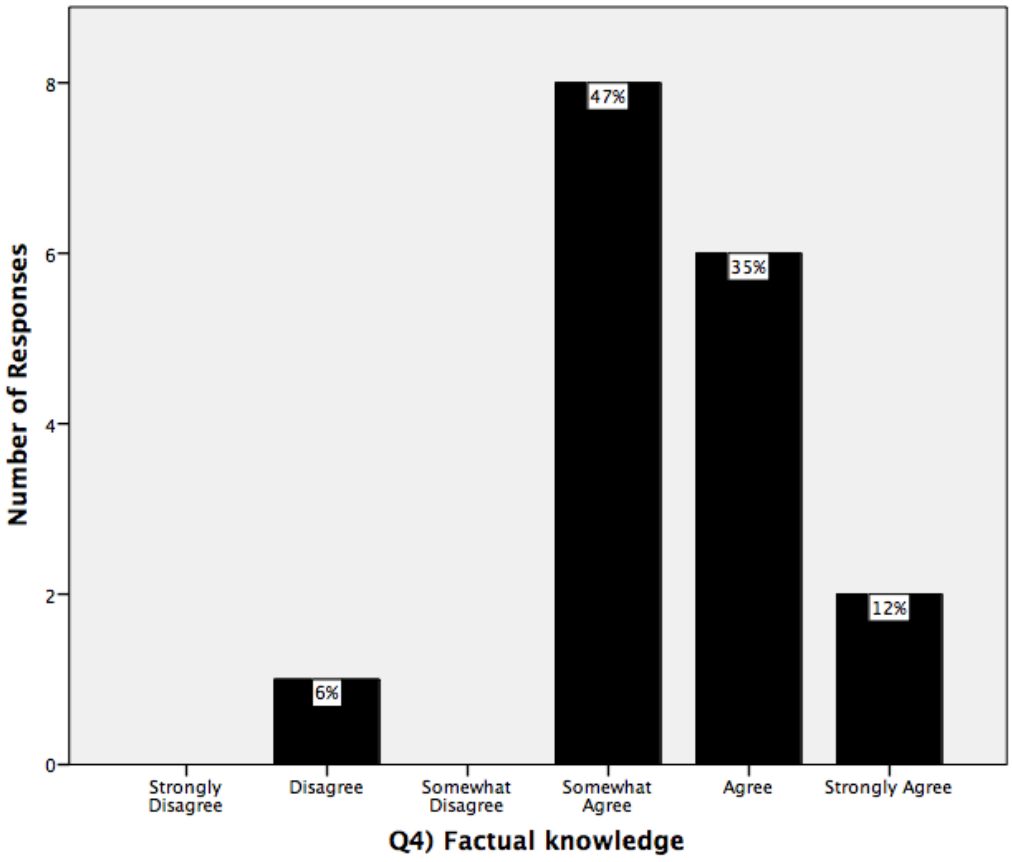

Figure 4. Factual knowledge Question 4: "I used proficiency-based approaches in most of my teaching in the college".

The results as shown in Figure 4 indicate that a total of only 8 (47%) participants agreed to the following statement. Additionally, 8 (47%) of instructors only partially agreed to the statement in the question. Moreover, the standard deviation values for all items (Q1, Q2 and Q4) were smaller than the mean value with a typical distribution ranging from 0.9 to 1.5. An illustration of the above results from Question 4 denoted that the assumed factual knowledge was partially validated. However, judging from the result of Question 4 showed that more than half of the instructors do not use proficiency-based approaches to their teaching at MTC. This shows

a strong indication that the assumed cause of factual knowledge barrier does in fact existed among many of MTC instructors.

Procedural knowledge. As indicated from Question 3, a total of 15 (79%) of MTC instructors did not accurately define the evaluation method that best reflects the definition of the term "performance-based assessment (PBA)". Only 4 (21%) of the participants answered this multiple-choice question accurately. This suggests that many of the participants seem to lack the understanding of the term used to define the meaning of PBA.

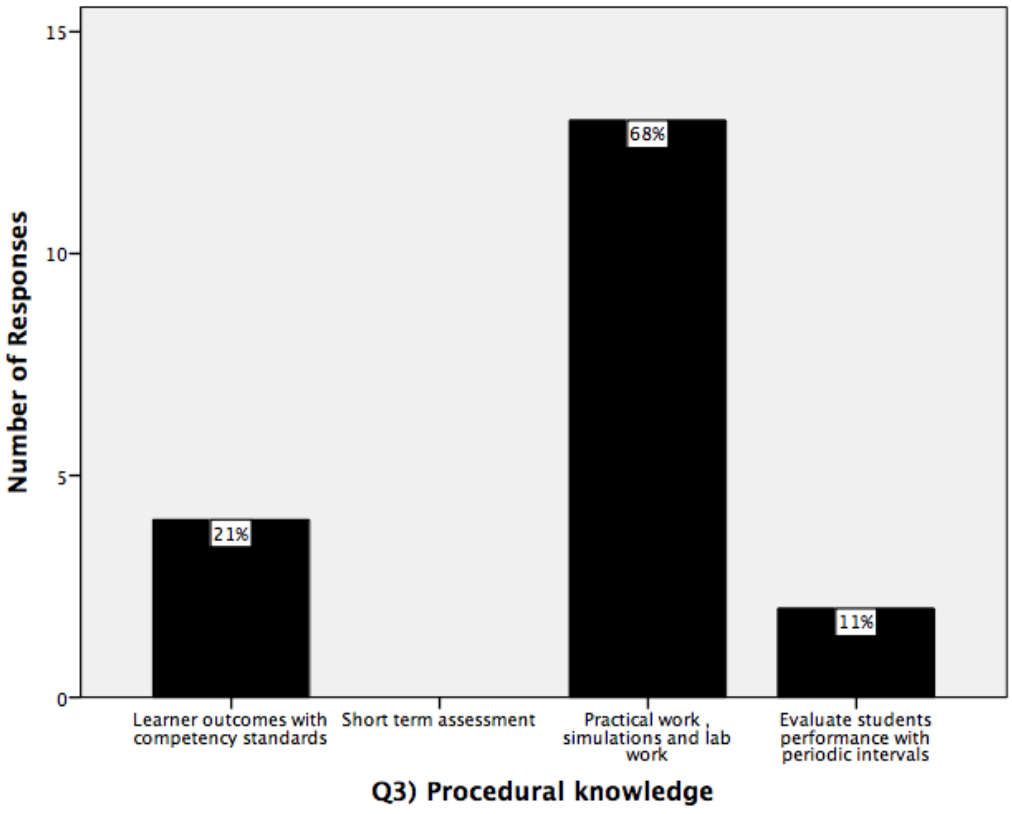

Figure 5. Procedural knowledge Question 3: "Choose from the list below the evaluation method that best describe the term 'Performance-based assessment'.

The second procedural knowledge Question 5 sought to elicit how many instructors actually applied competency-based assessments as their evaluation method. The results of this

question gave a high mean value of 4.47. The standard deviation of this question was found to be 1.264, which again shows a much lower value than the actual mean. This showed the data collected from the sample size was quite close together. Refer to the figure below for details.

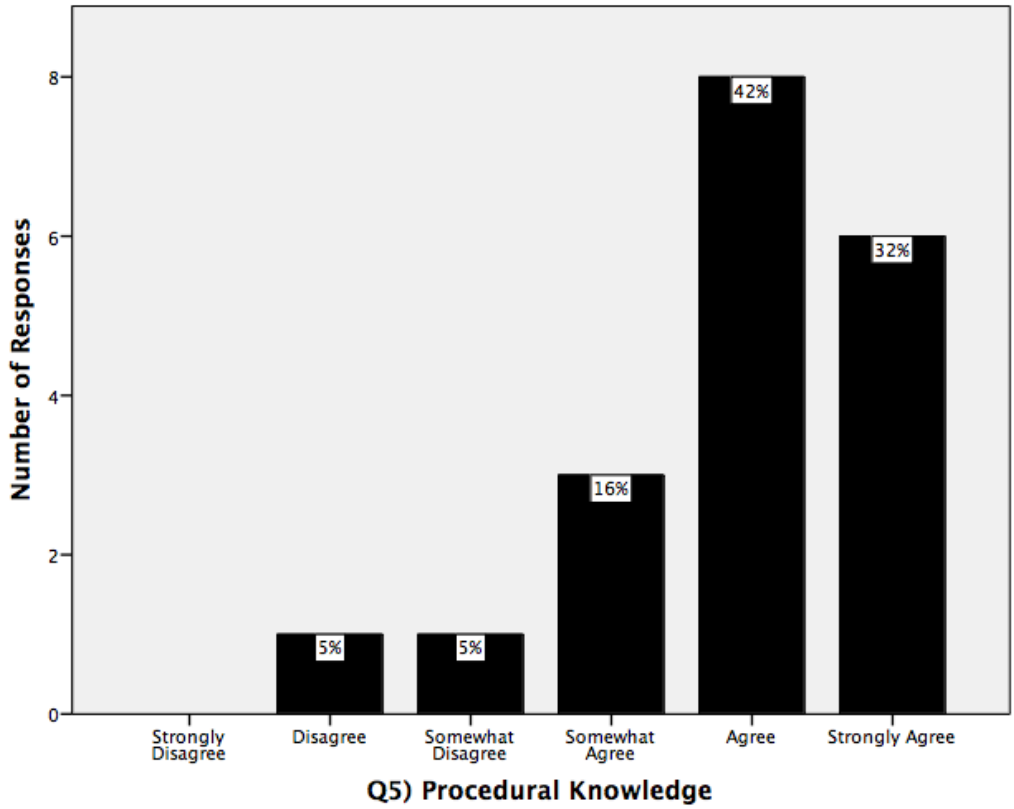

Figure 6. Procedural knowledge Question 5: "I evaluate my student's performance using assessments on their actual proficiencies on their tasks or skills".

In view of the results above, a total of 14 (74%) agreed to the following statement. In contrast to the above results, it can be argued that this particular question in the survey might be very confusing to some of these instructors. The other choices of answers to define PBA listed in this question had very similar meaning to the correct statement. Judging from this question, this suggests a partial validation of the assume causes for some of the instructors having a procedural knowledge gap. In brief, based on this two procedural knowledge questions, there were only partial validation of this assumed knowledge cause existed among the participants.

Summary of knowledge survey findings. The survey results have suggested that MTC instructor's lack factual and some procedural knowledge of the statements to describe the meaning of the terms used in either PBT or CBET. This is insufficient evidence to confirm complete validation of the assumed procedural knowledge gaps among the participants. On the other hand, half of these instructors agreed to apply competency-based assessments to their teaching in their classrooms. Nevertheless, there were some misconceptions of the usage of these two terms by many of the instructors. In summary, there was validation of a factual knowledge gap and partial validation of a procedural knowledge gap that existed among them. In short, no firm conclusion can be drawn based on this data along, and further analysis and comparison with the interview data will be discussed in the next section.

Interview Results

Nine instructors were asked five questions to assess factual knowledge and one procedural knowledge barrier at MTC. The first question asked the instructors to elicit the top most favorable choices of careers of youths based on the latest market trends in Brunei. Six of the participants (67%) answered confidently, giving accurate responses such as, "oil and gas related careers" or "mechanical engineering, chemical engineering and IT related fields." This was very consistent as the respondents were very familiar with the current most in demand jobs in the country. These responses seemed to understand that more than 80% of the country's wealth comes from the oil and gas sector. Besides, it is only logical why many of the instructors strongly agree that most of the available careers exist within this sector of the economy. According to Zailani (2014), there more than 1000 jobs available currently in Brunei Darussalam specifically in the oil and gas sector. Additionally, these answers consistent with the results from one of the survey item where 50% of the respondents chose petroleum engineering and

underwater welder to be the highest ranked most in demand jobs in Brunei. In contrast, the first multiple choice item in the survey instrument measuring the factual knowledge showed a discrepancy between the interview and survey data initially collected. In short, this result indicates a partial validation existed among MTC instructors.

The next factual knowledge question asked "What skills and knowledge that all technical vocational graduates should possess in order to improve their marketability?". Five (56%) of the interviewees replied "soft skills particularly in the aspect of acquiring interpersonal skills". Most of them mentioned having effective communication skills and good attitude in the workplace chosen as the most common answer. Besides having technical skills, five interviewees mentioned "Lifeskills" which include teamwork, self-management and the willingness to learn as an essential core skill to acquire for all successful career progression. This question determined that many of MTC instructors were aware of the necessary skills and knowledge that all graduates should possess in order to become more marketable. Thus, there was no validation of any assumed factual knowledge causes that existed among any of these instructors.

The third interview question asked instructors to examine their understanding of the term "Health Safety Security Environment" or HSSE in short. Almost all of the instructors understood the meaning of HSSE and they all commonly answered "safety awareness at work which is compliant to policy of international safety standards ". One instructor said "HSSE is necessary to all trainers and employers to ensure they comply with the workplace safety Health order 2009 in Brunei". On this note, judging from these responses, again there was no validation of any factual knowledge gap existing among any of these participants.

The second last two interview questions involved in examining the instructor's factual and procedural knowledge of the term used to describe; "How familiar are you in applying

performance-based/outcome-based learning (PBT) as part of a teaching strategy in the classroom"? This item was designed to test the instructors' understanding of the meaning of the term 'PBT'. According to the interview responses, one instructor claimed to be a newly recruited instructor and he admitted of not being familiar in using any of these terms. Then, another instructor was only slightly familiar of the definition and application during the implementation process of applying PBT assessments. Six of the participants (67%) being interviewed had a reasonably good understanding of applying PBT as part of their teaching approaches in the classroom. In addition, this showed partial validation of any factual or procedural knowledge barrier existing among these instructors.

The last question in the interview protocol asked, "What are the important elements in teaching a PBT to your students"? This question will seek to validate the assumed procedural knowledge gap present among these interviewed participants. Surprisingly, many of the instructors answered correctly to this question such as, " to apply proper assessments procedures in any form of skilled-based training". More importantly, many instructors suggested that for conducting successful implementation of PBT, proper training and industrial experience is required by all instructors for the attainment of the relevant skills and knowledge in their teaching career. More than half of the interviewed participants listed, "resources and up-to-date equipment or facilities are very important for hands on practices for successful PBT implementation". Based on the previous survey data acquired, a total of 15 (79%) instructors chose the wrong answer to this particular statement. Furthermore, there was discrepancy with the two findings from both interview and data results. In conclusion, there was no validation of this procedural knowledge gap existed among these participants at MTC.

Synthesis of Results and Findings for Knowledge Causes

The results from both instructor's survey and interview results have did not validate some of the factual and the procedural assumed causes for PBA and competency-based education training (CBET) implementation at MTC. There was only partial validation based on the overall findings of the interview data and survey responses. The survey results confirmed not all of the participants are aware of the latest market trend of the highest in demand jobs in Brunei. In addition, not all instructors at MTC were fully aware of the definition or the term used to define PBT as the data suggested only 12(63%) instructors understood the actual meaning and usage of these two terms. Thus, it can be concluded that only partial validation existed at both of the assumed causes of factual and procedural knowledge barriers existing at MTC. The assumed knowledge causes based on the survey and interview results are summarized as shown in table 10.

Table 10

Summary of Validated Assumed Knowledge Causes

Knowledge category	Assumed Cause	Validated	Not Validated	Explanation
Factual	Instructors do not have the knowledge of the latest market trend for job listings currently in high demand in the country.	Partially ✔		*Survey*: Only 4 (21%) or respondents answered the item in the survey accurately. I*nterview*: 67% of instructors gave the correct response of 'oil and gas' careers, which is accurate.
Factual	Instructors lack the knowledge to define the meaning of "Performance Based training (PBT)."	Partially ✔		*Survey*: Only 63% know the meaning of the definition of either PBT or CBT based on the statements. *Interview:* No validation for this gap as many instructors understood the meaning of both terms used in defining PBT and CBT.
Factual	Instructors do not use proficiency-based approaches in their teaching.	Partially ✔		*Survey*: Only 43% of respondents agreed on using competency-based approaches in their teaching.
Factual	Instructors are not familiar with the term "performance-based outcomes" as an important part of their teaching strategy		**X**	*Interview*: Many instructors understood the correct definition of performance based outcomes and defined the meaning similarly to competency-based training (CBT).
Procedural	Instructors failed to answer the correct meaning to define the term "performance-based assessment (PBA)".	Partially ✔		*Survey*: 79% of respondents failed to select the correct definition of the term used for PBA. *Interview:* More than 67% of interviewees gave the correct definition of the terms used to define the term PBA.
Procedural	Instructors failed to differentiate between the two terms of performance-based assessments (PBA) and competency/ performance based training (CBT/PBT).	Partially ✔		*Survey*: Only 74% of instructors agreed in using PBA as part of their evaluation methods. *Interview*: More than 67% of instructors knew that the meaning of PBA and CBT were interrelated and similar.

Results and Findings for Motivation Causes

According to Clark and Estes (2008), there are three types indicators of motivational issues, including active choice, persistence and mental effort. These can be used as a guide to study the stakeholder's underlying motivation issues such as self-efficacy, task value, attribution, outcome expectancy and goal orientation. In the case of MTC, three possible underlying motivational barriers that were analyzed, which were self-efficacy, task value and outcome expectancy.

Survey Results

The survey instrument used to consider the motivational barriers for MTC instructors consisted of eleven items utilizing a six-item Likert scale. Table 12 summarizes the results obtained from the responses of the survey instrument.

A brief review of this table suggests that the areas of self-efficacy, task value, and expectancy outcomes are possible motivational barriers existing at MTC. In addition, the mean values for self-efficacy produced the highest mean value of 5.05 and lowest standard deviation in comparison to the other assumed motivational causes. On the other hand, the motivational bands of goal orientation, affect, goal and attribution may not represent any concern to MTC participants. A detail description of the motivational questions will be further described in the next section.

Table 11

Results of the Motivational Survey Questions using a six-point Likert scale (Strongly agree, Agree, Somewhat Agree, Somewhat Disagree, Disagree and Strongly Agree)

Assumed Cause & Type	Item	Mean	SD
Self Efficacy (MSE) Instructors have low confidence in teaching a competency-based approaches to their teaching	(Q6) I am confident in my ability to use teaching approaches that focus on student performance	4.89	1.197
	(Q7) I believe I can do a good job in teaching an outcome-based curriculum	5.05	0.780
	(Q13) I feel that teaching an outcome-based curriculum is very manageable	4.84	1.385
	(Q16) Through my teaching, I can help students to graduate from the college with a positive attitude towards work	4.89	0.737
Task Value (MUV) Instructors do not see the value of teaching a competency-based training	(Q8) It is important to me to teach students using an outcome based curriculum for the student's future career prospect	4.42	1.539
	(Q10) I believe teaching with an outcome-based curriculum will improve the student's overall performance	4.89	1.100
	(Q14) It is important for me to learn different approaches to my teaching pedagogies	4.68	0.820
	(Q15) I believe that using an outcome-based curriculum will help me to become a better instructor	4.26	1.447
Outcome Expectancy (OE) Instructors do not believe that the overall preparation students receive will lead to successful employment outcomes.	(Q9) Our institute has a goal to ensure all the students who graduate will attain employment	4.68	0.820
	(Q11) The students who graduate from this college are well prepared to enter a competitive workforce	4.74	1.485
	(Q12) The students who graduate from the college possess necessary critical and problem solving skills	4.53	1.712

Self-efficacy. Due to the prior feedback and interaction between instructors, the motivational causes that were present at MTC were assumed to be low self-efficacy and low task value in the instructors' ability to teach a competency-based education training (CBET). Some MTC instructors, for example had talked about frequently of avoiding difficult tasks that required higher mental effort, such as teaching a curriculum that focuses on assessing multiple level of competencies. To validate this assumed cause, there were three questions in the survey that measured this motivational category. However, in general the results indicated that many MTC instructors were very confident in their ability to teach and using an outcome-based curriculum. All of the results for self-efficacy questions from the survey produced a relatively high mean values ranging from 4.8 to 5.05 on a six-point Likert scale. Results from the responses of the first two self-efficacy questions (Question 6 and Question 7) produced positive results of 12 (63%) and 13(68%) respectively. There is evidence that many instructors felt very confident in their ability to practice teaching approaches that focuses more on assessing student's various levels of proficiencies. All of the instructors agreed that they "could do a good job" and only one response somewhat disagreed to that following statement. Refer to the Figure 7 below for details as follows:

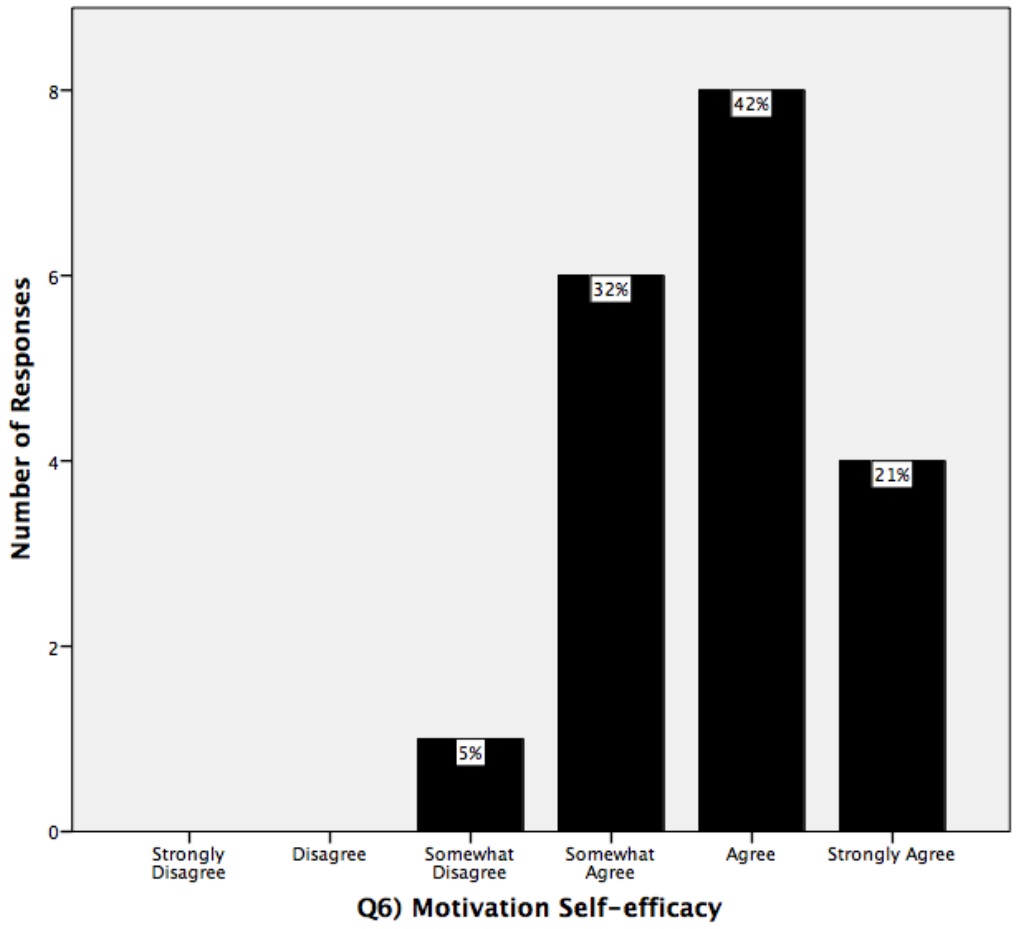

Figure 7. Self-efficacy Question 6: "I am confident in my ability to use teaching approaches that focused on student's performance". A total of 12 (63%) of MTC respondents agree to the following statement. Only 1 (5%) of instructors disagreed to the following statements.

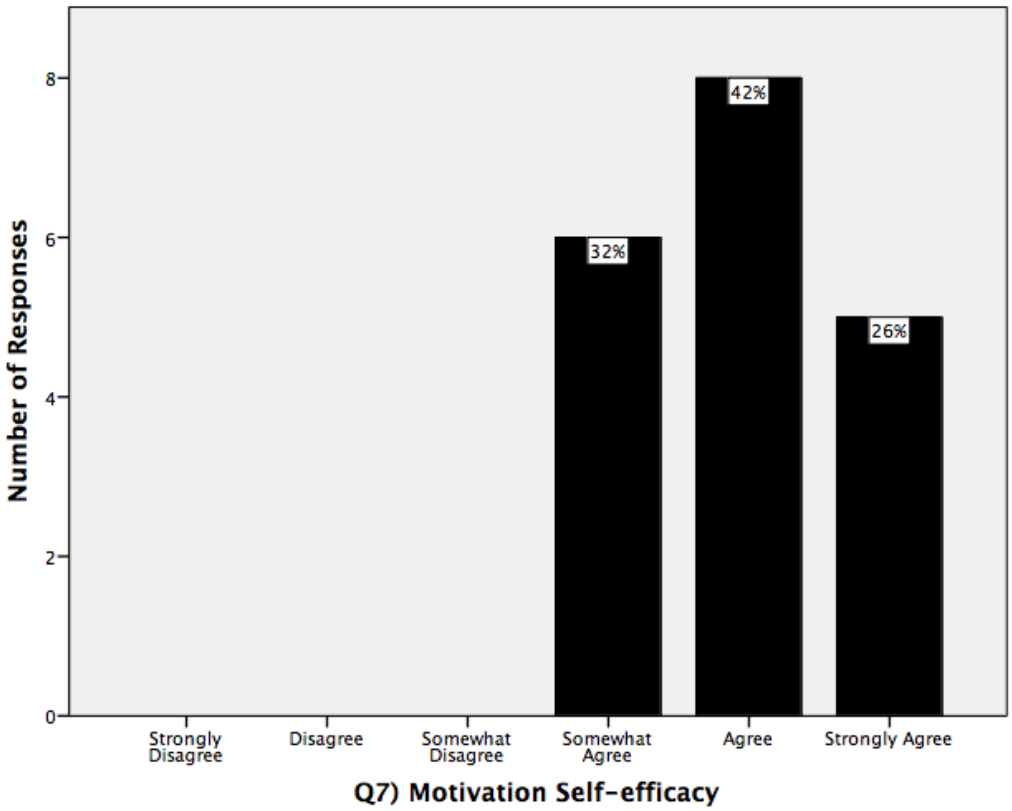

Figure 8. Self efficacy Question 7: "I believe I can do a good job in teaching an outcome-based curriculum". A total of 13 (68%)) responses agree to this statement. Only 6 (32%) of instructors gave in between answers.

The next question asked whether instructors agree that teaching an outcome-based curriculum is manageable or otherwise. A total of 10 (53%) instructors responded positively, either agreeing or strongly agreeing, and 8 (42%) responses denoted that they somewhat agree. Only 2 (10%) of MTC instructors disagreed or strongly disagree with this statement. This question provided evidence that only two instructors out of 19 might feel that teaching a CBET is overly demanding for them, further validating the assumed cause of possessing low self-efficacy among many instructors in the college.

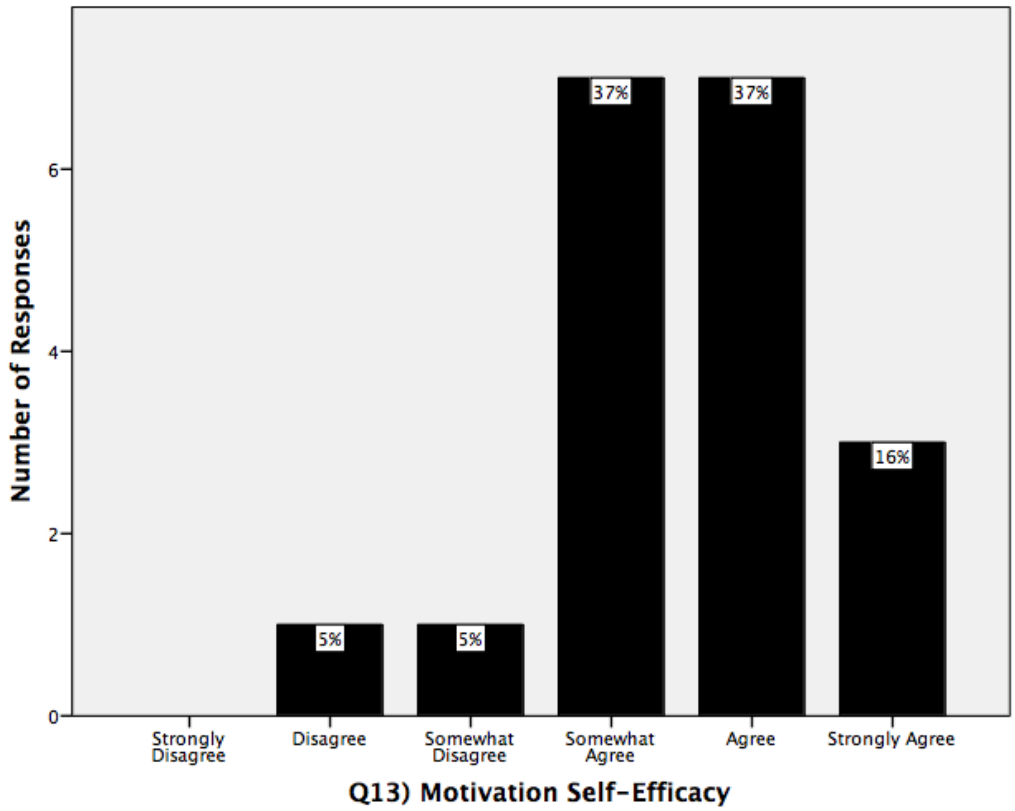

Figure 9. Self-efficacy Question 13: "I feel that teaching an outcome-based curriculum is very manageable". In response to this question, 10 (53%) out of 19 instructors agreed or strongly agreed that applying an outcome-based curriculum is very manageable. Whereas the remaining 5 (37%) participants somewhat agreed and 1 (5%) instructor disagreed to the statement.

This means that while the majority of these instructors believe that using a CBC is manageable, a significant number 8 (42%) were less sure or either disagree to the statement. The results of this question may provide partial validation of the assumption that some MTC instructors feel that teaching an outcome-based curriculum might be challenging to some instructors. In summary, the results of these three self-efficacy motivation questions suggest that all of the items in the survey invalidate this particular motivational assumed cause among instructors at MTC.

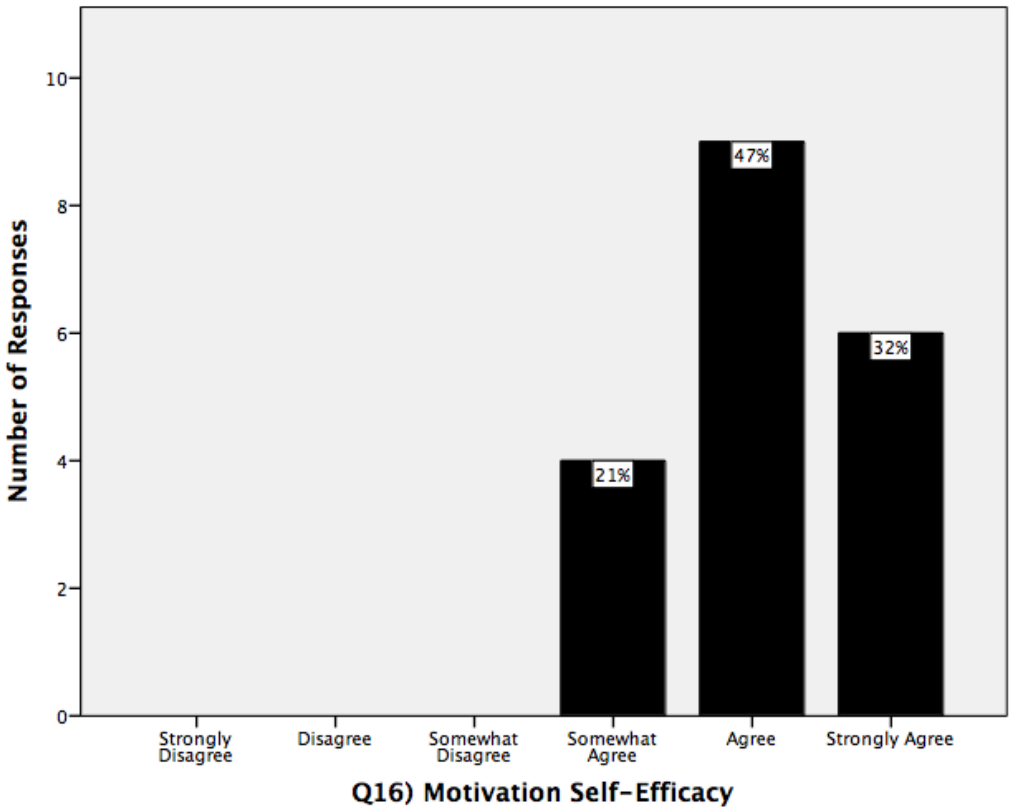

Figure 10. Self-efficacy Question 16: "Through my teaching, I can help students to graduate from the college with a positive attitude towards work". Referring to the figure above, it can be concluded that 15 (79%) of respondents agreed to this statement. 4 (21%) of respondents are in between answers.

This implied that MTC instructors understood the importance of teaching a CBET, which will allow their students to be more marketable in attaining higher critical skills or competencies. All of self-efficacy questions produced high mean values of nearly 5, which is consistent to all respondents from the other self-efficacy questions.

Task value. This motivational variable will be used to validate instructor's lack of either intrinsic (interest) or extrinsic (utility) value with regards of student's attainment of success. MTC instructors were observed to have difficulty in understanding the purpose of teaching a competency-based curriculum, which focuses more on job performance and not course content.

Besides, the assumption was that many of these instructors would not value that the teaching of CBET. Hence, this is probably due to their lack of understanding for the real educational outcomes and benefits of applying this type of teaching method. There were four positive statement questions asked in the survey to measure all task value motivation indexes. Thus, the results obtained would validate this particular assumed cause. Refer to the figure below for details:

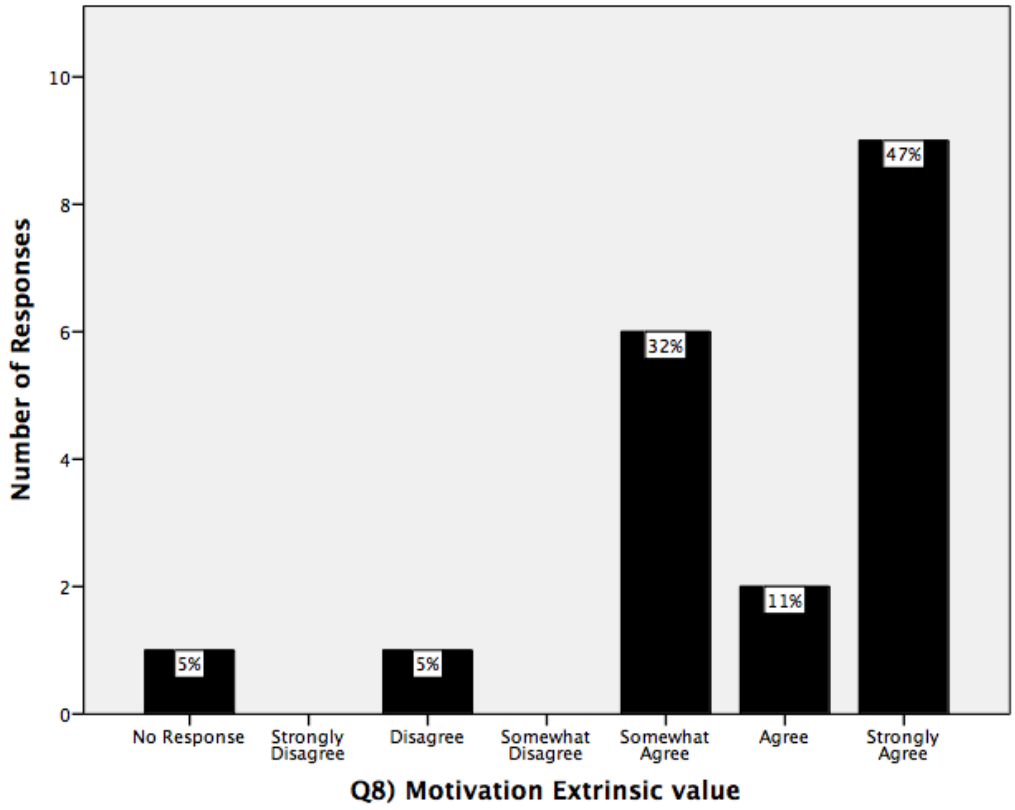

Figure 11. Extrinsic (utility) value Question 8: " It is important for me to teach students using an outcome-based curriculum for the students future career prospect". Based on the results of the respondents, more than 15 (79%) participants agreed and strongly agreed to this statement.

This implied that many MTC instructors believed that teaching an outcome-based curriculum is very important to their students in order to achieve high employment in the labor market.

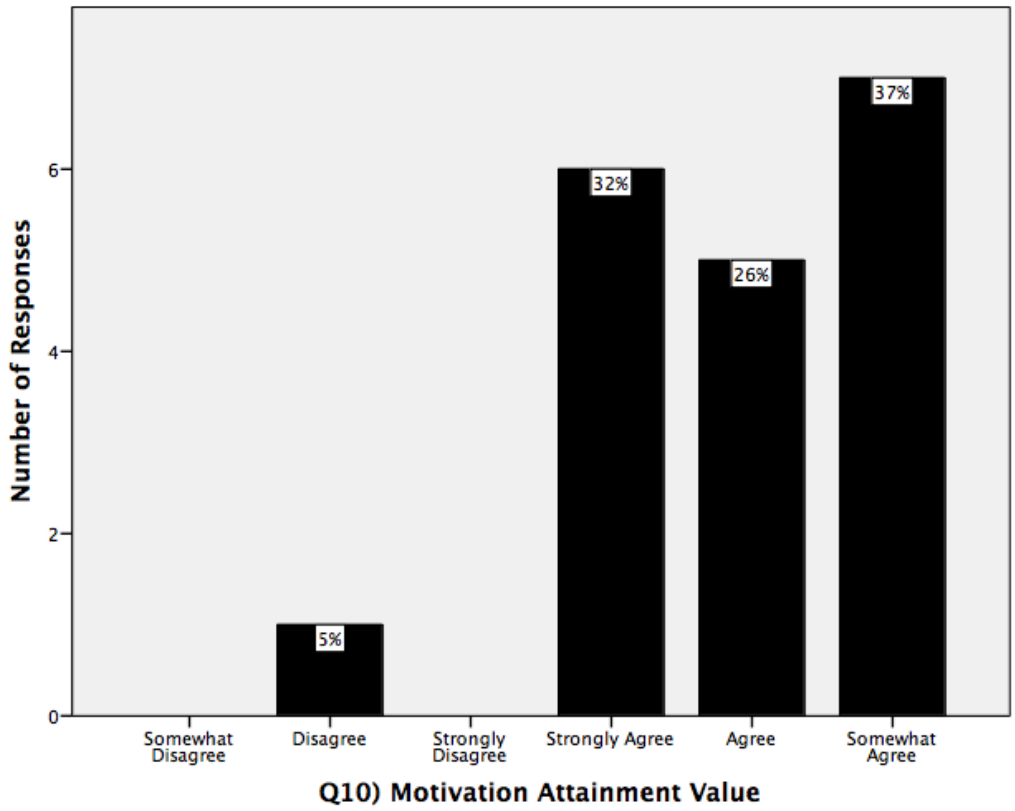

Figure 12. Attainment task value Question 10: "I believe teaching with an outcome-based curriculum will improve the student's overall performance". A total of 11 (58%) respondents agreed to the statement on the above item. From the figure above, 11 (58%), a majority of respondents agreed to the statement as stated in this question survey.

The mean and median of the results obtained has produced a high mean value (close to 5) and the standard deviation produced a small value of 1.10. This indicates that the variation of the respondents (width of distribution) is tightly clustered (bell curve is steep) around the mean and median represents that the respondents seemed to agree on the statement to this question. The results also showed one instructor that disagreed to the statement and a significant number 7 (37%) participants were less sure or disagreed to this question.

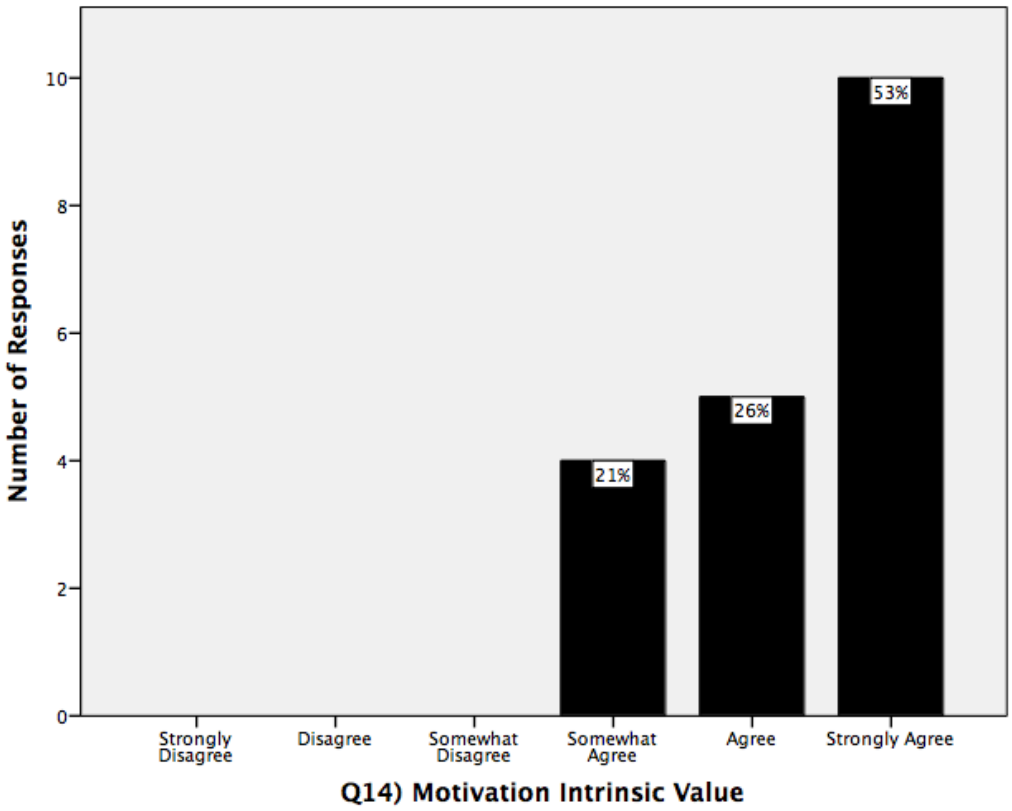

Figure 13. Intrinsic (interest) value Question 14: "It is important for me to learn different approaches to my teaching pedagogies". The results from the respondents above indicated that more than 15 (79%) or respondents have self-motivated interest and agreed to the following statement. MTC instructors believed that they should apply different approaches of teaching for different types of learners in the classroom.

Continuing to the next item that measures the extrinsic (utility value) of results from question 15. The results from the statement below indicated that 12 (63%) of the respondents agreed and strongly agreed to the statement below. This indicated that many MTC instructors believed that using an outcome-based curriculum will be very valuable for them in the context of their their future goals of becoming a better instructor.

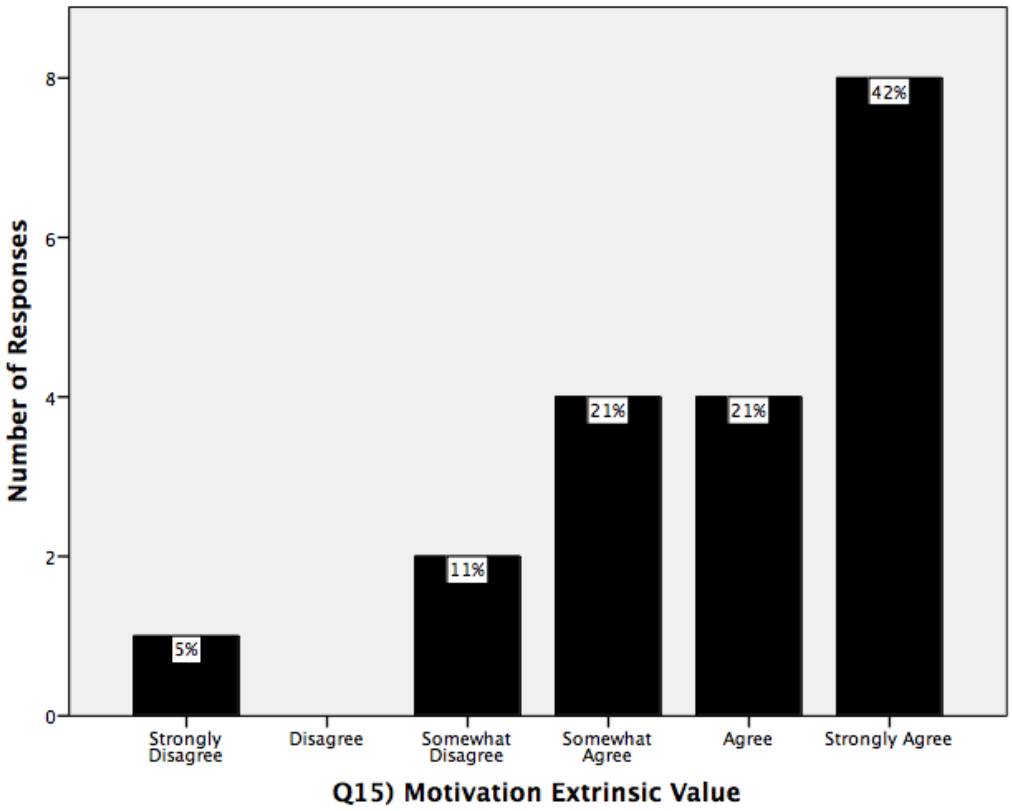

Figure 14. Extrinsic (utility) value Question 15: "I believe that using an outcome-based curriculum will help me become a better instructor".

Hence, the consensus view judging from all the results of the respondents to all the task value motivation Questions 8,10,14 and 15, this assumed cause of motivation task value were found to be not validated.

Outcome Expectancy. The expectancy value theory focuses on outcome expectations where certain behaviors will lead to certain outcomes (e.g. the believe that practicing will improve one's performance). This expectancy theory believes that different individuals can believe that a certain behavior will produce a certain outcome (Eccles & Wigfield , 2002). In practical terms many MTC instructors do not believe that the overall preparation of students in their learning in the classroom will lead to successful outcomes such as employment. For

instance, the students who have enrolled to MTC were students of K-11 and above and these students were known to not have achieved high scores in their academic performance. There have no other choice but to enter our Technical Vocational Education Training (TVET) systems in order to continue their education and to aspire to attain relevant industrial skills for future employability. In the survey instruments, there were three Questions (9,11 and 12) used to validate this assumed outcome expectancy theory. The figure below shows details for illustration purposes of this type of motivational cause.

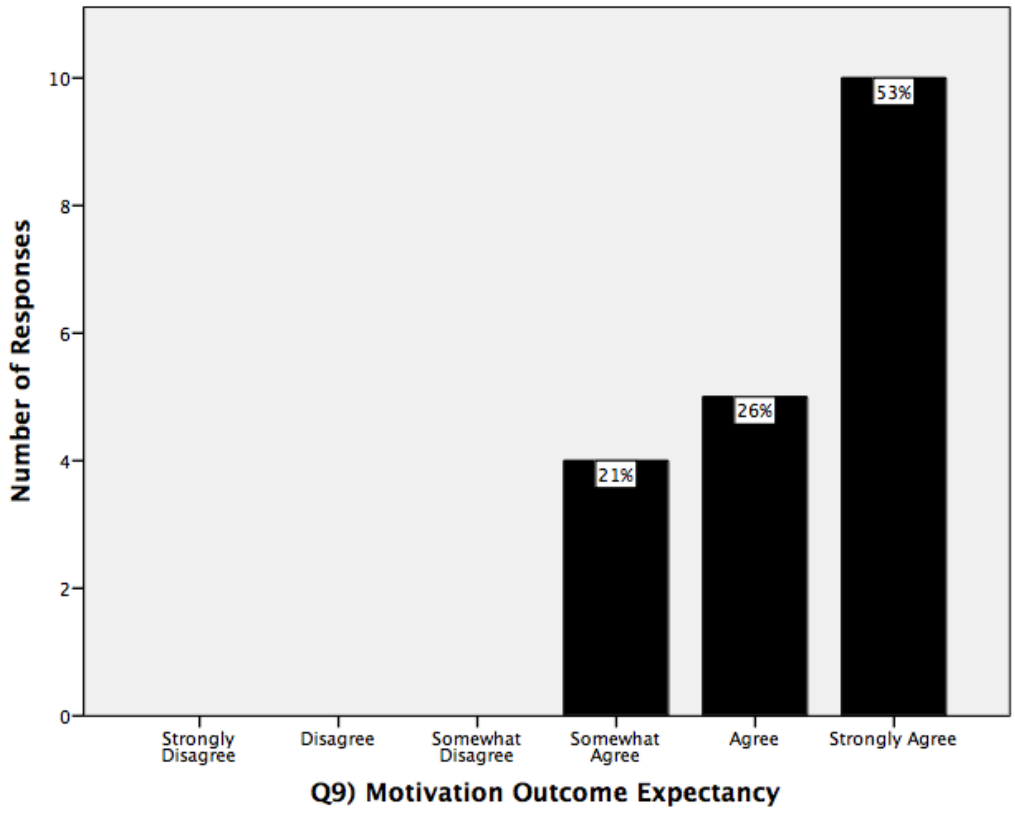

Figure 15. Outcome Expectancy Question 9: "Our institute has a goal to ensure all the students who graduate will attain employment". More than 15 (79%) agreed and strongly agree to the above statement.

In short, many of MTC instructors are aware of the significance of students who graduated from this college will attain 100% employment.

The next question asked a similar question to validate another outcome expectancy

motivation theory.

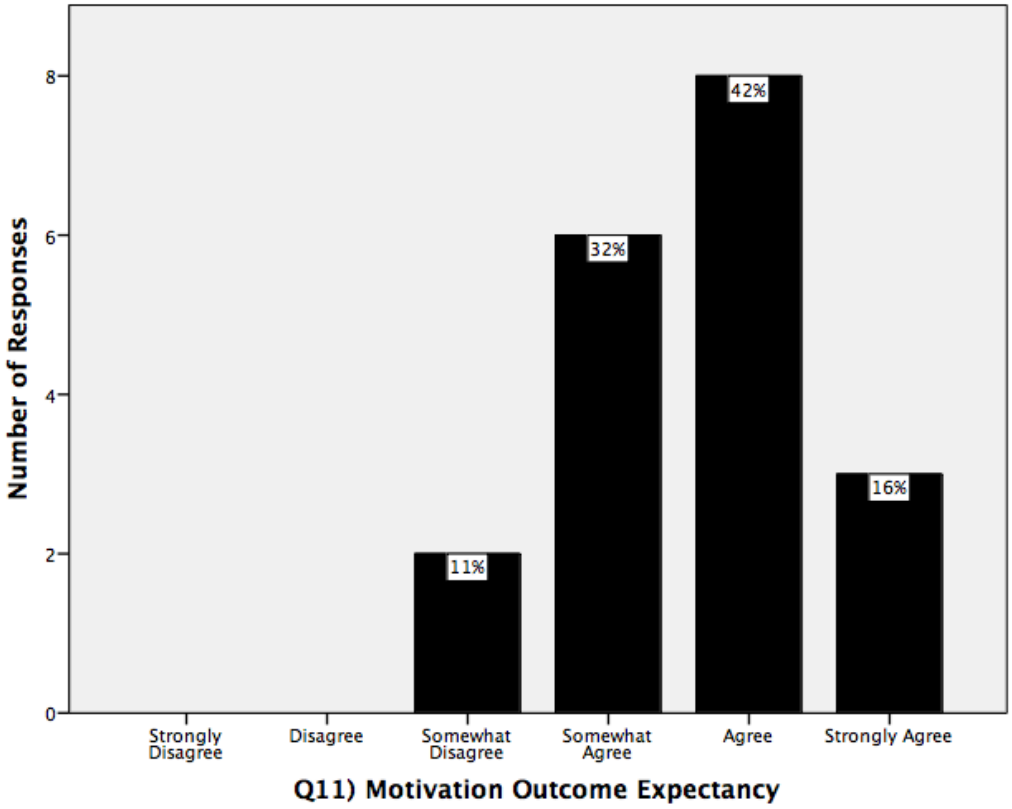

Figure 16. Outcome Expectancy Question 11: "The students who graduate from this college are well prepared to enter a competitive workforce. The results obtained referring to the above figure implied that more than 11 (58%) of MTC instructors agreed to the above statement that the students who graduated would be well prepared before entering the workforce within the country.

The last question below is used to validate the final assume outcome expectancy cause existing among MTC instructors.

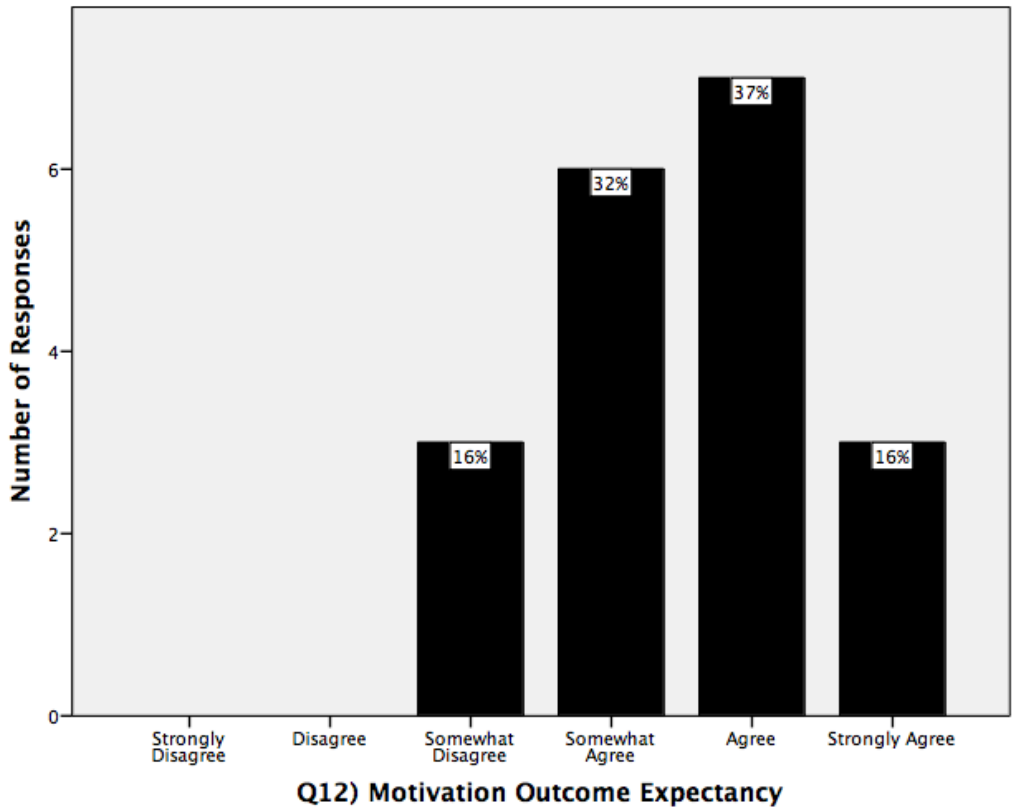

Figure 17. Outcome Expectancy Question 12: "The students who graduate from this college possess necessary critical thinking and problem-solving skills". The results above indicated 10 (53%) of instructors agree that all the students who graduated from MTC will have the necessary skills before they enter the labor market.

This question tested the expectancy beliefs of instructors at MTC of how critical are their teaching outcomes will lead to an increase in student's performance. To review, the overall results from the respondents above have shown no validation of any of this assumed motivational cause at MTC college in Brunei.

Summary of motivational survey results. In summary, it can be concluded that the results compiled from the eleven items measuring all of these motivational barriers of; active choice on self-efficacy, task value of extrinsic, intrinsic, attainment and outcome expectancy for all of the assumed causes could not be completely validated. On the contrary, these results are

required to be compared to the interview data before any conclusions can be made. However, judging from the first impression, the results showed that MTC instructors do not have any high level of motivational barriers despite one or two instructors who responded negatively to some of these statements indicated in the survey results.

Interview Results

There were two motivational questions asked during the interview sessions with the nine participants from MTC. Initially, two highly structured question comprised of two parts used to elicit their views of how much value they place in teaching an outcome based curriculum (determining task value) in their professional work. The second question entailed in seeking knowledge of how an outcome-based curriculum will benefit in improving the student's overall performance determined to measure the instructor's level of self-efficacy. Four of the interviewees (44%) replied to the first question positively. A majority of the participants agreed that teaching an outcome-based curriculum was very important particularly to all students in general. However, there was one instructor who emphasized that teaching CBET is very challenging even to an experienced instructor. He affirmed by answering "many instructors need to execute student's performance more than once in order to meet the industry standards". He added, "this can be very time consuming and stressful for both students and instructors". Another instructor stressed the importance of how CBET requires the curriculum to be very versatile and continuously updated with positioning the content against industry requirements. Overall, the interview data has revealed no factual evidence of any concerning motivational issues that exists among any of these instructors in the college.

The second interview question asked, " How can teaching performance-based approaches be challenging to you?". This question will test these instructors' confidence and beliefs of how

applying competency-based approaches in their teaching is beneficial towards their learners. Out of the nine responses, seven instructors (88%) agreed to the statement inquiry. Only one instructor disagreed with the rest and gave a negative response. A majority of the interviewed participants strongly agreed that applying competency-based approaches were very challenging and time consuming generally. Another participant said, “Our students who don’t acquire any academic background can still perform well as the learning instructions focused on assessing their hands-on and practical proficiencies”. On the contrary, another instructor argued that, “teaching using competency-based approaches is not really and issue for me especially if you have enough industrial experience”. He said, “Professional training for instructors is still important and given enough time and effort, teaching CBET and applying the right pedagogies will be easy especially if you are used to it”. On these grounds, there is a partial validation that a motivational self-efficacy gap exists among a minority of these instructors within the college.

Synthesis and Findings for Motivation Causes

The synthesis of the results from both surveys and interview protocols, have some supporting evidence to determine whether any of the earlier motivational assumed causes can be completely validated. The results from the instructor’s survey have not validated any of the motivational causes of self-efficacy, utility value, and outcome expectancy. Neither of the data from the survey instrument as well as the interview finding was able to validate any of these assumed motivational causes at MTC.

In addition based on the data collected, many of MTC instructors were confident in their ability to apply competency-based approaches to their teaching and learning. In contrast, the findings of the interview has confirmed that a majority of teaching instructors at MTC admitted that teaching a competency-based curriculum at times is very challenging to any instructor. In

summary, this indicated a partial validation of the assumed causes for instructors to possess low self-efficacy in teaching a competency-based training. To summary, the final results of the survey and interviews are summarized as shown in the table below.

Table 12

Results of the Motivational Survey and Interview

Motivation category	Assumed Cause	Validated	Not Validated	Explanation
Active Choice	Instructors have a lack of active choice to teach a competency-based curriculum	Partially ✔		There is a discrepancy between the responses from the surveys and interviews results.
Self-efficacy	Instructors do not believe they are capable of effectively teaching CBT	Partially ✔		Survey: More than 60% of instructors agree that they are confident in teaching competency-based approaches to their students (invalidated) Interview: Seven participants (78%) admitted that teaching competency-based training (CBT) is difficult and very challenging for them
Utility-value (Extrinsic)	Instructors do not see the value of teaching a competency-based curriculum		X	Survey: More than 60% of the respondents agree that teaching a CBT is crucial for the students' success and future career prospect
	Instructors do not view that teaching applying competency-based approaches will help the students to become more marketable		X	Interview: Four interviewees (44%) agreed that teaching a CBT will motivate the students to perform better and useful for them to acquire successful employment
Expectancy	Instructors do not believe that the overall preparation in student's learning will lead to successful employment outcomes		X	Surveys: 60% (from three items) of the respondents agreed that the students who graduate from MTC will attain successful employment. Interviews: A total of 66% of the interviewed participants agreed that using a competency-based curriculum (CBC) will improve

	the student's overall performance overall.

Results and Findings for Organization Causes

An organization's internal culture can either promote or impede its productivity and the achievement of either its short-term or long-term goals (Rueda, 2001). According to Gallimore and Goldenberg (2001), the culture of an organization can be understood as being comprised of cultural models, which are values, beliefs, attitudes that are generally invisible and automated. Furthermore, in the domains of cultural settings which are the visible, concrete manifestations of the cultural models, such as; lack of goals, communication norms, resources, and high employee turnover. In the case of MTC, assumed causes related to both cultural models and cultural settings were investigated thoroughly. Interview protocols and surveys were applied to validate if these assumed organizational causes were influencing MTC's ability to meet its 2016 goal for enabling its graduates to attain 100% employment.

Survey Results

In order to validate these the organizational assumed causes, a total of eleven items were used in the survey instrument to extract data for these types of barriers from MTC instructors. There were two assumed causes under cultural models of non-participation and attitudes of helplessness and hopelessness and four assumed causes under the category of cultural settings. These cultural settings includes, "busy work" or bureaucratic work, lack resources, a lack of autonomy at work and the absence of any strategic plan existing in the college. In the sections below, I will discuss the findings concerning the cultural model barriers as well as cultural setting barriers in detail using frequency tables to illustrate the instructor's responses.

As with the previous items in the survey, a six-point Likert scale was used to identify the participant's overall responses. A brief summary of the overall results as indicated in the table below suggests the areas of cultural models of non-participation, attitudes of helplessness and

hopelessness. In addition for cultural settings, the organizational factor of "busy work" or bureaucratic work not aligned to goals, lack of resources, autonomy and strategic plan are possible organizational concerns for many instructors at MTC. On the contrary, organizational barriers such as dishonesty, hypocrisy and unfairness, social loafing, pessimistic or negative beliefs of attitudes, lack of communication may not represent any major concern that hinders MTC to reach its organizational goals. The results obtained from the eleven organizational item survey responses produced the highest mean value of 4.74 under the lack of autonomy assumed causes and the lowest standard deviation value was found to be 1.742 obtained from the lack of resources assumed factor. All of these results gained were compiled and compared and summarized by each of their means and standard deviation as indicated in the table below.

Table 13

Results of the Organization Survey questions using a six-point Likert scale (Strongly agree, Agree, Somewhat Agree, Somewhat Disagree, Disagree and Strongly Agree)

		Result	
Assumed Cause & Type	Item	Mean	SD
Cultural Models Non-participation	(Q24) I am often asked to share my views about my job and organizational plans	3.89	2.025
Attitudes of helplessness and hopelessness	(Q21) I feel helpless about getting support from the college when urgently needed	3.58	2.294
	(Q22) I feel that my ideas and request are not respected by the college administration	4.05	1.779
Cultural Settings "Busy work" that is not aligned with goals	(Q17) I feel that the non-instructional responsibilities interfere my ability to be a good instructor	2.63	1.985
Lack of resources	(Q18) The college administration provides adequate facilities, equipment and resources to	3.95	1.985

	conduct a performance based education training		
	(Q20) All the resources required to teach a performance-based education training are readily accessible in the college	3.53	1.742
Lack of autonomy	(Q23) I have a lot of freedom and choice over my tasks at work	2.47	1.896
	(Q25) I do not feel overly restricted by college rules and regulation in performing my routine tasks	4.74	1.790
Absence of a clear strategic plan	(Q26) There is a clear strategic vision in the college to reach its performance goal	3.79	1.843
	(Q19) The college is responsive to the TVET training in general	4.21	1.960
	(Q27) There is sufficient work procedures and support from the college in order to reach its organizational goal	3.58	2.224

Non-participation. Non-participation on the part of faculty was the first factor assumed to be causing the organizational performance gap at MTC. There was only one question in the survey used to measure this cause. The results of the respondents are provided in Figure 18 below.

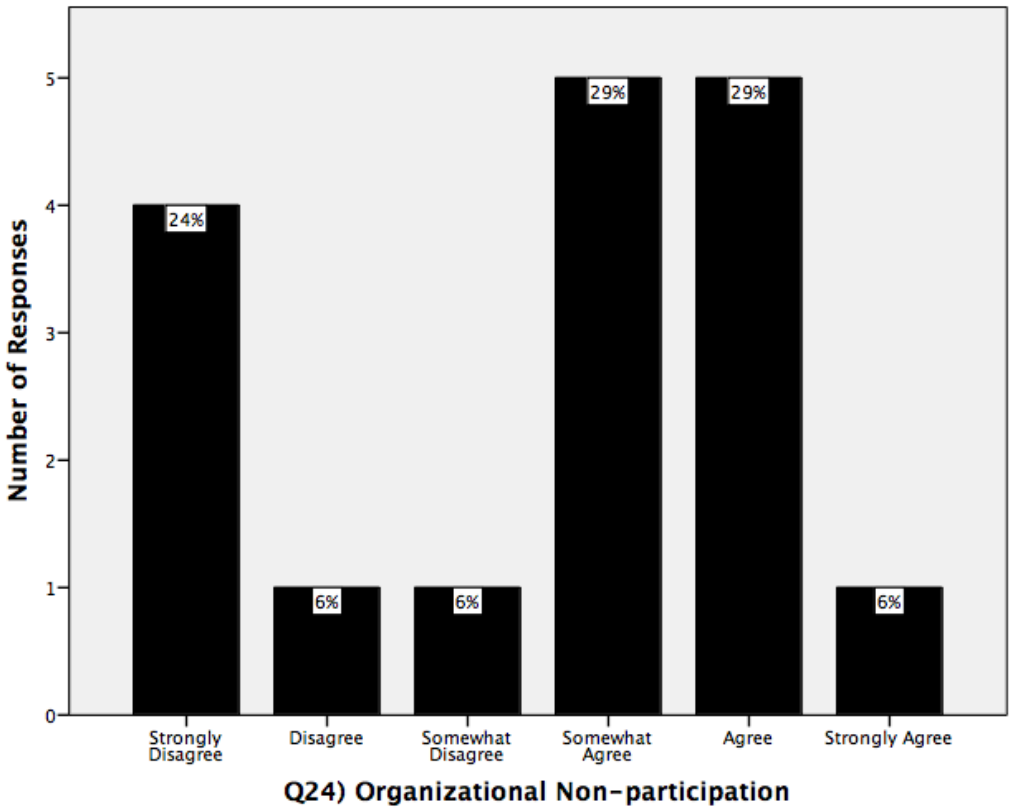

Figure 18. Resistance Question 24: "I am often asked to share my views about my job and organizational plans".

The responses indicate that there were mixed views about this statement. A total of 6 (35%) of instructors agreed or strongly agreed with the statement, whereas 5 (30%) of the instructors at MTC disagreed or strongly disagreed. The remaining participants in the survey include two instructors who did not respond to this statement and another 6 (35%) of instructors agreed or somewhat disagreed. Given that the question produced a relatively equal distribution of responses across the scale, the validation of this organizational barrier is inconclusive. It

seems that there are instructors who experience the invitation to participate by giving their view and others who don't.

Attitudes of helplessness or hopelessness. There were two items used to measure this organizational cause under the cultural model category. It was assumed that the MTC instructors' felt that their views or requests for support were not accepted or perceived insignificant by the college administration. The first item assessed how the instructors feel about getting institutional support when needed. The results of the participants were shown below in Figure 19.

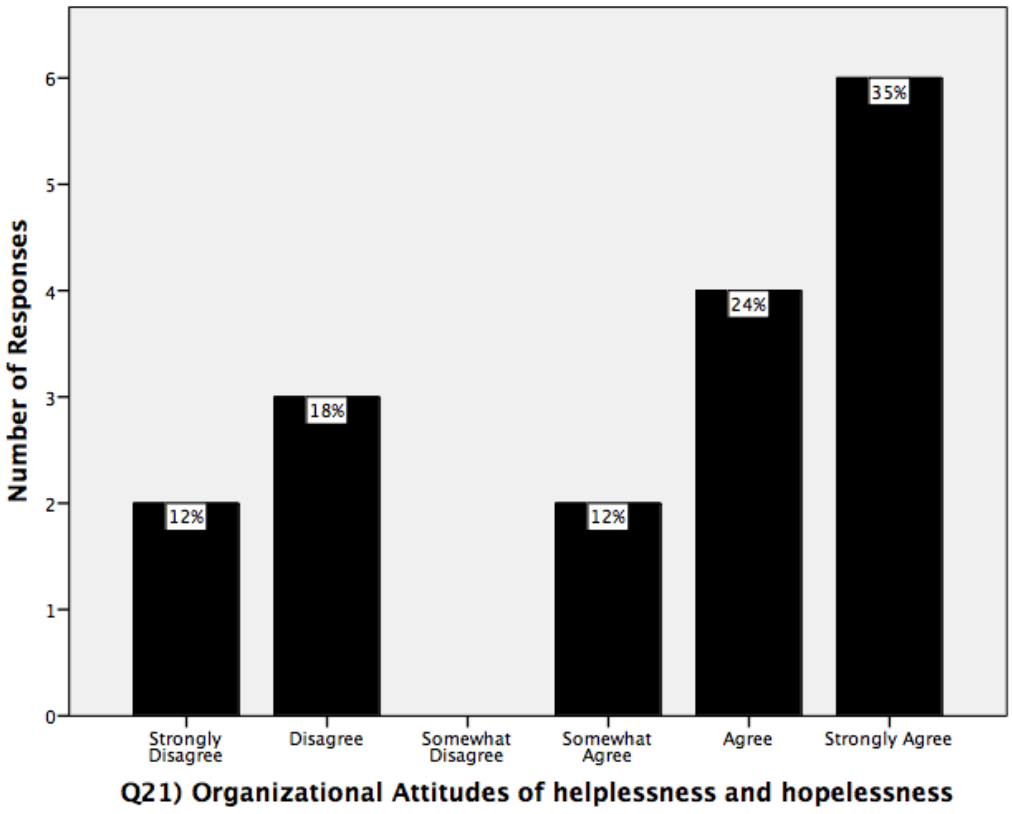

Figure 19. Resistance Question 21: "I feel helpless about getting support from the college when urgently needed."

The results reveal that 10 (59%) of the respondents agreed or strongly agreed with the statement, and an additional 2 (12%) somewhat agreed. On the other hand, only 5 (30%) respondents disagreed or strongly disagreed. While there was a split in views, the larger number

of instructors responding with agree and strongly agree suggests that some instructors were not getting the support from the administration when urgently needed. This result supports there is partial validation of this specific assumed cause.

The next item used to measure this similar organizational barrier is shown in the Figure 20.

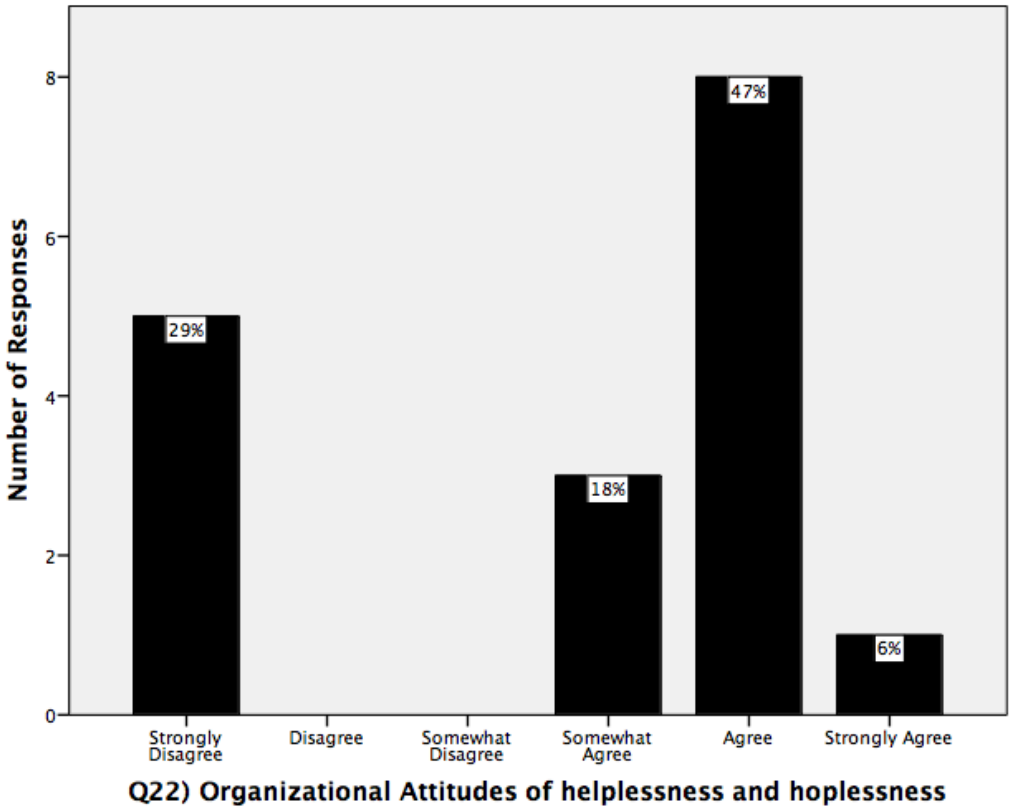

Figure 20. Attitude of helplessness for Question 22: "I feel that my ideas and request are not respected by the college administration". This is a negative item and instructors should response accordingly to the statement.

A total of only 9 (53%) respondents agreed or strongly agreed with the above statement. Whilst another 5 (29%) of the instructors strongly disagreed with the statement, the overall results obtained from these participants produced a relatively high mean value of 4.05 in comparison to the other organizational items as described previously. The results of item indicated that some of these instructors' agreed that they are not getting the respect that they

need from the college. In summary, judging from the analysis of the results of the two items as indicated above, there is partial validation of this type of assumed organizational cause.

"**Busy work" or bureaucratic work.** This is the first statement under the cultural settings category used to measure this type of assumed organizational gap. MTC instructors were asked their opinion about the non-teaching responsibilities that were adhered to them, which at times develop beyond their job description. These instructors were given only one question to measure to this organizational gap and the results are indicated in the figure below.

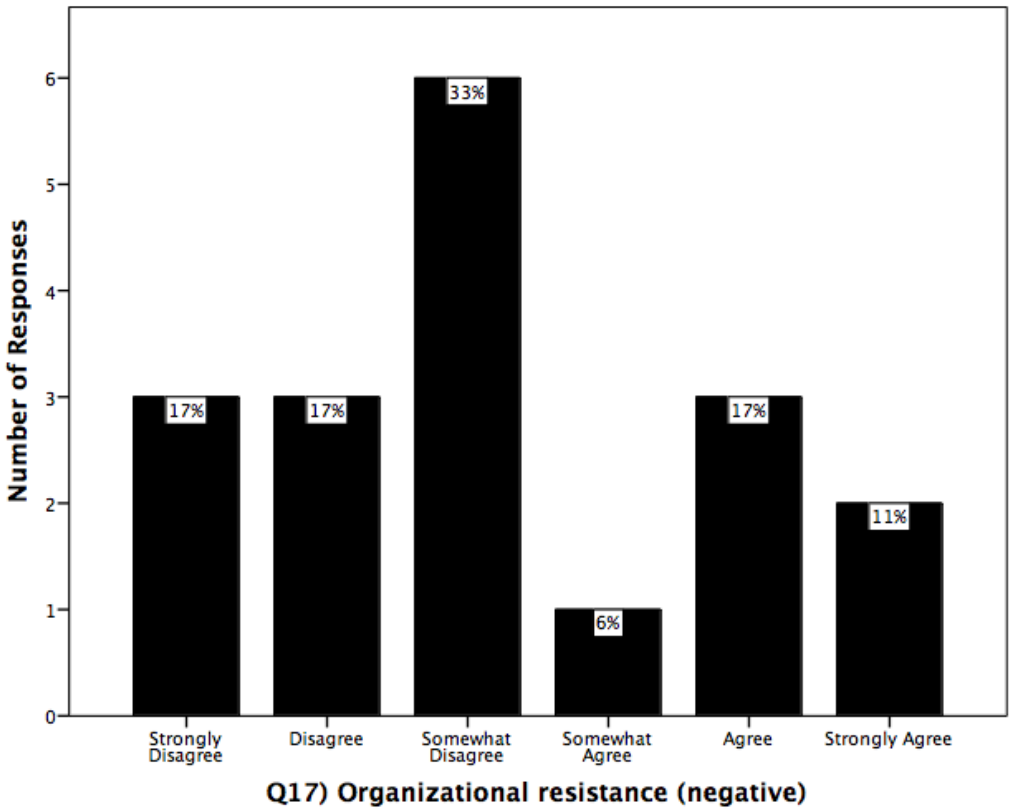

Figure 21. Resistance Question 17: "I feel that the non-instructional responsibilities interfere with my ability to be a good instructor".

There was a mixed response based on the data computed as shown above. A total of 5 (28%) respondents agreed to the statement. Another 6 (34%) of the participants completely disagreed. One instructor didn't respond at all and the remaining 7 (39%) respondents neither

agreed nor disagreed. On these grounds, there is no validation towards assuming this particular organizational barrier existing at MTC.

Lack of resources. Next, the cause of the performance problem faced by MTC instructors, which is related to the cultural settings found at MTC. There were two items used to validate this assumed cause. The results for the first item obtained are shown in the Figure 23 below.

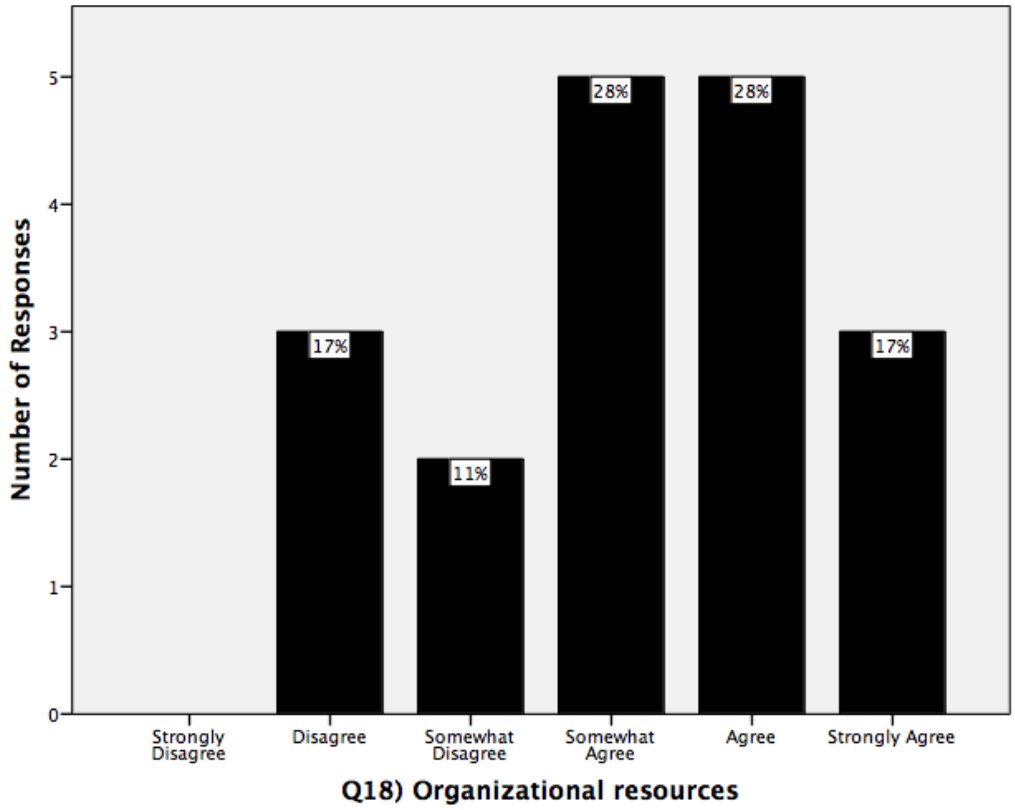

Figure 22. Lack of Resources Question 18: "The college admin provides adequate facilities, equipment and resources to conduct performance based education training".

As indicated in the figure above this organization statement showed a total of only 8 (35%) instructors who completely agreed to the above statement. Moreover, a total of 3 (17%) respondents disagreed, one instructor didn't respond and the remaining 7 (39%) respondents

were in between answers. These data provide inconclusive evidence to validate this assumed cause.

The next question confirmed the instructor's responses to another organizational gap, which also measured the lack of resources at MTC College.

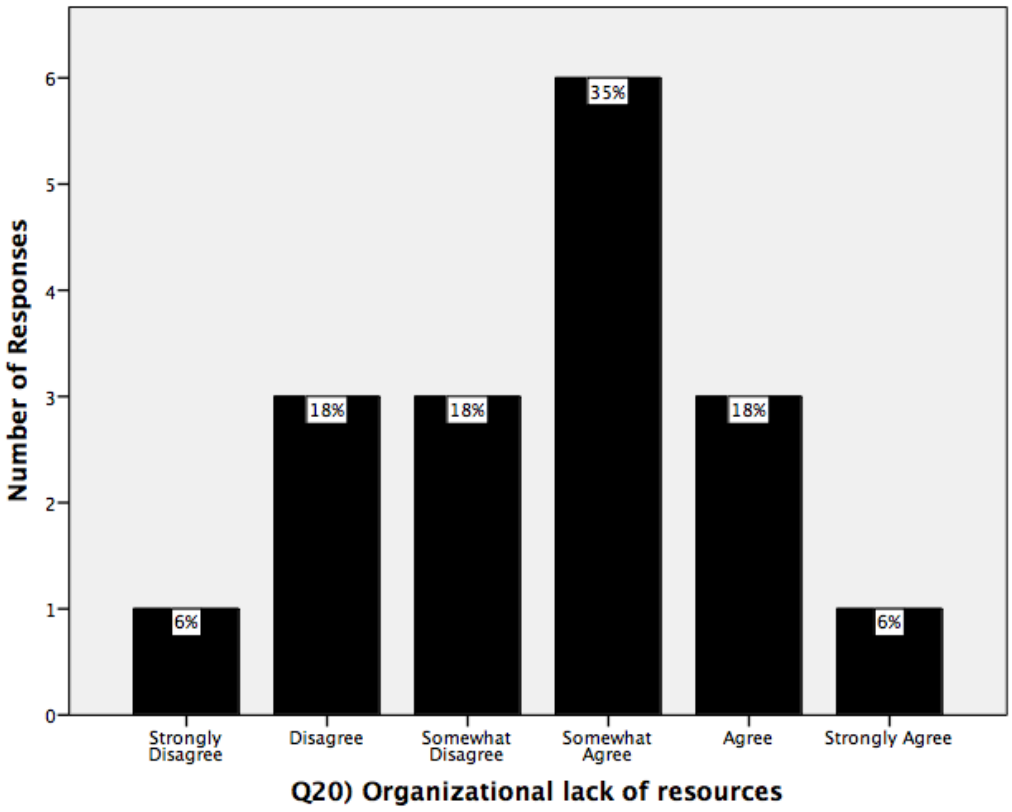

Figure 23. Lack of resources question 20: "All the resources required to teach a performance-based education training are readily accessible in the college".

This question is quite similar to the previous question with regards to readily available resources that is accessible in the college. In contrast to the earlier question, this question produced a more normal distribution of responses, with fewer instructors giving agreement to the statement. Similarly, another 4 (24%) disagreed with the statement completely. The results show a slight disparity from the earlier question about resources, although ideally, the data should

reveal a more similar result. Based on these survey results, there appears to be partial validation that the organizational performance gap on account of the lack of resources existing at MTC.

Lack of autonomy. This is the second cultural setting used to measure the performance organizational gaps at MTC. These items were used to measure how much autonomy MTC instructors were given in their current job prescription. The results were shown in the figures below.

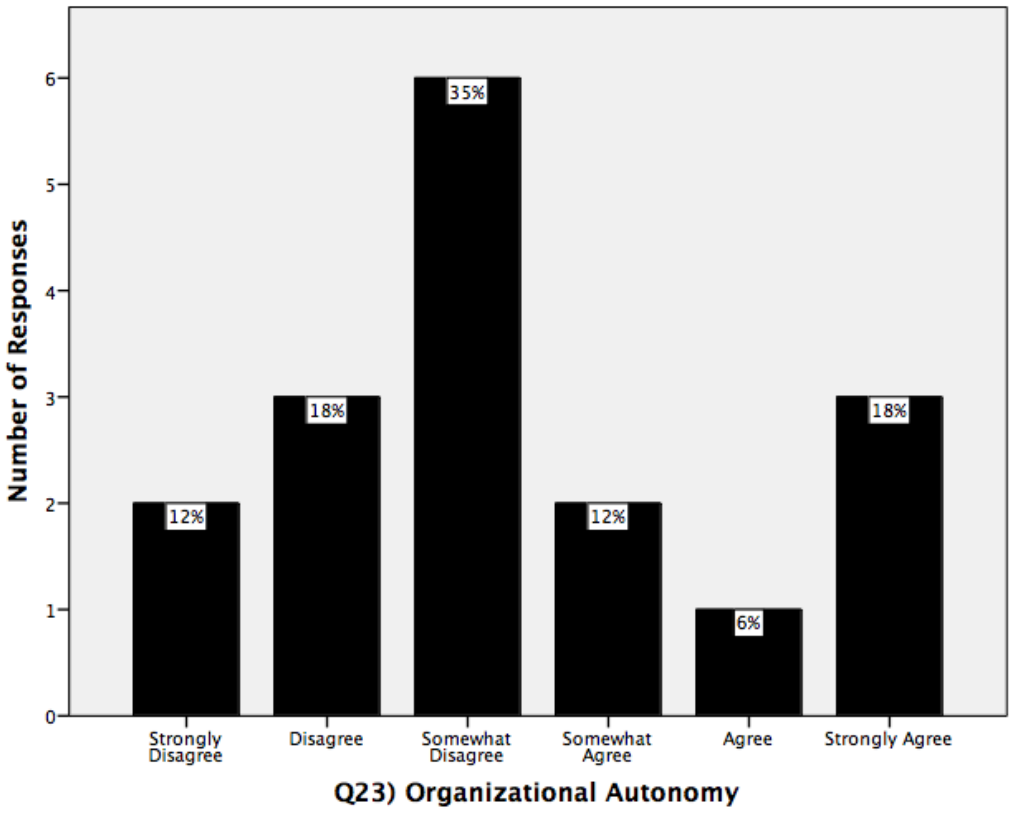

Figure 24. Lack of autonomy for Question 23: "I have a lot of freedom and choice over my tasks at work".

Only 4 (24%) respondents agreed or strongly agreed with the above statement. The remaining respondents produced a mix of responses. Also, 2 (11%) participants didn't answer this question. Again, the next item in this survey continues to measure the organizational

autonomy of instructors at MTC. The results are indicated below.

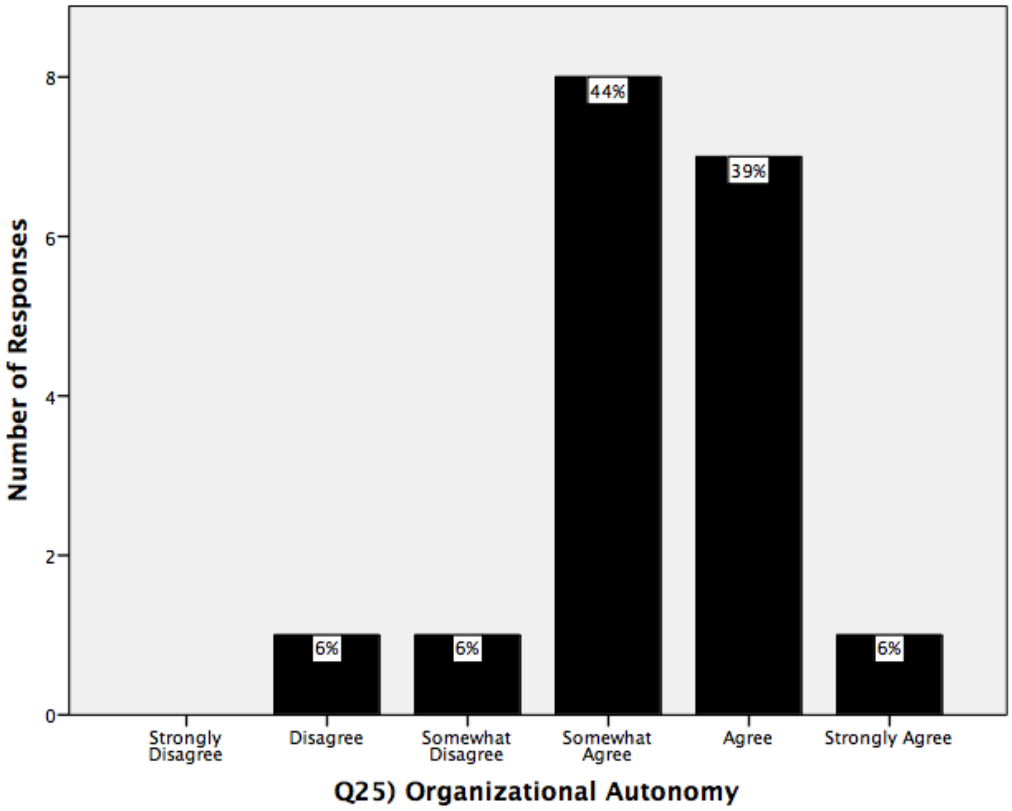

Figure 25. Lack of autonomy for Question 25: "I do not feel overly restricted by the college rules and regulation in performing my routine tasks".

A total of 8 (45%) of the respondents agreed or strongly agreed with the above statement, while only one instructor disagreed. This has shown a discrepancy in the results between these two statements measuring the same cause of the organizational gap.

The combined results from the two questions measuring the autonomy for MTC instructors have shown evidence that there may be a partial validation of a lack of autonomy is a concern for some instructors in performing their routine tasks at work. Thus, for many of these instructors, the need for a lot of autonomy to teach effectively a competency-based curriculum could not be completely fulfilled. This lack of autonomy could be the result of too many

restrictions due to college rules and regulations. However, this will need to be further validated by the interview results. Thus, these survey results will be compared with what respondents said in the interviews in order to confirm the validation of any existence of this type of organizational barrier.

Lack of an effective strategic plan. The final cultural setting category to be measured is the lack of an effective strategic vision and goals. There were three questions used to measure the organizational strategic plan assumed cause. The questions from the survey instrument have produced the following results as indicated in the figures below.

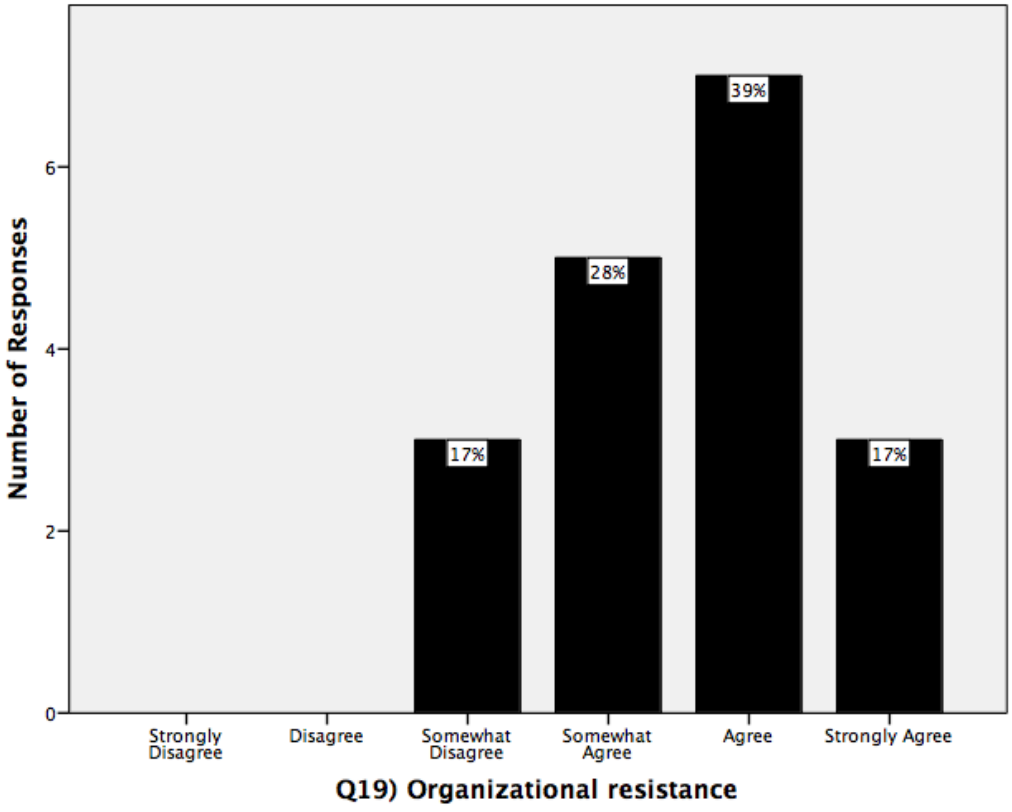

Figure 26. Resistance Question 19: "The college is responsive to the TVET training in general".

A total of 10 (53%) of respondents agreed or strongly agreed with the statement on the above item shown in Figure 26. Additionally, none of the participants disagreed with the statement, and of the remaining participants only three somewhat disagreed. Accordingly, this

survey question produced the highest mean value of 4.21 when compared to the other questions used to measure organizational barriers.

The Figure 27 below shows the results for the other question measuring any strategic plan barrier that may have existed at MTC.

Figure 27. Lack of strategic plan for Question 26: "There is a clear strategic vision in the college to reach its performance goal".

A total of 10 (50%) of respondents agreed or strongly agreed with the above statement, whereas 4 (22%) of MTC instructors disagreed or strongly disagreed, implying that the college may lack a strategic plan or one that is sufficiently clear to instructors. Similarly, the next question measured another aspect of a possible lack of a strategic plan. The results of this question are presented below in Figure 28.

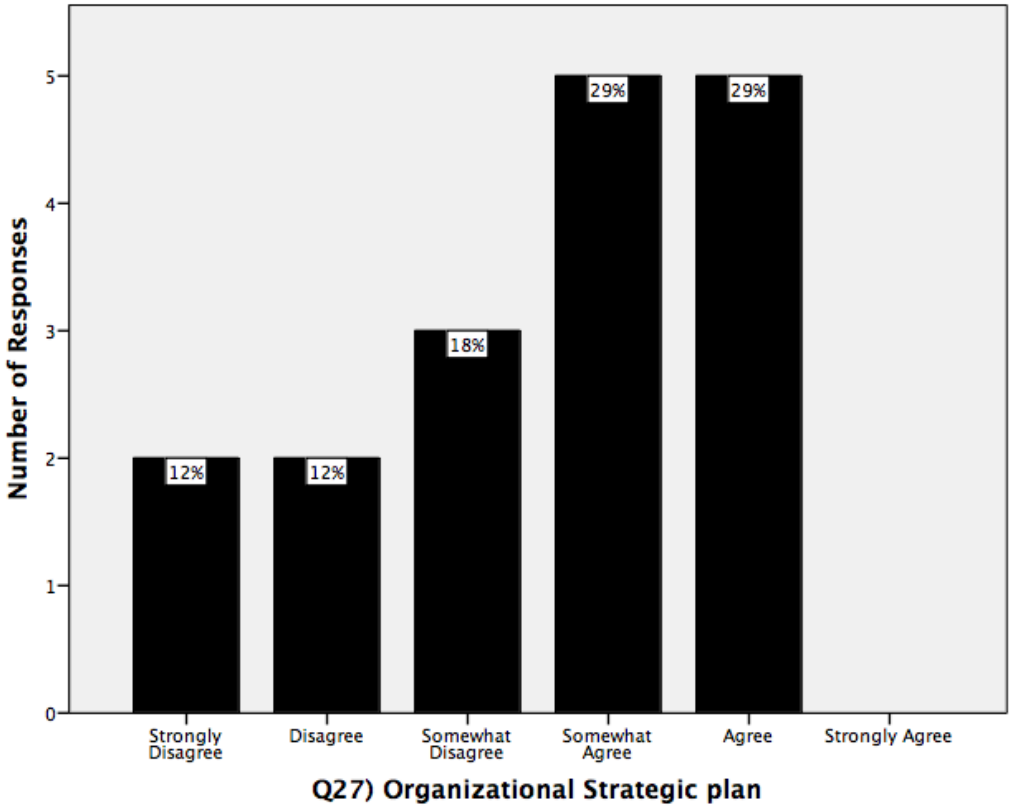

Figure 28. Lack of strategic plan for Question 27: "There is sufficient work procedures and support from the college in order to reach its organizational goal".

A total of only 5 (29%) of respondents agreed with the above question. Four instructors (24%) did not agree or strongly disagreed with the statement. Overall, this statement produced an almost even mix of response from all of these instructors; with 8 (47%) of the respondents giving mixed reactions between somewhat agree and somewhat disagree. This mix of responses means that this question only partially validates the assumed cause of the college not having a lack of a strategic vision. On this basis, the interview data will be compared next to validate further whether the lack of a strategic plan is validated as an organizational barrier.

In summary, out of the eleven questions used to measure the organizational barriers, there were a few assumed causes that were either validated or partially validated as organizational

barriers based on the cultural models and cultural settings framework. The assumed organizational cause that was partially validated by the survey results was the attitude of hopelessness and helplessness, lack of resources and finally the lack of autonomy for many instructors within the college. The other six items from the survey have not validated the remaining assumed organizational barriers.

Findings from Interviews

These organizational assumed causes were further investigated by analyzing the interview data and comparing it with the survey results. Six structured questions were used in inquiring about the organizational causes with nine participants from MTC. Three questions examined the "busy work" or bureaucratic work cause, one question looked at organizational resources, one investigated the instructors' autonomy at work and the last examined the views of instructors on the college's strategic vision and goals.

"Busy work" or bureaucratic work not aligned with goals. There were three questions used to validate this assumed cause. The first question asked how instructors view their current range of responsibilities specified to them in their workplace. A follow-up question was asked on whether these responsibilities could affect their ability to teach effectively. Out of the nine instructors, five gave responses that suggested that their responsibilities at times were to great and these extra duties pose a challenge for them and can be very disruptive and interfere with their teaching timetable. One instructor claimed, "It is very disrupting especially when you have too much work and high number of teaching hours and teaching material to cover". Another instructor said, "I believe too much admin work is very disrupting even to administrative staff as during peak hours, at times the responsibilities are too much". He added, "I need to prepare my lesson plans and notes before hand as I have a lot to catch up especially during peak semesters".

In contrast, another instructor stated, “the key to this is time management. You need good management skills in order to work responsibly and efficiently. Don’t forget to prioritize them accordingly”. On the other hand, two instructors said the work given was manageable and the stressful part is when students have lack of motivation during lessons. One instructor claimed that the work is highly dependent on your ability to deliver the tasks in time and managing teaching times effectively. Based on these views, the results suggest a partial validation for this type of organizational cause as a majority feels that the administrative duties are disruptive to their teaching period and affect their lessons.

The third question assessed the same “busy work” organizational barrier for participants with regards to the curriculum that they were currently using. Many of these instructors were involved in the design of the curriculum and they are aware of how much the current curriculum being used is actually aligned to industry requirements. This question was designed to assess the instructor’s perception of whether the bureaucratic work in the college hinders their ability to design a curriculum that is aligned to industry needs. Based on the responses, nearly all of the participants agreed that the current curriculum that they were using was very much aligned to industrial standards. It was apparent that busy work or bureaucratic work was not a barrier in developing a properly industry aligned curriculum. One instructor said, “These programs have been developed with full collaboration with many industry personnel which is aligned to the national competency standards that is very well established”. In this respect, these responses are in line with the survey data, and the interview answers also indicate no validation for this assumed organizational barrier among MTC instructors.

Organizational lack of resources. The next question asked during the interview assessed whether a lack of resources presents an organizational barrier within the institution.

Almost all of the instructors admitted that the lack of facilities and resources were a concern in order to teach an effective competency-based training to their students. One instructor said, "There were not a lot of support provided to teach an effective CBET particularly if the equipment is outdated". In contrast, one instructor mentioned, "institutional support is there, but there is still a lack of proper equipment such as good working environment, teaching materials still remains a challenge for me". One instructor said, "its not just about facilities, you need to be properly trained in order to teach CBET". Hence, the consensus view in the interview results is comparable to the survey results and indicates some validation of this type of organizational barrier existing at MTC.

Organizational autonomy. The next question in the interview protocol was used to validate the assumed cause of lack of autonomy for these instructors within their workplace. Almost all of the participants agreed that they have enough autonomy and particularly in their teaching practice. One participant said, " I have a lot of autonomy especially in my teaching instruction. But I still need to follow guidelines provided by the college". On the other hand, one instructor mentioned, "Even though, I have full autonomy in my work especially in teaching, you still need to gain a lot of trust in order to exceed expectation from others". Based on their responses, it was concluded that a lack of autonomy is not a hindrance to instructor's performance at the workplace. In view of this when comparing to the survey data, there is a contradiction with the earlier results, suggesting that there is not a conclusive validation for this type of organizational cause.

Organizational strategic plan. MTC instructors were asked, "How do you feel about the strategic vision of the college? Does everyone understand it? " More than 7 (78%) of the participants answered negatively. Two instructors agreed that the strategic vision of the college

has not been properly translated to the middle management level. One instructor said, “The vision of the college is not clear as it keeps changing. Any improvement of schools needs to be conducted step by step so that everyone is on the same page”. Likewise, another instructor said, “ Only the top and middle management are aware of the college’s strategic vision, they should be more communication and consultation from all levels of management.” This person added, “By doing this, you will allow more people to have ownership of the vision applying the SMART principles. You will end up building a family organization”. The interview data denoted that many of the participants were not clear or aware of the existence of any college strategic vision and goals within MTC. Judging the results of both the interview data and survey results, there was a partial validation of the lack of strategic plan barrier existing within the college.

Synthesis of Results and Findings for Organization Causes

The overall results obtained from this gap study for the organizational barriers at MTC were only able to validate one of the six assumed organizational causes under variables of cultural models and cultural settings. The only assumed causes that were not validated were found to be the non-participation assumed cause. Next, the partial validated causes were found to be the attitude of helplessness, “busy work” or bureaucratic work, lack of autonomy and lastly, the lack of any strategic plan within the college. Finally, the only assumed causes that were validated based on the overall data compiled were found to be the lack of adequate resources available at MTC to teach an effective competency-based curriculum (CBC). Consequently, many of MTC instructors argued that the lack of resources and equipment in the college was one of the major factors hindering their inability to design and teach an effective competency-based curriculum.

In summary, the data from the surveys and interviews for the organizational barriers present at MTC are summarized as indicated below:

Table 14

Results of the Organizational Survey and Interview Data

Organization category	Assumed Cause	Validated	Not Validated	Explanation
Non-participation	*Cultural Models* MTC instructors were asked to share their views and opinions about their job and organizational plan		X	*Survey:* Roughly equal split on both extremes, with 35% agreeing that their views were widely accepted and 30% disagreeing. *Interview:* No question was asked to validate this
Attitudes of helplessness and hopelessness	MTC instructors viewed themselves as unimportant, as their requests, suggestions are often rejected and unsupported by the college administration	Partially ✔		*Survey*: 59% of the participants agreed or strongly agreed with not getting enough support and respected within the college administration. *Interview:* No question was asked to validate this cause
"Busy work" or bureaucratic work not aligned to goals	*Cultural Settings* MTC instructors felt that the non-instructional responsibilities hinders their ability to teach a well-designed industry aligned curriculum and become a good instructor	Partially ✔		*Survey:* Equal distribution of results where 28% agreed and 34% disagreed to the statements of the non-instructional responsibilities disrupting their teaching capacity. *Interview*: More than 55% of instructors claimed to have too many disruption caused by unnecessary administrative responsibilities affecting their overall teaching ability

Table 14, continued

Organization category	Assumed Cause	Validated	Not Validated	Explanation
Lack of resources	Many MTC instructors experienced lack of equipment and facilities to teach competency-based training (CBT) effectively	✔		*Survey:* Two items gave an in between responses. One item produced 15% of the respondents who disagreed with the statements completely. The other item gave 21% of respondents who disagreed with the statement of the readiness of the college to have adequate resources.
				Interview: 8 (89%) out of 9 instructors being interviewed admitted that the college have insufficient resources to teach an effective CBT
Lack of Autonomy	MTC instructors felt that they do not have enough autonomy and freedom to teach and effective competency-based curriculum		X	*Survey:* One item produced 4 (24%) of the participants admitted in having enough autonomy in their teaching. The remaining 5 (30%) participants disagreed completely to the statement. The other item gave only 8 (45%) responses agreed in having enough autonomy in their workplace.
			X	*Interview:* 77 % of respondents agreed in having enough autonomy in the workplace.
Lack of an effective strategic plan	Many MTC instructors felt that the college lack any strategic vision and goals that are consistent		X	*Survey:* Two items in the survey produced 53% who agreed to the college having enough strategic initiatives to reach its organizational goals
		✔		*Interview*: Total of 77% instructors admitted that the college is lacking in a strategic plan to reach its mission and vision.

Summary

The following section summarizes the validated causes based on the data derived and triangulated from both the interview and survey instruments applied in this study. Out of the sixteen assumed causes of knowledge, motivation and organizational (KMO), only two of these KMO causes were fully validated and the other remaining assumed causes were either partially validated or not validated at all.

Knowledge and Skills

In the knowledge domain all of four of the assumed causes of factual and procedural domains were partially validated due to a discrepancy between the results of the survey and interview data collected.

Motivation

The results from the survey and interview have partially validated two of the assumed motivational index of lack of active choice and the domains of lacking in self-efficacy among some of the instructors at MTC. On the other hand, the other assumed causes such as utility value and expectancy were not validated, as it was found that many MTC instructors value the importance of applying competency-based approaches in their teaching and learning. Furthermore, these instructors believe that using competency-based approaches in their teaching will help develop their student's ability to become more proficient, which in time will lead to higher employment outcomes for all of their students.

Organization

The results of data collected from both interview and survey instruments confirmed the validation of only two of the assumed organizational causes existing within this variable. This validation was found to be the lack adequate resources and effective strategic plan existing

within the college. Overall, this will affect the instructor's performance in teaching an effective competency-based education training (CBET) to their students. The assumed organizational causes of attitudes of helplessness, "busy work" or bureaucratic work not aligned with goals were found to be partially validated found within this gap analysis study. In addition, some of the instructors argued that the lack of the college's strategic vision and mission were related to the core of the institutional culture viewed as a significant hindrance for MTC to reach its performance goals. A summary of the final results of the assumed causes for all KMO variables within the college are summarized as illustrated in the table below:

Table 15

Results of list of Validated Causes from the List of Assumed Causes from Table 2 for Knowledge, Motivation and Organizational Culture

Validated Causes	Partially Validated Causes
Knowledge	Factual 1. Instructors lack of factual knowledge of the latest job listings currently in high demand in the country 2. Instructors failed to understand the meaning of the term "Performance Based Training (PBT)" 3. Instructors do not use proficiency-based approaches in their teaching Procedural 1. Instructors failed to choose correctly meaning of the term "performance-based assessment". 2. Instructors failed to differentiate between the terms performance-based-assessments and competency-based training
Motivation	Active Choice • Instructors have a lack of active choice to teach a competency-based curriculum Self-efficacy

		• Instructors do not believe they are capable of teaching competency-based training effectively in the classroom
Organization	Lack of resources • MTC instructors experienced lack of equipment and facilities to teach competency-based training (CBT) effectively Lack of strategic plan • Many instructors felt that the college lack an effective strategic vision and goals that were consistent	Attitudes of helplessness and hopelessness • MTC instructors viewed themselves as unimportant, as their requests, suggestions are often rejected and unsupported by the college administration "Busy work" or bureaucratic work not aligned to goals • MTC instructors felt that the non-instructional responsibilities hinders their ability to teach a well-designed industry aligned curriculum and become a good instructor

Case Study Question: What are the knowledge, motivational, and organizational needs of MTC instructors to enable them to successfully implement a competency-based approach in their teaching and learning?

The recommended solutions to close this knowledge, motivational and organizational gaps will be closed by implementing findings as recommended by the research literature that will be discussed further in the next chapter.

Case Study Question: What are the recommended solutions to close this gap in knowledge, motivation, and organization in order to attain 100% employment for MTC students with local employers and industries in Brunei?

There will be recommended solutions presented in Chapter 5 to ensure that by January 2016, all of the validated causes in the areas of KMO existed at MTC will address all the challenges faced by its graduates to attain employment upon six months after their graduation

CHAPTER 5

SOLUTIONS, IMPLEMENTATION AND EVALUATION

The purpose of this study was to investigate factors that will allow the Mechanical Training Centre (MTC) to reach its organizational goal in achieving secure employment for 100% of its graduates in areas that were suitable to their field of study. Clark and Estes (2008) gap analysis model was used as a procedure to minimize the gap between current performance and desired outcome by addressing underlying knowledge, motivation and organizational causes. This study was designed to validate root causes of why students were not able to secure employment based on the knowledge, motivation and organizational (KMO) aspects related to MTC faculty instructional methods of applying competency-based approaches in their teaching and learning. The expectation was to determine which causes of KMO could be validated by supporting literature reviewed to help identify possible causes and to support the design of the methodology. Surveys and interviews were used to identify the root causes of performance problems at MTC resulting in the validated causes as described in chapter four.

This chapter describes recommendations for MTC for addressing validated and partially validated causes that arose from having conducted this study. A description of each recommendation is provided, to be followed by steps for implementation. An evaluation plan is also included to ensure that each recommendation could be carried out in the most effective way.

Validated Causes Selection and Rationale

In the previous chapter, there were eleven assumed causes that were validated or partially validated and four causes that were not validated. In this section, the validated or partially validated assumed causes would be further discussed to work out the order of significance and to recommend steps, which will allow MTC to narrow its performance gap.

In the domains of knowledge, there were five partially validated causes that were found hindering instructors from achieving MTC's organizational performance goals by the year 2016. These partial validated causes were found to consist of three factual and two procedural knowledge domains. First, the factual knowledge barrier was due to their lack of knowledge about the highest demand jobs in the country. Another factual knowledge barrier that was partially validated was MTC instructors' lack of understanding of the meaning of the term "proficiency-based education training" (PBET), a finding that was in line with data which suggested that instructors do not use proficiency-based approaches in their teaching. For the procedural knowledge category, many instructors appeared to be confused with the term performance-based assessments (PBA). Some instructors seemed to fail in differentiating the meaning between performance-based assessments (PBA) and competency-based education training (CBET). These validated and partially validated knowledge causes will be addressed in the sections below.

In the motivation domains, results from this study indicated that only one partially validated cause of low self-efficacy seem to be evident among MTC faculty members. It was found that 78% of the interviewed instructors admitted to having difficulty in teaching (competency based education training or CBET) to their students. In addition, 90% of the interviewed instructors agreed that teaching CBET is very challenging even for an experienced instructor. This partially validated will be further addressed in this chapter.

For the organizational causes, it was found that two validated and two partially validated causes existed among MTC instructors. First, 89% of the interviewed instructors revealed that lack of resources is a major obstacle for instructors to teach effectively using CBET. Other partially validated causes include attitudes of helplessness and 'busy work' (or bureaucratic

work), which is not aligned to the college vision and mission. In the area of strategic planning, 77% of instructors expressed that the college lacks an effective strategic plan to reach its vision and mission.

In short, ten out of the sixteen assumed causes will be addressed, of five are related to knowledge, one is related to motivation and four are related to organizational barriers. Table 16 shows the summary of the selected causes that will be addressed in the recommended solutions offered at the end of this chapter.

Table 16

Selection and Rationale of the Validated Causes

	Category	Validated causes
Knowledge	Factual	1. Instructors lack of factual knowledge of the latest job listings currently in high demand in the country
		2. Instructors failed to understand the meaning of the term "Performance-based training"
		3. Instructors do not use proficiency-based approaches in their teaching and learning
	Procedural	4. Instructors failed to choose the correct meaning of the term to describe "performance-based assessment" (PBA)
		5. Instructors failed to differentiate between the terms performance-based-assessments (PBA) and competency-based education training (CBET)
Motivation	Self-efficacy	6. Instructors do not believe they were capable of teaching CBET effectively
Organization	Lack of resources	7. Instructors experienced lack of adequate equipment and facilities to teach competency-based education training (CBET) effectively
	Lack of effective strategic plan	8. Many instructors felt that the college lack an effective strategic vision and consistent goals
	Attitudes of helplessness and hopelessness	9. Instructors viewed themselves as unimportant, as their request and suggestions were often rejected and unsupported by administration
	"Busy work" or bureaucratic work not aligned to goals	10. MTC instructors felt that the non-instructional responsibilities hinders their ability to teach a well-designed industry aligned curriculum to industry standards and become a good instructor

Solutions for Knowledge Causes

This section will describe the proposed solutions to address knowledge barriers that have been identified in this study within the facets of factual and procedural knowledge.

Factual

Anderson and Krathwohl (2001) described factual knowledge as knowledge of specific information and details acquainted with a discipline in order to solve problems. According to Anderson, Krathwohl & Bloom (2001), two subtypes of knowledge include knowledge of terminology and knowledge of specific details and elements. MTC instructors' lack of awareness of their job demand in the country represents a factual knowledge gap, which needs to be addressed immediately. Similarly, the lack of knowledge about basic terminology related to CBET is also an important knowledge gap, which must be resolved.

Solution 1: Equip faculty with accurate data about highest demand jobs in the country.

The triangulation of data from the survey results and interview findings indicated MTC instructor's lack of factual knowledge of awareness on the latest market trends concerning the most highly demanded jobs in Brunei. Middleton, Ziderman & Adams (1993) argued that educational training is related to labour demand needs. Training in high demand vocations is important for students to receive market relevant skills and to eventually experience higher employment levels (World Bank, 2006).

On these grounds, the MTC instructors should have a clear understanding of the labor market in order to ensure our TVET training is demand-driven and meet the needs of the local employers in Brunei. This would help ensure TVET graduates at MTC receive transferable skills that can be applied across viable economic sectors nationwide. Additionally, demand driven training for

programs offered at MTC will be viewed as more cost effective when graduates attain high–demand jobs or occupation that result in higher initial salaries. In the perspective of MTC faculty, acquiring factual knowledge and updated labor demand jobs information will make programs more interesting and relevant to students and help ensure that students were actively engaged in the processes of learning (Rueda, 2011).

Equipping MTC instructors with labor demand knowledge is considered to be manageable. There have been existing examples to indicate how other governments across developed nations include labor market analysis to ensure their TVET institutions supply graduates with easily marketable skills (Prasad & Bahr, 2010). In addition, MTC instructors themselves have already been engaged in the curriculum development for the various TVET programs offered within the institution. Therefore, acquiring and incorporating updated information on the labor market demands in Brunei will be viewed as not too difficult to do and will allow MTC to offer programs that are in high demand locally. Knowing more about local industry needs will also allow instructors to design demand-driven programs that can help to prepare students with both hard (cognitive, technical) and soft (communication) job-related skills. Eventually, a more relevant, demand driven model offered at MTC will provide one of the nation's responses to fulfilling the gap in local human resource. Finally, this process will be readily supported by the Department of Economic Planning and Development (DEPD) under the Prime Minister's Office, the current national and human resource planning centre in Brunei which offers the latest information on future emerging workforce opportunities for the country.

In relation to proposed **solution 1**, the process will involve several components. One of the first processes is to form a network of industry partners as part of an advisory council committee to help inform MTC and its instructors on the ongoing needs of the local industries. A

bi-annual meeting is expected to commence in October 2015, which involves various faculty and their engagement in information sharing with two major oil and gas and business operators in Brunei. The venue for the sharing session will be the Brunei Asia Pacific Shell Learning Hub (BAPSLH), a complex area fully equipped with learning and development facilities in the Seria district of Brunei. The complex is located at a strategic location at the heart of the industrial park and the major business centre for oil and gas in the country.

The regular meetings will hope to improve the networking between MTC faculty members and the local industries, particularly in areas of understanding each other's needs through human resource needs projections, input in curriculum development and bridging any technological and knowledge gaps. According to Raihan (2004), industries are the major consumers of TVET graduates. Industry participation would be essential in the successful implementation of TVET, particularly in curriculum development and industrial attachment. Moreover, industries need to be involved in all process of specific skills and behavior development to ensure they justify the relevance of linking TVET and skills requirement (Raihan 2004).

Solution 2: Conduct professional development on competency-based education training (CBET) and its application.

The data collected from interviews and survey instruments in this study have validated that there is a lack of understanding among the instructors on the meaning of the terms `performance-based assessments' (PBA) and `competency-based education training' (CBET). The data suggested in this study revealed that not all of the instructors were aware of the usage of both of these two terms. MTC instructors' lack of factual knowledge about these terms could possibly reveal a direct impact on their students' learning process. This finding has been supported by the data,

which suggested that MTC instructors do not use proficiency-based approaches to assess their student's performance level.

Several countries such as the United Kingdom and Australia too have adopted the concept of CBET in the reform of their TVET systems. As Rueling (2002, p.15) pointed out, the approach of an "outcome-based learning" is seen as a major driver or motivator of learning for students. According to Deißinger & Hellwig (2011), using CBET approaches in teaching and learning will result in better acquisition of competencies and qualifications in the development of human capital. Applying CBET, however, requires instructors to be well versed in proficiency-based approaches in training. CBET also require teachers to prepare learners to not only "know" but "do" and in such cases, teachers must use competency-based assessments to validate learning (Adelmon 2013; Klein-Collins, 2013).

It will be imperative to secure appropriate trainers, coaches and curriculum specialists who could carry out monitoring tasks. A professional development plan will need to be developed to increase MTC instructors' knowledge of CBET teaching strategies and practices. Additional information that identifies the gaps among the instructors on their lack of knowledge on CBET must also be collected. Once diagnostic information have been collected and relevant trainers identified , MTC will able to narrow the instructors' skills and competencies gaps on subjects related to CBET. This process to identify the current position and desired goals for instructors' level of competencies and to ensure relevant professional development will be further outlined in the implementation process.

Procedural

Procedural knowledge focuses on tasks that require performance of an individual to

achieve a particular goal or set objectives. According to Byrnes & Wasik (1991, p.777) procedural knowledge is the "knowing how" or knowledge of the steps required in attaining various goals often characterized using constructs such as skills, strategies and interiorized actions.

Solution 3: Equip instructors with strategies and assessment tools for applying performance-based assessments (PBA).

The data collected in this study have validated a lack of procedural knowledge for MTC instructors about how to carry out PBA accurately. MTC instructors should not only be aware of the components of CBET, but should be able to promote the development of higher competence among students by applying appropriate PBA. Assessments thus play a major role in the concepts of teaching CBET particularly in providing clear guidance to teachers and trainers (Deißinger, & Hellwig, 2011).

On this account, MTC instructors must be able to use PBA to measure the skills and abilities of their students in relation to the particular job for which the assessment is conducted (Moral, 1997; Wood & Payne, 1998). As observed by Van der Merwe & Potgieter (2002), the advantages of PBA include the perception by individuals of inherent fairness by focusing on behavior and not personality or cultural factors. Applying PBA also cuts across cultural, gender and racial differences, perceptions, stereotypes and subjectivity (Fisher & Maritz, 1994). Thus, for the successful implementation of CBET, MTC instructors should understand how to apply PBA in their teaching to produce graduates of higher competencies as stipulated by industries.

The professional development plan will also be used to carry out this solution to increase MTC instructors' ability to apply performance-based assessments (PBA) and design rubrics for student's evaluation purposes. The coaches and curriculum experts will be able to provide

training and ongoing mentoring to MTC instructors in the implementation of PBA(s). With sufficient professional training and teaching practices, MTC instructors will develop mastery of utilizing PBA(s) for their students' evaluation. The effective use of PBA will ensure that MTC students would be engaged in deep learning, critical thinking and the development of employable skills and competencies. This could be achieved through the use of authentic real-world learning content.

Summary

For the purpose of closing the knowledge at MTC to produce graduates in attaining higher employment, three solutions have been recommended to greatly reduce and narrow the factual and procedural knowledge gaps among instructors.

- The first solution entails in improving the instructors' engagement by increase collaboration through network formation with industries, update on manpower planning, curriculum design, and bridging technological knowledge gap. Alternatively, tapping into these close industrial relationships, collecting labour market information will allow MTC to offer programs that will lead to higher employment opportunities for students.
- The second solution is to conduct awareness workshop to assess the instructor's understanding on CBET. The aim of this workshop is to increase the competency gaps of faculty of MTC and subject matters related to CBET.
- The third solution is to increase MTC instructors' procedural knowledge of applying performance-based assessments (PBA) such as designing rubrics for student's evaluation purposes. Coaches and CBET experts will be invited to provide training to MTC instructors in the implementation of CBET and PBA(s) within their training context.

Solutions to Motivation Causes

The validated cause in the area of motivation at MTC was found to be a lack of self-efficacy. In this section, some solutions will be recommended in order to close the motivational gap among MTC instructors.

Self-efficacy

As stated in chapter three, the effects of self-efficacy beliefs include influences on active choice, mental effort and how much an individual perseveres in the face of difficult situations over a period of time (Alderman, 1999; Bandura, 1994; Pajares, 1997). According to Ashton (1985, p.142), self-efficacy for teachers means a "teacher's beliefs in their ability to have a positive effect on student learning." Bandura (1997, p.3) stated that self-efficacy refers to the "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments." In the case of MTC, the lack of self-efficacy was evident as instructors admitted to being fairly new to utilizing a competency-based curriculum (CBC). Nine out of ten instructors admittedly experiencing difficulty in applying performance-based assessments (PBA) to evaluate their students' performance. For these reasons, addressing the self-efficacy beliefs of MTC faculty is important in order to close the performance gap.

Increasing the self-efficacy of MTC instructors will help them develop higher abilities, knowledge and skills necessary to implement effective and efficient CBET teaching processes (Rosenberg, Sindela & Hardman, 2004). In contrast, if the instructors' self-efficacy is not addressed, eventually the outcome will be a mediating factor in the student's acquisition of skills and knowledge and subsequent performance (Bandura, 2006, Schunk & Pajares, 2001). If self-efficacy is maximized, MTC instructors will develop higher confidence in class management, demonstrate higher levels of lesson planning, focus on higher standards and spend more time on

interactive instruction within the classroom settings. Additionally, increasing the instructor's self-efficacy could also lead to the implementation of other innovative methods of teaching and experimentation with different types of instructional materials (Allinder, 1994; Guskey, 1988; Stien & Wang, 1988). Similarly, this will create a positive impact to MTC instructors and motivate them to train students to meet high standards of learning.

Solution 4: Increase instructors' confidence in using CBET by promoting effective leadership strategies.

According to Bandura (1997) self-efficacy is created by four main sources of information: (1) enactive mastery experiences often viewed as authentic successes in carrying out particular tasks; (2) vicarious experiences, referred to observational experience provided by social models; (3) verbal persuasion emphasizing encouragement and evaluation feedback expressed by others and (4) physiological and affective states that include experiences such as tension and stress. The recommended solution is to apply Bandura's (1997) framework to ensure that MTC instructors were adequately supported. This should be carried out as part of the professional development plan.

For the enactment experiences and vicarious influences, MTC instructors' will be given opportunities to develop teaching mastery by applying a competency-based curriculum (CBC) and observing experts through a structured professional development plan. This should include providing practice opportunities, peer-coaching and mentorship with the assistance of outside coaches and experienced instructors at MTC. In the verbal persuasion aspect, encouragement and corrective feedback regarding their teaching skills, will help MTC instructors develop self-confidence in applying CBET. Verbal persuasion could also involve MTC top management and instructors with long-term teaching experiences sharing their personal teaching mastery

experiences during dialog sessions. According to Hipp (1996), good principals exhibit leadership that influences behaviors related to self-efficacy. Additionally, there should be opportunities for MTC instructors to build a collective efficacy through sharing with each other their own positive experiences. Finally, MTC instructors will increase their self-efficacy through the provision of opportunities to reflect on and discuss their perceived physiological reactions such as fatigue and stress and other emotions. The opportunity sharing affective experiences among colleagues will allow for reflection on their development which will help raise instructors' self-efficacy, and which is also aligned to competence-based approaches in teaching and learning (Ritzen & Kösters, 2002; Struyven & De Meyst, 2010). Ultimately, MTC instructors will develop higher self-efficacy if these components were built into activities that are embedded within the staff development plan.

Summary

As stated above, this was one of the solutions proposed to narrow the motivational gaps at MTC. The data revealed that MTC instructors were less confident to conduct CBET in their lessons. The solution proposed will lead to increasing the faculty's self-efficacy, or personal beliefs about their ability to successfully teach a competency-based curriculum (CBC). Moreover, MTC instructors will develop the confidence through staff development activities for attaining higher levels of teaching mastery through applying Bandura (1997) self-efficacy framework.

Solutions to Organization Causes

Organizational beliefs and practices that were not aligned to the goals within any system can impede the performance of stakeholders in that system (Gallimore and Goldenberg 2001). The gap in this study found that the work of faculty members at MTC in terms of using CBET is

impeded by a lack of resources, the absence of a clear strategic plan, attitudes of helplessness and hopelessness and "busy work" or bureaucratic work that is not aligned to institutional goals. The following solutions aim to address the organizational causes and will be discussed further under the constructs of cultural models and cultural settings.

Cultural Models

Rueda (2011) explained that cultural models were shared mental schemas of how the world works or ought to work including cognitive and affective domains of human behavior. Leaders play an important role in establishing the cultural models of any organization, including how change ought to occur. According to Kerr (1984), organizational change will not occur if there is no buy-in from individual with positional power. In addition, several studies have indicated that change was facilitated through the support of individuals with power and positions (Birnbaum, 1991a; Eckel, Hill, Green, and Mallon, 1999; Kerr, 1984). Specifically, organizational change was created due to environmental conditions (Levinthal, 1991) or derived from strategic decision making. On this account, MTC top management should recognize the importance of providing full support for any change management to occur within the institution.

Solution 5: Promote collaborative leadership among faculty members.

The promotion of collaborative leadership is recommended as a proposed solution to resolve the feeling of hopelessness and helplessness among MTC instructors. Collaborative leadership should be enhanced to ensure instructors' opinions and ideas were valued. Similarly, collaborative leadership has the potential to create significant impact by increasing instructors' levels of commitment, empowerment and engagement (Gardenswartz and Row, 1994; Kotter, 1996). The implementation of a collaborative leadership will support MTC to create aligned shared values to enhance the overall organizational performance. Also, the impact of bottom-up

leadership will allow instructors to foster visions and realize the importance of accomplishing goals and mission of the college.

The recommended solution begins by having an effective principal-instructor interaction with MTC faculty in the area of instructional support and management. An effective instructional leadership should focus on establishing a pattern of dialogue with instructors to promote reflection on their teaching and encouraging and modeling a culture of ongoing professional growth. As noted by Kezar & Eckel (2002) the importance of mechanism of collaborative leadership is to develop people's leadership capacities of creativity for successful institutional direction. The MTC principal can form a continuous dialog to encourage instructors to critically reflect on their ongoing professional practices and development. This could take the form of regular individual consultations involving suggestion making, feedback, modeling and the use of inquiry-based strategies. Furthermore, instructors will be involved in many of the decision making process together with top management at MTC.

Cultural Settings

Cultural settings were visible, concrete everyday manifestations of underlying cultural models in an organization (Gallimore and Goldenberg, 2001). Sarason (1972) pointed out that cultural settings appear "whenever two or more people come together, over time, to accomplish something" (p.1). The two causes related to the cultural setting at MTC found in this study were a lack of resources and the need for greater strategic planning.

Solution 6: Increase budget in the procurement of more equipment and training facilities for CBET.

This gap study has provided evidence that there were inadequate resources to teach effectively using CBET at MTC. It was found that 90% of MTC instructors highlighted the need

to improve the current physical resources and equipment to teach CBET effectively. Policies and performance expectations within an organization should be supported with enough resources to overcome shortcomings and lack of adequate resources. These challenges were found to be one of the major barriers that hinder people from reaching their performance goal within an organization (Clark & Estes, 2008). Therefore, the recommended solution in this case is to increase the funding allocation to all MTC departments in order to adequately equip instructors with appropriate training, curricula and other supplies needed to effectively carry out CBET.

Adequate resources have been perceived to be relevant in TVET. According to Bolina (1996), Technical Vocational Educational Training (TVET) systems were often more expensive due to their high capital intensive nature as classes were smaller with lower student to instructor ratio. Gupta (2007) pointed out, however, that adequate facilities should be provided to teachers for training in order to utilize the experiences of institutional training. Holvikivi (2007) also observed that institutions must supply technical equipment and learning materials that were relevant to industrial applications. As Brown (2003) noted, the success of students is highly dependent on their ability to engage with tools and technologies of a given industry.

In light of this, MTC management should prioritize the need to procure better teaching equipment for effective lesson delivery and increase the fiscal budget allocated to each department at MTC. Likewise, each head of department at MTC will need to come up with an effective strategic and execution plan for academic budgeting that takes into account the required resources for effective CBET delivery. Each department will optimize their budget planning, resources allocation included in the budget proposals in accordance to the steps as indicated below:

1. identify the additional resources and actions that were needed in order to more adequately

support faculty in teaching CBET;

2. identify the cost of proposed action plans and needed resources for teaching CBET;
3. include data in the proposal such as student population, student's attrition, number of programs offered and human resource planning;
4. ensure conformity to the financial regulations, which includes stating priorities and rationales for the procurement of equipment exceeding USD100,000; and,
5. include plans to assess budget performance based on cost-effectiveness/cost-benefit analysis and efficiency of spending.

After these steps were carried out, MTC finance committee will review, recommend, and revise each budget proposal with the executive committee. The research committee at MTC will work closely with the respective MTC departments to compile information and data on student assessment outcomes. This unit will provide outcome reports to support all initiatives to ensure each instructional program and student support services were aligned to MTC departmental plan. MTC executive committee will then analyze the report and include each assessment together with the departmental budget proposal for further review before any final decisions can be made. Accordingly, after the executive committee at MTC approves the budget proposal, a tentative budget is prepared and submitted to the Board of Governors at the Institute of Brunei Technical Education (IBTE) headquarters. A final budgetary master plan will be prepared by the end of February of each year before the approval of the next college fiscal year commencing every 1st of April of the upcoming year.

Solution 7: Facilitate strategic planning by college management.

The interview and survey data gathered in this study indicated that instructors faced challenges from the lack of strategic planning within MTC management. The recommended solution is to

develop a plan encompassing strategic, operational and tactical levels at MTC. In the current global climate, there is a stronger need to apply strategic planning process in many higher education institutions around the world. Globalization impacts such as increasing enrollments, declining public funding, and demographic changes among students were some of the emerging challenges facing higher education (Lerner, 1999). Benjamin & Carroll (1998) suggest that higher institutions need to "make major structural changes in their decision-making systems...and reallocate scarce resources" (p. 21).

MTC is currently undergoing a transformation process and ensuring its alignment to the Ministry of Education (MOE) goals by focusing on addressing unemployment in Brunei. Moreover, MTC is one of the seven colleges under the management of the Institute of Brunei Technical Education (IBTE), a publicly funded higher education institute. The goals of IBTE are to promote academic innovation under a new corporate governance model. This was mandated by Ministry of Education, Brunei to encourage TVET strategic alignment of programs offerings by each college under IBTE. In addition, IBTE will ensure a continuous supply of national skilled manpower demands within the country. Therefore, the timing and conditions were ideal for MTC to develop a strategic plan that could support and guide faculty and other stakeholders in the college more effectively.

A highly educated and skilled workforce will help to ensure all government investments will benefit and build a modern Bruneian economy that creates quality employment opportunities, strengthening both public-private sectors. Complementary to this, MTC is required to be more strategic, particularly in the aspect of offering demand-driven TVET programs. Moreover, all of the discussion and planning with MTC instructors will allow the integration of plans by each department to increase employability of graduates.

A team leader for each department will be appointed by the MTC principal to lead the process of execution of each departmental strategic objective. To illustrate, each MTC department will establish targets of a minimum increase of 20% of successful graduate work placement. These team leaders will then prepare a comprehensive employability strategy to reach the main goal, which will include mission, objectives, SWOT analysis, curriculum and instructional strategies, resource planning and timelines per each department. In addition, the research unit at MTC will collect all student tracer studies data, alumni and keep track of all previous graduates and conducting a qualitative study, which examines their present career status and salary levels of students. A final subsequent report will be compiled to measure results against each employability strategic goal for comparative data, study, and assessment of methods to be submitted to MTC top management. Key aspects of successful change management include planning, assessment, incentives, leadership, strategy, restructuring and reengineering (Brill and Worth, 1997; Carnall, 1995; Huber and Glick, 1993). Consequently, MTC will undergo a transformational activity, which includes implementing a management of change process

MTC management will ensure that the college's strategic goals could be realistically achievable through the involvement of every level of management within the college. Cameron and Tschichart (1992) stated the importance of collegial forms of decision-making, information sharing and other cultural or cognitive processes in order to foster organizational change. Hence, the meaningful engagement of faculty members at MTC will also be crucial for the strategic planning process leading to successful operational accomplishments. More importantly, the support of senior leadership will be essential in promoting participation by all stakeholders within the planning process so that they were not seen as the sole drivers for the strategic plan (Sanaghan & Hinton, 2013). In short, MTC top management should be transparent in pursuing

the organizational goal of widespread engagement among all key stakeholders, particularly the teaching instructors.

Summary

The objective of this study in narrowing the MTC organizational gap is to ensure its graduates attain employment by January 2016. Three solutions were recommended. These solutions were summarized to include both cultural models and settings of MTC organizational constituents.

1. The first solution is to promote collaborative leadership among MTC instructors. Thus, MTC instructors will influence more people to share the institutional goals of increasing student's employability over a long term period.
2. The second solution is to increase MTC departmental budget to invest more in better equipment and facilities encompassing high capital investment costs aligned to ensure each programs were conducted effectually for CBET. Hence, this high capital investment is critical in order to close this organizational gap at MTC.
3. The third recommendation is to apply an employability strategic planning process at each MTC department. Hence, it is also important to develop a clear overall strategic planning process to achieve MTC's vision and goals for all stakeholders in the long run.

Implementation Plan

An implementation plan will be developed to integrate the knowledge, motivation and organizational solutions that have been described above. A summary of the validated causes, solutions, and target activities that were being recommended in order to close all of the performance gaps is provided in Table 17.

Table 17

Summary of KMO Causes, Solutions and Implementation of the Solutions

Causes	Solutions	Implementation
Knowledge		
Instructors posses low level of knowledge of the latest job listings currently in high demand in the country	1: Equip faculty with accurate data about highest demand jobs in the country	• MTC principal will assign instructors to collect, organize, data, facts and information for manpower planning starting October 1st 2015
Instructors were not familiar with the terms competency-based education training (CBET) and its teaching application	2: Conduct professional development on competency-based education training (CBET) and its application	• From 1st September 2015 MTC management will hire a trainer or coach to provide in house training/workshops for all faculties for the familiarization and practical application of CBET
Instructors failed to differentiate between the meaning of the terms used to define CBET and PBA Instructors do not know how to use proficiency-based approaches in their teaching and learning	3: Equip instructors with strategies and assessment tools for applying performance-based assessments (PBA)	• From September 1st 2015 MTC will develop a professional development plan to increase faculties ability to apply performance-based assessments and design rubrics for student evaluation purposes.
Motivation		
Instructors do not believe they were capable of teaching CBET due to low self-efficacy	4: Increase instructors' confidence using CBET by promoting effective leadership strategies	• By October 29th 2015 MTC principal will ensure instructors acquire skills and knowledge of teaching a CBC. They will develop confidence through applying Bandura (1997) self-efficacy framework as part of the professional development plan in attaining higher levels of teaching mastery

Table 17, continued

Organization		
Instructors viewed themselves as unimportant, as request and suggestions were often unsupported by MTC administration	5: Promote collaborative leadership among faculty members	• MTC principal will exhibit a more decentralized leadership approach in dealing with instructors for the promotion of collaborative leadership
Instructors do not have adequate training equipment and other physical resources to teach competency-based education training (CBET) effectively	6: Increase budget in the procurement of more equipment and training facilities for CBET	• By November 5th 2015, MTC instructors to create a proposal submitted to top management as inputs in the formation a budgetary master plan prepared before the next fiscal year before 1st April for the upcoming year
Instructors felt that the college lack an effective strategic vision and consistent goals Instructors felt the non-instructional responsibilities hinders their ability to teach an industry aligned curriculum	7: Facilitate strategic planning by college management	• From September 19th 2015 MTC instructors will create a comprehensive strategic plan outlining mission, goals in order to increase student's employability by December 13th 2015. Team leaders will be appointed by the principal to lead the targeted goals of increasing at least by 20% by December 31st 2015 • By November 19th 2015 MTC principal will ensure the human resources are adequate to avoid instructors do other administrative duties not directly related to their teaching.

Knowledge

For the knowledge solutions, MTC instructors will be assigned to collect, organize, data, facts and information of the latest market trend and job availability for manpower planning by 1st October 2015. Starting in the fall semester of 2015, MTC will organize a series of engagement sessions with industries, employers, DEDP from the Prime's Ministers Office in Brunei to provide data to produce graduates who can develop career pathways and participate in industrial attachment within their vocation. Consequently, by February 1st 2015, all graduates will have sufficient work placements for job securement after completing heir training at MTC. In order to address the procedural knowledge gap, by 1st September 2015, MTC will hire a trainer or coach to provide in house training/workshops for all faculty for the familiarization and practical application of CBET such as developing rubrics in performance-based assessments for student's evaluation. By December 2015, all relevant MTC instructors will be able to demonstrate skills and competencies in applying rubrics as a form of assessments included within their lesson plans.

Motivation

In order to narrow and eventually close the self-efficacy motivational barrier, the objective is to develop high level of confidence by achieving teaching mastery in teaching CBET and its assessment practices. First, By October 29th, MTC will focus on teacher leadership training to boost faculty's morale through proper training for the acquisition of knowledge and skills of teaching a competency-based curriculum. Second, instructors will be able to develop confidence through professional development that is based on Bandura's (1997) self-efficacy framework as part of the effort to facilitate higher levels of teaching mastery.

Organization

In order to address MTC organizational barriers, the MTC principal will first apply a more decentralized approach in managing the college to promote collaborative leadership. Second, by November 5th, a departmental budget proposal will be prepared by instructors to procure new equipment and facilities for CBET. The departmental budget will be part of a budgetary master plan prepared before the next fiscal year before the 1st of April 2016. Third, MTC top management will set clear goals for the purpose of creating a comprehensive strategic plan by December 13th, 2015, particularly aligned to increasing students' employability. In addition, by September 13th, team leaders will be appointed to coordinate with other teams for the successful implementation of targeted goals and objectives as agreed by each MTC department. These various MTC departments will set specific targets and develop strategies to increase student's employability before end of December 2015. Fourth, by November 19th 2015, MTC management will ensure that the human resources are adequate in the college to prevent instructors from having to do other administrative duties not directly related to their teaching. This will greatly support their day to day tasks by eliminating any unnecessary administrative duties assigned to them by the management. Furthermore, instructors will able to focus more on lesson preparations and apply more innovative teaching practices to maximize their student's outcomes. Table 18 outlines the organizational goal, specifically allocated by short-term goals aiding to achieve the main goals of MTC.

Table 18

Outline of Organizational Goals, Cascading and Performance Goals

Organizational Goal: By January 2016, 100% of all students who graduate will secure jobs within six months after graduation		
Goal 1: By January 1st 2015, MTC instructors will highly proficient in teaching CBET and designing rubrics to measure student's performance	**Goal 2:** By October 29th 2015 MTC principal will provide leadership training to enhance instructor's leadership skills.	**Goal 3:** From September 19th 2015 MTC instructors come up with a comprehensive student employability strategic plan outlining, mission, goals, environmental analyses by January 1st 2015
Cascading Goal 1: Instructors will develop a training for trainers workshop to reach out to other instructors in teaching CBET and using PBA approaches by 1st February 2016	**Cascading Goal 2:** A leadership forum will be conducted between February to March 2016 attend by all instructors to learn leadership skills and sharing acknowledgement of good practice	**Cascading Goal 3:** A task force will be created to develop, monitor, evaluate graduate employment metrics and explore evidence to asses the outcomes of the employability strategies
Performance Goal 1: By January 2016, at least 80% of instructors at MTC will use rubrics included in their lesson plans by applying performance-based assessments to evaluate their students by March 2016	**Performance Goal 2:** By January 2016, 80% of instructors will present their work and provide evidence of CBET and its approaches in all teaching and learning	**Performance Goal 3:** By January 2016, MTC instructors would have submitted a proposal to the executive committee as inputs in the formation a budgetary master plan
Performance Goal 4: By January 2016, MTC would have undergone in house training/workshop by a curriculum specialist, trainer to ensure faculties become well-versed on CBET and its practical application	**Performance Goal 5:** By January 31st January 2016, MTC principal exhibit a more collaborative leadership approach in college management for better transparency and bringing faculties involved in various decision-making process	**Performance Goal 6:** By January 1st 2016, MTC faculties would have undergone the Bandura (1997) self-efficacy framework to develop their confidence in teaching CBET

The next section will outline an assessment procedure to indicate signs of success and measure the impact of the implementation plan depicted in Table 17. Each step will require systems to measure results, monitor progress, and compile management information, ensuring successful implementation plan if it is carried out effectively. Additionally, assessment tools will be employed to track progress to measure deliverables. A final review of the work accomplished for each goal will be compiled and submitted to MTC principal for additional feedback.

Evaluation Plan

The main purpose of designing the KMO evaluation plans in applying the proposed solutions is to measure the impact after applying the employability strategic plan at MTC. Hence, any impact of any training conducted in applying a strategic plan would be a form of evidence of the effectiveness and relevancy in a long term plan. The measurement of any form of evidence of any success or failure applied is to provide evidence of any reduction of the performance gap at MTC. Specifically, all data collection methods of survey instruments, interview protocols would be used to measure the total percentage of MTC graduates attaining employment over a longer period of time. Kirkpatrick's Four – level Training Evaluation model will be used to guide the assessment of implementing this proposed solution. There are four levels of evaluation include: 1) Reaction (immediate personal feedback); 2) Learning or Performance (what did they learn); 3) Transfer of Behavior (the ability to demonstrate skills in their work) and 4) Result (whether the gap is closed).

Level 1: Reaction/awareness

The objective is to improve MTC instructor's abilities to increase their students' employability over a period of time. The measureable goal would be to obtain feedback from instructors based on their subjective personal reaction after attending the strategic planning

workshops. At this level, an evaluation will determine whether these instructors were satisfied by any of these proposed solutions. The evaluation plan will be conducted by January 1st 2016.

A survey instrument will be introduced to measure this reaction level of instructor's satisfaction during the end of the strategic planning workshops. This will enable instructors to provide feedback on the effectiveness of the workshops and to test whether the goals and objectives of the training were accomplished. The survey forms distributed will use a five-point scale to assess their response: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. MTC instructors will answer the survey questions anonymously. The survey will provide MTC instructors an opportunity to write their comments or suggestions on ways to improve the proposed solutions. This will be a post-only one-shot assessment.. In short, this evaluation level process should be generally fast, easy and inexpensive form of measuring their feedback, which has an important consequence for the next learning process (level two). Although positive reactions by the instructors do not guarantee learning, negative ones would certainly minimize the possibility of learning. To illustrate, an example of the survey form is as follows:

Please circle the number that represents your reaction after undergoing the strategic planning workshop:

1. I am very satisfied with the strategic planning workshop.
2. It is very important to apply the strategic planning in order to improve the students' employability.
3. The strategic planning workshops provided were very relevant to my work.
4. I manage to capture the entire concept ideas shared during the strategic planning workshop.
5. I enjoyed the training session and felt that the workshop is useful for me in future.

Level 2: Learning

The second level of evaluation under the Kirkpartick model is on measuring the learning aspect of participants. According to Kirkpartick (2006) participants will acquire the intended knowledge, skills, attitudes, and confidence, commitment based on participating in the training activity. The acquisition of knowledge attained by MTC instructors will be measured under this evaluation level after learning how to design student's employability strategic plan. MTC faculty will have the necessary skills and knowledge in designing the strategic objectives for implementation as indicated in the strategic planning document. A pre (before) and post (after) measurement test will be directed to move beyond the instructor's learning satisfaction level. This level attempts to assess MTC instructor's advancement either in knowledge, skills and attitudes particularly in designing the employability strategic objectives and goals for their students. The methods of measuring this level would range from either formal to informal testing to each team assessment; survey, interviews or observations used to measure the instructors' learning level after the training.

After having attended professional development, MTC instructors would have achieved the skills to create their own strategic objectives to increase their student's employability depending on their individual trade or discipline. The purpose of measuring this learning level is to validate the learning objectives of the training being provided. These learner assessments were created to allow a judgment to be made about MTC's instructor's performance personal capability. The two parts of processes in measuring this learning level would be the gathering of information or evidence (testing the learner) and judging of the information (representation of data). This assessment level should not be confused with evaluation. According to Tovey (1997), this assessment level is more geared towards measuring achievements of the individual learners,

while evaluation is about the whole learning program. In the case of MTC, two types of surveys will be administered, first before training (pre-test) and second, a survey given out at the end (post-test) to assess the amount of learning that has occurred after undergoing the training. Similarly, both survey forms will use a five-point scale to assess the response to measure their knowledge, skills and attitudes to include (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). Three sample questions included in the second (post-test) survey instrument are:

1. I have learned how to develop my own employability strategic planning.
2. I have acquired new skills of how to execute the strategic objectives to increase my student's employability.
3. I am very confident in my ability to design my own strategic objectives for future purposes.
4. I believe it is important to create my own strategic objectives particularly in professional career.

Level 3: Transfer

This level is the most challenging one to be measured most effectively. It measures the learning transfer that has occurred on MTC instructor's behavior after undergoing the training program (Kirkpartick, 2006). According to Clark & Estes (2008), this level measures how the program or training continues to be effective after it was implemented. This is a long-term activity that will take place weeks or months after the initial training. Additionally in the trainer's perspective, this is a true measurement of the effectiveness of the training program. This evaluation level measures MTC instructor's learning capability to perform their newly acquired knowledge and skills while on the job. This third level attempts to answer the question, "Are instructors actually using their newly acquired skills on their job?" The best method to measure

this behavioral level would be to conduct document analysis (review of current syllabus), observations and interviews over a period of time. More importantly, repeated evaluation should be conducted at appropriate intervals. To carry out this assessment level, instructors at MTC will be randomly selected to be surveyed and interviewed. The interview protocols may include questions such as:

- Are you still using the employability strategic plan that was formed during the strategic planning workshops?
- Are you able to teach others new knowledge, skills or attitudes of other types of strategic planning objectives to other people?
- Are you aware of changed behavior in your teaching?

An important aspect to be recognized would be that behavior will only change if the environmental conditions are favorable. Learning could have taken place during the training sessions, but if the organizational culture were not conducive to behavioral change, MTC instructors would not be able to apply what was learned after the training period.

Level 4: Results

The desired outcome to be measured in the results level is whether or not the organizational global goal was reached in order to close the performance gap at MTC and if 100% of MTC graduates would be able to secure jobs within six months after their graduation. The assessment of this result will indicate whether the implementations of solutions were effective and if the employability strategies implemented have enabled MTC students to become more marketable. Student data on job placement will be collected. In addition, an employer satisfaction survey form will be administered to measure the employer's satisfaction level with

MTC graduates by January 2016. A one-time survey will be administered to local employers with questions that include:

1. I am very satisfied with MTC graduates.
2. I will employ any student from MTC to work in my company.
3. I believe the training conducted in MTC is aligned to industry requirements.

In short, the assessment conducted will measure the final impact in order to close the organizational performance gap at MTC. However, level four evaluations are difficult to measure and correlate with training. For example, the increase in MTC graduates could be attributed by several external factors such as economic growth or foreign direct investments in Brunei. This may not be directly correlated to the recommended solutions in this study conducted at MTC. Nevertheless, a tracer study will be conducted to track the status of MTC graduates after one year. This would be a strong indication to validate whether any performance gap has been reduced or closed in the upcoming year.

In conclusion, Kirkpatrick's evaluation model will provide a way to measure the outcomes of the recommended solutions.. Any mid-course corrections in performance can be made throughout the duration of the implementation process to ensure the impact is beneficial and sustained over a period of time.

Strengths and Weakness of the Approach

The gap analysis framework applied in this study will assist the institution to reach its organizational goal by January 2016. The approach will help to identify the organizational problems and provide MTC with clear solutions, goals and measurable outcomes. One of the major strengths of applying this framework is the ability to customize the process and tailor it to address the institutional needs. The data collected were based on actual responses from MTC

instructors to find the root causes of the performance problems as identified in this study. The solutions suggested in this study were recommended by considering the stakeholders at MTC carefully. In addition, the gap analysis framework will help MTC reach its own specific organizational goals in a timely manner.

However, the gap analysis approach does have its drawbacks. One of challenges is the time and effort required to analyze each knowledge, motivation and organizational barrier to address each domain and apply the recommended solutions accordingly. In the fast changing world of technical education, where policymakers and decision makers must respond to the immediate needs to address concerns, applying this gap analysis study may not be feasible.

Another drawback are the external factors such as the political environment and other complexities that constantly change, which could represent other root causes of all the validated performance problems existing within the institution. These political and environmental factors are outside the scope of this gap analysis approach. These external considerations, however, may have affected the stakeholders' perceptions, which could have a significant impact on final data collected from the survey and interviews. In this view, the solutions that were recommended may not be relevant for solving other important issues and problems linked to external influences. Hence, diagnosing other performance problems in the organizational context becomes essential as the gap analysis cycle continues.

Limitations

There were constraints and limitations that may have affected the final results of this study. The first limitation was the low response rate for the survey instruments. There was only a thirty-four percent response rate, which suggests that not all of the instructor views may have been taken into account in the study. Furthermore, the questionnaire for the study was distributed

during the end of a semester when instructors were busy preparing exam questions, which may be the one of the causes for the low response rate. The second limitation was the little amount of time MTC instructors spent in responding to each item on the survey. It was uncertain whether these participants had provided enough thought in answering each item, which may have affected the overall accuracy of the responses. The discrepancy of results gathered from the survey and interview protocols also raises speculation that the level of proficiency in English of the participants was not sufficient to respond to all of the questions. Some of the instructors may not have provided the correct responses due to the lack of understanding of some of the terminology used in the survey instrument. Finally, some of the participants who were new to MTC, may also lack the knowledge and experience to respond to all of the questions appropriately.

Future Research

A continuation of this gap analysis study could be continued to investigate the opinions of other key stakeholders such as MTC administrators, who play a significant role in ensuring that goals to increase graduates' employability can be realized. Further gap analyses would also help the Institute of Brunei Technical Education (IBTE) to accomplish its key performance indicators under the grand initiative of the Ministry of Education in Brunei. MTC is only one of the seven colleges under the governance of IBTE. The other six colleges should also implement similar employability studies using the Clark and Estes Gap analysis KMO framework. For example, a study that investigates the causes of problems related to the students with low socio-economic backgrounds could be useful in understanding the unique challenges these graduates face in attaining employment. To understand the causes of other problems, new survey instruments and interview protocols will be helpful in gathering data. However, additional

mechanisms, such as observations or focus groups, may also be needed to pinpoint genuine causes for the occurrence of these problems.

Conclusion

Solving unemployment problems has become a high priority for the Brunei Government in recent years. In the era of globalization, it has become a public policy to address the concerns of unemployment for the future stability and economic growth of Brunei and to avoid other negative social consequences in the long run. MTC is one of the leading TVET institute in Brunei and as a source of highly skilled graduates for the labor market in both private and public sector. MTC plays an important role in providing requisite skills and competencies to youth and to address the needs for Brunei's fast growing economy and society. The rising number of unemployed youth, however, has indicated signs of weakness in the current strategies, regulations and policies of corporate and government entities in Brunei. Hence, this is a call for all private and public agencies to collaborate and help tackle this growing concern before it propagates into a larger social issue in the future.

There was no doubt that stronger competency-based education training (CBET) would benefit all learners in TVET systems as recommended in this study. Hopefully, the planned strategies would create better understanding among MTC key stakeholders of how instructors can develop a more robust, competency-based teaching approach. To conclude, applying CBET more effectively would enable instructors to produce graduates who are well prepared for a competitive employment environment and to further the development of human capital in Brunei.

REFERENCES

Abrokwa, C. K. (1995). Vocational education in the Third World: Revisiting the debate. *The Vocational Aspect of Education. 47* (2), 129–139

Adelman, C. (2013, June 6). Competence, technology, and their discontents. *Inside Higher Ed*. Retrieved from http://www.insidehighered.com/views/2013/06/06/higher-ed-discovers-competency-again-essay

Alderman, M.K. (1999). Motivation for achievement*: Possibilities for teaching and learning.* Mahwah, New Jersey, Lawrence Erlbaum Associates.

Allinder, R. M. (1994). The relationships between efficacy and the instructional practices of special education teachers and consultants. Teacher Education and Special Education, 17, 86- 95.

Anane, C. A. (2013). Competency based training: quality delivery for technical and vocational education and training (TVET) institutions Retrieved from http://www.erint.savap.org.pk/PDF/Vol.2(2)/ERInt.2013(2.2-14).pdf

Anderson, L. W., & Krathwohl (Eds.) (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* New York: Longman. Retrieved from http://www.celt.iastate.edu/pdfs-docs /teaching/RevisedBloomsHandout.pdf

Arulampalam, W., Gregg, P., & Gregory, M. (2001). Unemployment scarring. *Economic*

Journal, *111*(475), 577-84.

Assaad, R., & Levison, D. (May, 2013). Employment for youth - A growing challenge for the global economy. *High Level Panel on the Post-2015 Development Agenda Employment and Economic Growth*. Retrieved from http://www.post2015hlp.org/wp-content/uploads/2013/06/Assaad-Levison-Global-Youth-Employment-Challenge-Edited-June-5.pdf

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior, *4,* 71-81. New York: Academic Press. (Reprinted in H. Freidman [Ed.], *Encyclopedia of mental health*. San Diego: Academic Press, 1988)

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, 1175-1184

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.*

Englewood Cliffs, NJ: Prentice Hall

Bandial, Q. A. (May 16th, 2011). Unemployed numbers may be higher than registered. *Brunei Times*. Retrieved from http://www.bt.com.bn/news-national/2011/05/16 /unemployed-numbers-may-be-higher-registered.

Beevers, B. (1993). Competency-based education training in TAFE: Rhetoric and Reality. *In Competencies: The Competencies debate in Australian Education and Training*, 89-108

Bell, D.N., Blanchflower, D.G. (2011): Young people and the Great Recession, Oxford

Review of Economic Policy, 27(2), 241-267.

Bennett, M. J. (1993). Towards enthnorelevatism: A developmental model of intercultural sensitivity. In M. Paige (Ed.), *Education for the intercultural experience* (pp. 21-72). Yarmouth, ME: Intercultural Press

Ashton, P. (1984). Teacher efficacy: A motivational paradigm for effective teacher education. Journal of Teacher Education, 35 (5), 28- 32

Bandura, A. (2006). Guide for constructing self-efficacy scales. *Self-efficacy beliefs of adolescents*, *5*(307-337).

Bandura, A. (1997). Self-efficacy: *The exercise of control.* New York: W.H. Freeman and Company.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], Encyclopedia of mental health. San Diego: Academic Press, 1998)

Benjamin, R. & Carroll, S. J. (1998). Breaking the social contract: The fiscal crisis in California higher education. RAND: Council for Aid to Education. (CAE-01-IP).

Biavaschi, C., Eichhorst, W., Giulietti, C., Kendzia, M. J., Muravyev, A., Pieters, J., ... & Zimmermann, K. F. (2012). Youth unemployment and vocational training. Retrieved

from http://ftp.iza.org/dp6890.pdf

Birnbaum, R. (1991a). *How colleges work: The cybernetics of academic organization and leadership.* San Francisco: Jossey-Bass.

Blanchflower, D. G., & Freeman, R. B. (2000). *Youth employment and joblessness in advanced countries.* University of Chicago Press.

Bolina, P. (1996). Financing vocational education and training in developing countries

Bowden, J., & Masters, G. N. (1993). Implications for higher education of a competency-based approach to education and training.

Brill, P. L., and Worth, R. (1997). *The Four Levers of Corporate Change.* New York: American Management Association.

Brown, B. L. (2003). *The benefits of career and technical education: Trends and issues alert.* ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, OH. Office of Education Research and Improvement, Washington, DC. ED 481 326.

BruDirect. (September 16th, 2014). JPKE released statistics on employment, drops in unemployment rate. Retrieved from http://www.brudirect.com/0-national/national/national-local/item/9655-jpke-released-statistics-on-employment-drops-in-unemployment-rate

Brunei Times. (February 5th, 2014). MOE targets 80% cut in jobless rate. Retrieved from http://m.bt.com.bn/news-national/2014/02/05/moe-targets80-cut-injobless-rate

Byrnes, J. P., & Wasik, B. A. (1991). Role of conceptual knowledge in mathematical procedural learning. *Developmental Psychology, 27*, 777-786. doi: 10.1037//0012-1649.27.5.777

Cameron, K. S., and Tschichart, M. (1992). Post industrial environments and organizational effectiveness in colleges and universities. *Journal of Higher Education, 63*(1).

Cameron, K.S., & Ettington, D.R. (1988). *The conceptual foundations of organizational culture*. Higher Education: Handbook of Theory and Research, (356-396). New York: Agathon

Carnall, C. A. (1995). *Managing Change in Organizations* (2nd ed.). London: Prentice Hall

Cheong, D., & Lawrey, R. (2009*). A study of unemployment issues among registered job seekers in Brunei Darussalam*. The Centre for Strategic and Policy Studies Brunei Darussalam.

Chung, Y.P. (1995). Returns to vocational education in developing nations. In M. Camoy (Eds.), International encyclopedia of economics of education. Oxford, UK: Pergamon.

Clark, R. E., & Estes, F. (2008). *Turning research into results: A guide to selecting the right performance solutions*. Atlanta GA: CEP Press

Clark, R. E., & Estes, F. (2002). *Turning Research Into Results*. Atlanta: CEP Press

Condly, S. J. (1999). Motivation to learn and to succeed: A path analysis of the CANE model of cognitive motivation. Unpublished Thesis., University of Southern California

Cooper, J. L. (1995). Cooperative learning and critical thinking. *Teaching of Psychology, 22*(1), 7-8

Cooper, J. W. (2006). Journal writing in career and technical education: A tool to promote critical thinking skills. *Journal of Industrial Teacher Education*, *43*(2), 71- 81

Creswell, J. W. (2014). Research design: Qualitative, quantitative and mixed methods approaches. Sage publications.

Dahiya, B. (2012). Cities in Asia, 2012: Demographics, economics, poverty, environment and governance. *Cities*, *29*, S44-S61.

Dalton, J. & P. Smith (2004). Vocational education and training in secondary Schools: Challenging teachers' work and identity. *Journal of Vocational Education and Training*, 56(4). Taylor & Francis Group

D'Andrade, R. (1995). *The development of cognitive anthropology.* Cambridge, England: Cambridge University Press

Deißinger, T., & Hellwig, S. (2011). Structures and functions of Competency-based Education and Training (CBET): A comparative perspective.

Denison, D. R. (1990). *Corporate culture and organizational effectiveness*. John Wiley & Sons

Dennis, D. H., & Hudson, C. C. (2007). Workforce education and two important viewpoints.

Journal of Industrial Teacher Education, *44*(2), 89-98.

Department of Technical Education. (2011). *Employment study.* Unpublished raw data, Ministry of Education, Brunei.

Dixon, N. (1994) *The Organizational Learning Cycle. How we can learn collectively*, London: McGraw-Hill.

Duron, R., Limbach, B., & Waugh, W. (2006). Critical thinking framework for any discipline. *International Journal of Teaching and Learning in Higher Education, 17*(2), 160-166

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual review of psychology*, *53*(1), 109-132.

Eckel, P., Hill, B., Green, M., and Mallon, B. (1999). *Taking charge of change: A primer for colleges and universities.* On Change: Occasional Paper, no. 3. Washington, D.C: American Council on Education.

Ennis, R. H. (2008). Nationwide testing of critical thinking for higher education: Vigilance required. *Teaching Philosophy, 31*(1), 1-26.

Fares, J., & Tiongson, E. R., (2007).Youth unemployment, labor market transition, and

scarring: Evidence from Bosnia and Herzegovina, 2001– 04. Policy Research Working Paper Series 4183, The World Bank.

Fasman, J. (2013). *The Economist explains*: *Why is youth unemployment so high? May 8th, 2013*. Retrieved from http://www.economist.com/blogs/Economist-explains/2013/05/economist-explains-why-youth-unemployment-so-high

Field, S., Hoeckel, K., Kis, V., & Kuczera, M. (2009). Learning for jobs: OECD policy review of vocational education and training: initial report. Retrieved from http://www.oecd.org/edu/skills-beyond-school/43926141.pdf

Fillingham, Z. (2012). *The geopolitics of youth unemployment.* Retrieved from http://www.geopoliticalmonitor.com/the-geopolitics-of-youth-unemployment-4739/

Fiske, S.T., & Taylor, S.E. (1991). *Social cognition (2nd ed.)*. New York: McGraw-Hill.

Fischer, H. & Maritz, D. (1994). Competence: Efficient way of increasing people potential. HRM.10(9), 22-30.

Flad, J. A. (2002). *The effects of increasing cognitive load on self-report and dual task measures of mental effort during problem solving.* University of Southern California, Los Angeles

Freeman, R. B., & Wise, D. A. (1982). The Youth Labor Market Problem: Its Nature Causes and Consequences. In *The youth labor market problem: Its nature, causes, and consequences* (pp. 1-16). University of Chicago Press.

Fretwell, D., & Pritz, S. (1994). Occupational standards and certification: Past-current

future trends in the United States. International Research Network for Training and Development (3rd), Milan, Italy

Gallimore, R. & Goldenberg, C. (2001). Analyzing cultural models and settings to connect minority achievement and school improvement research. *Educational Psychologist, 31*(1), 45-56

Gardenswartz, L., and Rowe, A. (1994). *Diverse teams at work: Capitalizing on power of diversity*. Chicago: Irwin.

Gimino, A. E. (2000). *Factors that influence student's investment of mental effort in academic tasks; A validation and exploratory study.,* University of Southern California, Los Angeles.

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. Teaching and Teacher Education, 4, 63-69.

Grant, G. E. (1988). *Teaching critical thinking*. New York, NY: Praeger

Gratton, C. (2010). Critical thinking and small group activities. *Informal Logic, 30*(4), 481-492

Grootings, P. (1994). Competencies: The word, the facts. *European Vocational Training Journal,* 1, 5(69)

Gomez, S.R., & Nadine, L.K. (2008): An analysis of youth unemployment in the euro

area, ECB Occasional Paper 89.

Gilbertson, C. (1995). Attitudes and perceptions held by parents toward vocational education: An assessment of influential factors. Doctoral dissertation, Temple University.

Gunnink, B., & Bernhardt, K. L. S. (2002). Writing, critical thinking, and engineering curricula. *Frontiers in Education*, *2*. F3H-2- F3H-7. doi:10.1109/FIE.2002.1158211

Gupta,C.B. (2007). Human Resources Management, Sultan Chand &Sons, New Delhi, pg.9-18.

Haas, A. R. (1999). *Trends in articulation arrangements for technical and vocational education in the South East Asian region*. Melbourne, Australia: RMIT University. Retrieved from http://www.unevoc.unesco.org/fileadmin/user_upload /pubs/rmit99.pdf

Hamre, B. K., & Pianta, R. C. (2006). *Student-teacher relationships*. Retrieved from http://www.pearweb.org/conferences/sixth/pdfs/NAS-CBIII-05-1001-005-hamre%20&%20Pianta%20proof.pdf

Hallam, S. (2002). Musical motivation: Towards a model synthesizing the research. *Music Education Research*, *4(*2), 225-244

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Dispositions,

skills, structure training, and metacognitive monitoring. *American Psychologist, 53*(4), 449-455

Hargraves, G. (1995). The influence of the European communities on the emergence of Competence-based models of vocational training in England and Wales. *British Journal of Education and Work, 8, 28-40*

Harris, R., Guthrie, H., Hobart, B.,and Lundberg, D. (1995). *Competency-Based Education and Training: Between a Rock and a Whirlpool*. South Melbourne: Macmillan Education Australia

Hawley, W. D. (Ed.). (2007). *The keys to effective schools: Educational reform as continuous improvement* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Heinz, W. R., Kelle, U., Witzel, A. & Zinn, J. (1998). Vocational training and career development in Germany: results from a longitudinal study. International Journal of Behavioural Development, 22, 77-101.

Herschbach, D. (2009). Planning for Education and Work: Alternatives and Issues, in Maclean, R. and Wilson, D. (eds) International Handbook of Education for the Changing World of Work: Bridging Academic and Vocational Learning. Bonn Springer

Hiebert, B., & Borgen, W. (2002). Technical and vocational education and training in the

twenty-first century: New roles and challenges for guidance and counselling. Holland, D., & Quinn, N. (Eds.). (1987). *Cultural models in language and thought.* Cambridge, England: Cambridge University Press

Hipp, K. A. (1996). *Teacher efficacy: Influence of principal leadership behavior.* Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Holvikivi, J. (2007). Learning styles in engineering education: The quest to improve didactic practices. *European Journal of Engineering Education*, *32*(4), 401-408. doi:10.1080/03043790701332909

Hong-Huat, L. (2009). *Economic crisis, unemployment and training in Brunei Darussalam for APEC Forum on Human Resource Development: Implementing public TVET programmes in the midst of the financial crisis. November 18-20th, 2009. Chiba, Japan.* Retrieved from http://hrd.apec.org/images/0/00/40.7.pdf

Huber, G. P., and Glick, W. H. (1993). *Organizational change and redesign: Ideas and insights for improving performance*. New York: Oxford University Press.

Hyslop-Margison, E. J., & Armstrong, J. L. (2004). Critical thinking in career education: The democratic importance of foundational rationality. *Journal of Career and Technical Education, 21*(1), 39-49.

International Labour Organisation. (2014). *Global employment trends 2014. Risk of a jobless recovery? ILO, Geneva, Switzerland*. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_233953.pdf

International Labour Organisation. (2013a). *Global employment trends for youth 2013. ILO, Geneva, Switzerland*. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_212423.pdf

International Labour Organisation. (2013b). Long-term youth unemployment causes generation's distrust. *ILO.* Retrieved from http://www.ilo.org/brussels/

International Labour Organisation (2012). *The youth employment crisis: time for action. May 23-25th 2012, ILO. Geneva, Switzerland*. Retrieved from http://www.ilo.org/ilc/ILCSessions/101stSession/reports/reports-submitted/WCMS_175421/lang--fr/index.htmpress/press-releases/WCMS_212981/lang--en/index.htm

International Labour Organisations. (2006).*Global employment trends for youth*. International Labor Office: Geneva

Institute of Brunei Technical Education (Dec 26th, 2013). *Transformation technical and vocational education:* A white paper. Unpublished report, Ministry of Education. Brunei.

Kaaya, P.B. (2012). *The importance of competency based education and training (CBET) on industrial performance in Tanzania*. Retrieved from https://www.academia.edu/3346115/THE_IMPORTANCE_OF_COMPETENCY_BASE

D_EDUCATION_AND_TRAINING_CBET_ON_INDUSTRIAL_PERFORMANCE_IN_TANZANIA

Kain, J. F. (1998, October). The impact of individual teachers and peers on individual student achievement. Paper presented at the Association for Public Policy Analysis and Management 20th Annual Research Conference, New York.

Kamit, R. (December 30th , 2013). Brunei needs well-education citizens. *Brunei Times.* Retrieved from http://www.bt.com.bn/frontpage-news-national/2013/12/30/brunei-needs-well-educated-citizens.

Kerka, S. (1998). Competency-based education and training. Myths and realities. Retrieved from http://www.calpro-online.org/eric/textonly/docgen.asp?tbl=mr&ID=65

Kerr, C. (1984). *Presidents make a difference: Strengthening leadership in colleges and universities*. Washington, D.C.: Association of Governing Boards of Universities and Colleges

Kezar, A. J., & Eckel, P. D. (2002). The effect of institutional culture on change strategies in higher education: Universal principles or culturally responsive concepts?. *The Journal of Higher Education*, *73*(4), 435-460.

Kirkpatrick, D. L. (2006). Seven keys to unlock the four levels of evaluation. *Performance Improvement, 45*(7), 5-8. doi:10.1002/pfi.2006.4930450702

Klein-Collins, R. (2013, November) Sharpening our focus on learning: The rise of competency based approaches to degree completion. *National Institute for Learning Outcomes Assessment*. Retrieved from http://learningoutcomesassessment.org/documents/Occasional%20Paper%2020.pdf

Kon, J. (July 3rd, 2013). Grand initiative to achieve vision 2035. *Brudirect*. Retrieved from http://ftp.brudirect.com/national/national/national-local/2492-grand-initiatives-to-achieve-vision-2035

Kotter, J. (1996). *Leading Change*. Boston: Harvard Business School Press.

Krathwohl, D. R., (2002). Theory into practice. *A revision of Bloom's taxonomy; an overview,* 41(4). Retrieved from http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf

Kuepie, M., Nordman. C., & Roubaud, F. (2009). Education and earnings in urban West Africa. Journal of Comparative Economics, 37, 491-515.

Kugel, P. (1993). How professors develop as teachers. *Studies in Higher Education, 18*(3), 315-328

Kuhlich, J. (1991). Current trends and priorities in Canadian adult education.

International Journal of Lifelong Learning, *1 0*, 93-106

Langthaler, M. (2013). *What kind of (vocational) education is required for economic development? Reflections on vocational training's contribution to private sector development.* Retrieved from http://www.oefse.at/Downloads/publikationen/oeepol/Artikel2013/8a_Langthaler_englisch.pdf

Law, S. S. (2007). Vocational Technical Education and Economic development – The Singapore Experience. *ITE Paper No.9, 2007,* 5

Lee, S. K., Goh, C. B., Fredriksen, B., & Tan, J. P. (2008). *Toward a better future: Education and training for economic development in Singapore since 1965*. The World Bank. Washington, DC

Lerner, A. L. (1999). A strategic planning primer for higher education. *College of Business Administration and Economics, California State University, Northridge.*

Levin, J. S. (2005). Faculty in the U.S. community college: Corporate labour 1. *Management in Education, 19*(3), 8-11. doi:10.1177/08920206050190030201

Levinthal, D. A. (1991). Organizational adaptation and environmental selection-interrelated processes of change. *Organization science*, *2*(1), 140-145.

Lewin, K.M. (1993). Education and development: The issues and the evidence. London: Overseas Development Administration.

Lewis, T. & Lewis, M.V. (1985). Vocational education in the Commonwealth Caribbean and

the United States. Comparative Education. 21(2), 157-171

Lindahl, R. (2006). *The Role of Organizational Climate and Culture in the School Improvement Process*: A Review of the Knowledge Base.

Lin, Y. J. (2012). *Youth bulge: A demographic dividend or a demographic bomb in developing countries?* The World Bank. Washington, DC. Retrieved from http://blogs.worldbank.org/developmenttalk/youth-bulge-a-demographic-dividend-or-a-demographic-bomb-in-developing-countries

Locke, L.F., Spirduso, W. W., & Silverman, S.J. (2013). *Proposals that work: A guide for planning dissertations and grant proposals (6th ed.).* Thousand Oaks, CA: Sage

Lucas, B., Spencer, E., & Claxton, G. (2012). How to teach vocational education. Retrieved from http://www.skillsdevelopment.org/PDF/How-to-teach-vocational-education.pdf

Lyons, J.E., Randhawa, B.S., & Paulson, N.A. (1991). The development of vocational education in Canada. Canadian Journal of Education, 16(2). 137-150

Marshall, R. & Tucker, M. (1992). Thinking for a living: Education and the wealth of nations. New York: Basic Books.

Mayer, R.E. (2001). Applying the science of learning. Boston, MA: Pearson Education, 13-90

Middleton, J., Ziderman, A., & Van Adams, A. (1993). Skills for Productivity: Vocational

Education and Training in Developing Countries (A World Bank Book No. 12290). New York, NY: Oxford University Press. Retrieved from http://documents.worldbank.org/curated/en/1993/06/437284/skills-productivity-vocational-education-training- developing-countries.

Mimbs, C. A. (2005). Teaching from the critical thinking, problem-based curricular approach: Strategies, challenges, and recommendations. *Journal of Family and Consumer Sciences Education, 23*(2), 7-18

Min, W. (1995). Vocational education and productivity. In M. Camoy (Eds.), International encyclopedia of economic of education. Oxford, UK: Pergamon.

McCaffrey, J. R., Lockwood, D. F., Koretz, D. M., & Hamilton, L. S. (2003). *Evaluating value added models for teacher accountability* [Monograph]. Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/pubs/monographs/2004/RAND_MG158.pdf

Mechanical Training Centre. (2012). *Vision and mission statements.* Ministry of Education, Brunei Darussalam

Mendro, R., Jordan, H., Gomez, E., Anderson, M., & Bembry, K. (1998). An application of multiple linear regression in determining longitudinal teacher effectiveness. Paper

presented at the 1998 Annual Meeting of the AERA, San Diego, CA.

Moffat, M. (2014*). What are the three types of employment*.Economics Department at About.com

Morrall, L. (1997). Competency-based interviewing and selection methods within the new Labour Relations Act. Seminar presented in Port Elizabeth, December.

Morris, P. (1996). Asia's four little tigers: a comparison of the role of education in their development. Comparative Education, 32, 95-110.

Neuman, S. & Ziderman, A. (1989). Vocational secondary schools can be cost-effective than academic schools: The case of Israel. Comparative Education, 25(21). 151-163

Norris, (1991). The trouble with competence. Cambridge Journal of Education.

OECD (2013). Structural policy country notes for Emerging Asia in OECD, *Economic Outlook for Southeast Asia, China and India 2014: Beyond the Middle-Income Trap*, OECD Publishing. doi: 10.1787/saeo-2014-8-en

OECD (2011). *Persistence of high unemployment: what risks? what policies?* 2011(1) Retrieved from http://www.oecd.org/eco/outlook/47656668.pdf

OECD & ILO (2011): *Giving youth a better start.* A policy note for the G20 Meeting of Labour and Employment Ministers, Paris, 26-27 September.

O'Higgins, N. (1997). Challenge of youth unemployment. ILO Employment and Training

Papers 7. Retrieved 3/31/2009 from http://www.ilo.org/public/english/employment/strat/publ/etp7.htm.

O'Higgins, N., & International Labour Office. (2001). *Youth unemployment and employment policy: A global perspective*. International Labour Office.

Ormrod, J. E. (2004). *Human Learning*. Upper Saddle River, NJ: Pearson Education Inc

Ortiz, I., & Cummins, M. (2012). When the global crisis and youth bulge collide: double the jobs trouble for youth. Retrieved from http://www.unicef.org/socialpolicy/files/Global_Crisis_and_Youth_Bulge_-_FINAL.pdf

Oslo, B.S. (August 22nd, 2010). Challenging unemployment. *Brunei Times.* Retrieved from http://www.bt.com.bn/opinion/2010/08/22/challenging-unemployment-0

Pajares, F. & Schunk, D.H. (2001). Self-beliefs and school success: Self-efficacy, Self-concept, and school achievement. In R.Riding & S.Rayner (Eds.), self-perception (pp.239- 266).London: Ablex Publishing.

Pajares, F. (1997). Current directions in self-efficacy research. In M. Maehr, & P. R. Pintrich, (Eds.) Advances in motivation and achievement, 10. Greenwich, CT: JAI Press, 1-49.

Pajares, F. (1996). Self-efficacy in academic settings. *Review of Educational Research, 66*(4), 543-578.

Parahoo, K. (1997) *Nursing Research: Principles, Process, Issues*. London: Macmillan.

Parry, S. R. (1996). The quest for competence. *Training Magazine*, 48-56

Phillips, C.O. (1981). Assessing black male high school students' attitudes toward vocational education. Doctoral dissertation, Southern Illinois University at Carbondale

.' International Journal of Educational Development. 11,

193-199

Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research, and applications* (2nd ed.). Upper Saddle River, NJ: Merill Prentice-Hall

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology, 95*(4), 667-686

Pintrich, P. R., & DeGroot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33-40

Podesta, J. (July 9th, 2013). Relentlessly high youth unemployment is a global time bomb. *The Guardian.* Retrieved from http://www.theguardian.com/commentisfree /2013/jul/09/youth-unemployment-long-term-effects

Puckett, J., Davidson, J., & Lee, E. (September, 2012). Vocational education: The missing link in economic development. *The Boston consulting group*. Retrieved from https://www.bcgperspectives.com/content/articles/education_public_sector_ vocational_education/ Risberg, E. (May 22th, 2012). Half of new graduates are jobless or underemployed. *USA Today.* Retrieved from http://usatoday30.usatoday.com

/news/nation/story/2012-04-22/college-grads-jobless/54473426/1

Prasad, G., & Bhar, C. (2010). Accreditation system for technical education programs in India: A critical review. European Journal of Engineering Education, 35 (2), 187-213.

Psacharopoulos, G. (1991). Vocational education theory, VOCED 101: Including hints for 'vocational planners

Qureshi, M.A. (1996). Current trends and issues in technical and vocational education. Unevoc Info. 8,1-3

Raihan, M. A. (2004). Collaboration between TVET Institutions and Industries in Bangladesh to Enhance Employability Skills.

Reuling, J. (2002). Vocational Training and Lifelong Learning in Australia: Observations and conclusions from a German perspective, in: Burke, G./Reuling, J. (eds.), Vocational Training and Lifelong Learning in Australia and Germany, Adelaide (NCVER), pp. 14–20

Risberg, E. (May 22th , 2012). *Half of new graduates are jobless or underemployed. USA Today,* Retrieved from http://usatoday30.usatoday.com/news/nation/story /2012-04-22/college-grads-jobless/54473426/1

Ritzen, M. & Kösters, J. (2002). Mogelijke functies van een portfolio binnen een competentiegestuurd curriculum [Possible functions of a portfolio within a

competence- based curriculum]. *Tijdschrift Onderzoek van Onderwijs, 31*(1), 3-7.

Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2000). Teachers, schools, and academic achievement (Working Paper W6691). Cambridge, MA: National Bureau of Economic Research.

Rosenberg, M., Sindelar, P., & Hardman, M. (2004). Preparing highly qualified teachers for students with emotional or behavioral disorders. Behavioral Disorders. 29, 266.

Ruby, A. (192) If Butts calls, tel him we might be changing course: a perspective on the notion of competency and Australia's schools. In *Education* in the 1990s: *Competencies, Credentialism, Competitiveness*? Canberra: Australian Government Publishing Service

Rueda, R. (2011). *The 3 dimensions of improving student performance*. New York: Teachers College Press.

Rueda, R. (2014). *Unit 11: Sociocultural Theory* [PowerPoint slides].

Salomon, G. (1984). Television is "easy" and print is "tough": The differential investment of mental effort in learning as a function of perceptions and attributions. *Journal of Educational Psychology, 18*, 647-658

Sanaghan, P., & Hinton, M. (2013). Be strategic on strategic planning. Retrieved from

https://www.insidehighered.com/advice/2013/07/03/essay-how-do-strategic-planning

Sanders, W., & Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement. Knoxville, TN: University of Tennessee Value-Added Research Center

Sarason, S. (1972). *The creation of settings and the future societies.* San Francisco: Jossey-Bass

Schein, E.H (2004). The concept of organizational culture: Why bother?

Schein, E.H (1985). Organizational Culture And Leadership Oxford, Jossey-Bass

Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26, 207-231

Shore, B. (1996). *Culture in mind: Cognition, culture, and the problem of meaning.* Oxford, England: Oxford University Press.

Smart, J. C., & Hamm, R. E. (1993). Organizational culture and effectiveness in two-year colleges. *Research in Higher Education*, *34*(1), 95-106

Smith, E. & Keating, J. (1997). *Making sense of training reform and competency based training.* Wentworth Falls, NSW: Social Science Press

Smith, G. F. (2003). Beyond critical thinking and decision making: Teaching business

students how to think. *Journal of Management Education, 27*(1), 24-51. doi: 10.1177/1052562902239247

Scarpetta, S., Anne, S & Thomas, M. (2010): Rising youth unemployment during the crisis. *How to prevent negative long-term consequences on a generation*? OECD Social, Employment and Migration Paper 106, Paris

Slamet, P. (1987). Attitudes of students and parents about vocational education in Yogvakarta. Indonesia. Doctoral dissertation, Ohio State University

Small, M.A. (1984). The attitudes of black high school students and their parents toward vocational education. Doctoral dissertation, East Texas State University

Stein, M. K., & Wang, M. C. (1988). Teacher development and school improvement: The process of teacher change. Teaching and Teacher Education, 4, 171-187. .

Stennet, R. G. (1984). Vocational and technical education: Current rends and future prospects. *Research Report* 84-03

Stevenson, J. (1992). Australian vocational education: Learning from past mistakes? *The Vocational Aspect of Education, 44,* 233-244

Struyven, K., & De Meyst, M. (2010). Competence-based teacher education: Illusion or reality? An assessment of the implementation status in Flanders from teachers' and students' points of view. *Teaching and Teacher Education*, *26*(8), 1495-1510.

Tesch, R. (1990). *Qualitative research*: *Analysis types and software tools*. New York: Falmer, 142-149

Tse, T., Esposito, M., & Chatzimarkakis, J. (2013). Youth unemployment after the financial Crisis: 'Quo Vadimus'?

The World Bank. (2006). World Development Report 2007, Development and the Next Generation (Report No. 35999). Washington, DC: The World Bank. Retrieved from http://www-wds.worldbank.org/external/default/WD-SContentServer /IW3P/IB/2006/09/13/000112742_20060913111024/Rendered/PDF/3 59990WDR0complete.pdf

Tovey, M. (1997). Training in Australia. Sydney: Prentice Hall Australia.

UNESCO-UNEVOC. (June-July 2013). *Tackling youth unemployment through TVET, 6-7*.

UNESCO. (1997). *Training of teachers/trainers in technical and vocational education.* Retrieved from http://www.unevoc.unesco.org/fileadmin/user_upload/pubs/Studies-11e.pdf

UNESCO. (2001). *Revised recommendation concerning technical and vocation education*. Retrieved from http://unesdoc.unesco.org/images/0012/001260/126050e.pdf

United Nations Population Fund. (2011). *The world at seven billion.* Retrieved from http://www.unfpa.org/webdav/site/global/shared/documents/7%20Billion/7B_fact_sheets_en.pdf

Van der Merwe, R. P., & Potgieter, T. E. (2002). Assessment in the workplace: a competency-based approach. *SA Journal of Industrial Psychology*, *28*(1), 60-66.

Verick, S. (2009). Who is hit hardest during a financial crisis? The vulnerability of young men and woman to unemployment in an economic downturn. International Labour Organization (ILO) and IZA. Discussion Paper No. 4359.

Wegner, D.M. (1997). When the antidote is the poison: Ironic mental control processes. *Psychological Science, 8*(3), 148-150

Weiner, B. (1986). An *attributional theory of motivation and emotion*. New York: Springer-Verlag.

Weisner, T. (1984). *Ecocultural niches of middle childhood: A cross-cultural perspective*. Washington, DC: National Academy of Sciences Press

Weiner, B. (1986). *An attributional theory of motivation and emotion.* New York: SpringerVerlag.

Wolf, A. (1989). Can competence and knowledge mix? In Burke, J.W. (Ed.) *Competency-based Education and Training*. Londong: Falmer Press

Wood, R. & Payne, T. (1998). Competency-based recruitment and selection. England: JohnWiley & Sons Ltd.

Zailani, N. (November 26th , 2014). 1,700 jobs up for grabs in oil and gas sector. *Brunei Times.* Retrieved from http://www.bt.com.bn/news-national/2014/11/26/1-700-jobs-grabs-oil-and-gas-sector

APPENDIX A

INTERVIEW PROTOCOL

Introduction Key Components: • Thank you • Your name • Purpose • Confidentiality • Duration • How interview will be conducted • Opportunity for questions • Signature of consent	Hello and Good Morning/Afternoon. I want to thank you for taking the time to meet with me today. My name is Mr. Luke Hamid and I would like to ask you are few questions about your teaching experience in the college. Specifically, looking for information and feedback from many instructors about the curriculum used to teach students. The interview should take less than an hour. I will be recording the session because I don't want to miss any of your comments. I would still be taking notes during the interview sessions. Please be sure to speak up so that I wont miss any of your valuable comments. All responses will be kept confidential. This means that your interview responses will only use strictly for research purposes and my report will not identify you as the respondent. Relax, sit back and answer the questions in your honest opinion. Do you have any questions for me? If you need further clarifications, do ask. Can we start the interview? _____ _____ Interviewer Signature Witness

Points to note:

- Choose at least 10-12 open-ended questions to be asked
- Questions will be mostly factual rather than opinion
- Probing will be used whenever necessary

Structured Interview Protocol

Interview Questions for Mechanical Training Centre
Date: September xx, 2014
Participants: MTC instructors
Interviewer: Mr. Luke Hamid
Interviewee: Mr/Ms. XX
Position:
Teaching Subject:
Teaching Experience:

1. If you had to list the top 5 career choices for youths based on market trends in Brunei, what would those be? (KF=Knowledge factual)
   Option: How confident are you in knowing the best in demand careers currently in Brunei?
   Option: What would help you stay informed about the market trends as they impact your students?

2. What do you think are some of the most important skills and/or knowledge that all technical and vocational graduates should possess to improve their marketability?

3. What are the key components of teaching the subject Health and Safety, Security Environment (HSSE)? (KF= Knowledge Factual)

4. How familiar are you in applying "Performance-based/outcome based- training as part of your teaching strategy in the classroom?" (KF= Knowledge Factual)

5. What do you consider important elements in teaching a performance-based training for your students? (KF= Knowledge Factual)

6. How do you feel about teaching students using an outcome-based curriculum? Can this curriculum improve the student's overall performance? (MUV= Motivation Utility Value)

7. How can teaching using performance-based approaches be challenging for you? (MUV= Motivation Utility Value)

8. How do you feel about the range of responsibilities placed upon you?
   Does it affect your ability to teach effectively? (OR=Organizational Resistance)

9. What do you think about institutional support for you to conduct outcome-based training to your students? (OR= Organizational Resources)

10. How do you feel about the standard-based curriculum that you currently using to teach your students? Has it been aligned to industry requirements? If No? Why? (ONP= Organizational Resistance)

11. How much autonomy do you have in your current job? (OA= Organizational Autonomy)

12. How do you feel about the strategic vision in the college? Does everyone understand it? If No? Why? (OSP= Organizational Strategic Plan)

Closing Key Components: • Additional comments • Next steps	Is there anything else you would like to add or comment? Thank you for your time

APPENDIX B

TECHNICAL AND VOCATIONAL EDUCATION QUESTIONNAIRE

PUSAT LATIHAN MEKANIK

MECHANICAL TRAINING CENTRE

Directions: Please check the appropriate box and provide the requested information. All information will kept confidential

Section I

1. Teaching qualification level:

[ ] Industry Skills Qualification [ ] Skill Certificate 2
[ ] Skill Certificate 3 [ ] Diploma

2. Present Position:

[ ] Administrator [ ] Instructor

3. Years of teaching experience: _____

4. Years of industry experience: _____

5. Years of administrative experience: _____

6. How many in service courses/workshops/training seminars have you attended during the past 5 years? _____

Section II: These questions are multiple choice questions

Directions: Please check your best answer

1. Please choose from the list below the highest in demand jobs in Brunei? (KF)
   - ❒ Chemical Engineer, Dentist, Software developer, Pharmacist and Plumber
   - ❒ Web developer, Architect, Accountant, School physiologist and Mechanical engineer
   - ❒ Underwater welder, IT Security analyst, Chemical engineer, Financial analyst and Lawyer
   - ❒ Petroleum engineer, University professor, Software engineer, Occupational therapist and Biomedical engineer

Option 2:

1. Please select from the following list the top five highest demand careers in Brunei:

   - ❒ Underwater 6GR Welder
   - ❒ Lawyer
   - ❒ Petroleum Engineer
   - ❒ Software Engineer
   - ❒ Occupational therapist
   - ❒ Chemical Engineer
   - ❒ Mechanical Engineer
   - ❒ Software developer
   - ❒ Pharmacist
   - ❒ Plumber
   - ❒ Architect
   - ❒ Accountant
   - ❒ Financial Analyst

2. Choose from the list below the best definition to describe the term “Performance-based and training (PBT)” (KF)
   - ❒ PBT is an approach to acquiring knowledge or skills through study, experience via informal classroom activities
   - ❒ PBT is defined as a cluster of related knowledge, skills and attitudes that affects a major part of learner’s responsibility to perform on a job measured against well-accepted standards (aligned to industry requirements)
   - ❒ PBT is concerned with a broader subject matter or theoretical nature of the development of a learner’s personal attitudes via learning experiences, on and off the job training
   - ❒ PBT is defined as a form of acquiring knowledge or skill through training that concerns with teaching of specific, factual, subject matter leading to long-term changes in behavior potential

3. Choose from the list below the evaluation method that best describe the term “Performance-based assessment”? (KP)
   - ❒ A form of assessment that focuses on learner ‘outcomes’ in a form of performance that is derived from a set of articulated competency standard(s)
   - ❒ A short term assessment method, as learners are in the process of making meaning of new content and integrating into their prior knowledge and skills
   - ❒ An assessment method that measures practical work, simulations & exercises, laboratory work, problem solving, reflective learning statements for all learners
   - ❒ An assessment that evaluates student’s performance at periodic intervals assessing their strengths, weaknesses, knowledge and skills and dispositions

Section III

Directions: Please circle the appropriate response for each of the following statements:

Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
1	2	3	4	5	6

4. I use proficiency-based approaches in most of my teaching in the college (KF)
   1 2 3 4 5 6

5. I evaluate my students' performance using assessment of proficiency-based approaches (KP)
   1 2 3 4 5 6

6. I am confident in my ability to use performance-based approaches in my teaching (MSE)
   1 2 3 4 5 6

7. I believe I can do a good job in teaching an outcome-based curriculum (MSE)
   1 2 3 4 5 6

8. It is important for me to teach students a outcome-based curriculum for the student future career prospect (MUV)
   1 2 3 4 5 6

9. We have a goal to ensure all the students who graduate will attain employment (MUV)
   1 2 3 4 5 6

10. I don't believe teaching an outcome-based curriculum will make any difference to improve the student's overall performance (MA)
    1 2 3 4 5 6

11. The student who graduates from this college are already well prepared to enter a competitive workforce (MUV)
    1 2 3 4 5 6

12. The student who graduates from this college posses necessary critical thinking and problem-solving skills (MUV)
    1 2 3 4 5 6

13. I don't see why I should use performance-base approaches in my teaching to help to student to succeed in the workplace (MA)
    1 2 3 4 5 6

14. I feel that teaching a outcome-based curriculum is very challenging (MSE)
1 2 3 4 5 6

15. It is important for me to learn different approaches to my teaching pedagogies (MUV)
1 2 3 4 5 6

16. I believe that using a outcome-based curriculum will train me to become a better instructor (MUV)
1 2 3 4 5 6

17. The student who graduates from the college posses positive attitude towards work (MUV)
1 2 3 4 5 6

18. I feel that I have too many responsibilities in the college (ORE)
1 2 3 4 5 6

19. I am too busy to use performance-based approaches in my teaching (OR)
1 2 3 4 5 6

20. I feel that the non-instructional responsibilities interfere my ability to be a good instructor (ORE)
1 2 3 4 5 6

21. I have enough resources, materials and facilities in the college to conduct outcome-based education training (ORE)
1 2 3 4 5 6

22. The college administration provides adequate facilities, equipment and resources to conduct performance-based education training (ORE)
1 2 3 4 5 6

23. The college is responsive to the needs of technical and vocational education and training in general (ORE)
1 2 3 4 5 6

24. All the resources required to teach a performance-based education training are readily accessible in the college (ORE)
1 2 3 4 5 6

25. I am not in favor of any changes in my job (OR)
1 2 3 4 5 6

26. My department does not like change in any changes implemented in the college (OR)
1 2 3 4 5 6

27. I feel helpless about getting support from the college when urgently needed (OA)
1 2 3 4 5 6

28. I feel that my ideas and request are not respected by the college administration (OA)
1 2 3 4 5 6

29. I have a lot of freedom and choice over my tasks at work (OA)
1 2 3 4 5 6

30. I am often asked to share my views about my job and organizational plans (ONP)
1 2 3 4 5 6

31. I do not feel overly restricted by college rules and regulation in performing my routine tasks (OA)
1 2 3 4 5 6

32. There is a clear strategic vision in the college to reach its performance goals (OSP)
1 2 3 4 5 6

33. There is sufficient work procedures, and support from the college in order to reach its organizational goal (OSP)
1 2 3 4 5 6

Section IV

Directions: Please provide your suggestions or recommendations regarding the following statements.

1. What are the three most significant factors that you consider to be important in planning the improvement of technical and vocational education and training

    1) _____
    2) _____
    3) _____

2. What are your views to be the three most important barriers that hinder efforts to improve technical and vocational education and training programs

    1) _____
    2) _____
    3) _____

3. What do you consider the three most important skills and/or knowledge that technical and vocational graduates should possess to improve their marketability?

    1) _____
    2) _____
    3) _____

4. Consider listing out other important issues that you feel should be included that were not addressed in this survey.

    _____
    _____
    _____

THANK YOU FOR YOUR ASSISTANCE

APPENDIX C

KMO ABBREVIATIONS USED IN THE SURVEY

Knowledge Gaps:	
Factual	KF
Procedural	KP
Conceptual	KC
Metacognitive	KM
Motivation Gaps:	
Self-efficacy	MSE
Utility Value	MUV
Attainment Value	MAV
Attribution	MA
Organizational Gaps:	
Resistance	OR
Non-participation	ONP
Resources	ORE
Autonomy	OA
Strategic Plan	OSP