A Social Cognitive Investigation of People with Physical Disabilities in Saudi Arabia

Majid AlSayyari

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A Social Cognitive Investigation of People with Physical Disabilities in

Saudi Arabia

Majid AlSayyari

This thesis is presented as part of the requirements for the award of the

Degree of Doctor of Philosophy of the University of Wollongong

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ABSTRACT

This study examined the Vocational Rehabilitation (VR) of people with physical disabilities in Saudi Arabia. Improving the VR services in Saudi Arabia is essential in order to help people with physical disabilities become active members in the society, and thus, a better and active life. The aim of this research was to increase knowledge of VR phenomena in Saudi Arabia and make recommendations for improving VR services. Two hundred and twenty-four participants Spinal Cord Injuries (SCI) who completed questionnaires were undertaking or had just finished their VR programs in VR centres or hospitals in Saudi Arabia. A further 32 participants were Trainers. Nine (patients/clients/students) were interviewed by telephone. Factor analysis, multiple regression analysis, and thematic analysis were used to test hypotheses relating VR trainer self-efficacy to proxy efficacy for the trainer, VR self-efficacy, and VR training performance, and proxy efficacy for the trainer and VR self-efficacy to VR training performance of people with physical disabilities. Students and VR trainers completed a questionnaire developed by the researcher, some provided free responses in the questionnaire, and some were interviewed by phone. Quantitative analysis was performed using the Statistical Package for Social Sciences (SPSS), version 19.0, for Mac. This study employed a conceptual framework based on SCT. The study provided evidence that VR self-efficacy predicted VR training performance. The findings of this study also provide some evidence that VR trainer self-efficacy was related positively to VR self-efficacy of the participants with SCI. VR self-efficacy and proxy efficacy for VR trainer were related to the VR training performance. It was also found that other variables such as
Time Since Injury (TSI) predicted VR self-efficacy and proxy efficacy for the trainer. The findings of this study have significant implications for the future of VR of people with physical disabilities in Saudi Arabia. Enhancing VR self-efficacy of people with physical disabilities could enhance their VR training performance. Moreover, improving VR trainer self-efficacy could, in turn, improve VR self-efficacy of people with physical disabilities, and therefore, enhance their VR training performance.
I am indebted to my supervisor Professor John McCormick for his ongoing support, expert advice, encouragement, and his endless patience to guide me through. I greatly appreciate the efforts and the very long hours, which he spent to develop my critical thinking, academic writing, research and analytic skills as an important elements of my research. My sincere appreciation also to my co-supervisor Dr Stuart Woodcock for his expert advice and invaluable encouragement. It has been a privilege to work under their supervision and learn from them. They were instrumental in bringing this study to completion.

This thesis is a milestone of my learning journey. I am very lucky to have all the encouragement and support from my mother while I worked towards this goal. I am very grateful to my brother Hamad for providing the great care of my mother back home so that I could pursue my dream with peace of mind.

I wish to thank my lovely wife, Nadia Almuqein and my gorgeous children Noura and Talal for their understanding and support.

My sincere thanks to the faculty staff members who worked to ensure a convenient environment for me to do my work.

I would also like to thank the Ministry of Education in Saudi Arabia for the opportunity to conduct this study.
STATEMENT OF AUTHENTICATION

I, Majid AlSayyari, declare that this thesis, submitted in fulfilment of the requirements for the award of degree of Doctor of Philosophy, in the Faculty of Social Sciences, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualification at any other academic institution.

Signed

Majid AlSayyari

Date:
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<td>SCI</td>
<td>Spinal Cord Injury</td>
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<td>SCT</td>
<td>Social Cognitive Theory</td>
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<td>TSI</td>
<td>Time Since Injury</td>
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<td>Vocational Rehabilitation</td>
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DEFINITIONS

VR self-efficacy is the individual’s belief about her or his capability to execute VR training to achieve a designated performance in a rehabilitation program (Bandura, 1986).

VR trainer self-efficacy is the trainer’s belief in her or his capability to train effectively students with physical disabilities (Miller & McDaniel, 1989).

Proxy efficacy for the trainer is the belief, of a student with physical disabilities, of the extent of his or her VR trainer's capabilities to organise appropriate training for her or him during vocational training sessions that assists the student to successfully complete training tasks (Bray, Brawley, & Millen, 2006).

Outcome expectancies are individuals’ beliefs about the consequences of their behaviours (Landry, 2003).

Self-regulation is the process whereby individuals stimulate and maintain their cognition, behaviour, and the environment’s influences, which affect the achievement of their goals (Zimmerman, 1989).
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CHAPTER ONE

INTRODUCTION

1.1. Background of the study

There are a number of challenges, which prevent people with physical disabilities becoming independent (Verhoef, Roebroeck, Schaardenburgh, Floothuis, & Miedema, 2014). Rehabilitation services help people with disabilities to perform independent tasks and participate in society as active members, which in turn, help them become employed and enhance the quality of their life (Verhoef et al., 2014). Vocational rehabilitation (VR), in particular, provides people with physical disabilities with better opportunities to become employed (Holmes, 2007). In general, the chance of being employed for people with disabilities who undertake VR has been found to be approximately 60% (Dutta, Gervey, Chan, Chou, & Ditchman, 2008). Employment provides benefits, but is not always available for people with physical disabilities (Meade, Armstrong, Barrett, Ellenbogen, & Jackson, 2006; Mpofu, Craig, Millington, Murphy, & Dorstyn, 2015). VR services generally assist people with physical disabilities to return to work or start a new job after being injured (Crowther, Marshall, Bond, & Huxley 2010; Dutta et al., 2008; Gobelet, Luthi, Al-Khodairy, & Chamberlain, 2007; Meade et al., 2006; Middleton, Johnston, Murphy, Ramakrishnan, Savage, Harper, & ... Cameron 2015; Nevala, Pehkonen, Koskela, Ruusuvuori, & Anttila 2015; Yamamoto & Alverson, 2014). For the majority of people, employment provides a steady financial income, enables access to needed health services, and helps them to have a personal identity in their society (Gobelet et al., 2007; Meade et al., 2006). For people with
physical disabilities, employment after Spinal Cord Injury (SCI) has been found to have a positive relationship with quality of life (Meade et al., 2006).

Finding an appropriate job for people with physical disabilities can be challenging (Issa, 2013). One of these challenges is the quality of VR (Issa, 2013). VR can help people with physical disabilities to overcome challenges and have better careers and jobs that suit them. The goal of VR for individuals with physical disabilities is to help people to find a job successfully or continue their education according to their interests, in order to help them participate in society as active members (Gobelet et al., 2007; Meade et al., 2006). People with physical disabilities who cannot work in their previous jobs because of their new injuries often can enrol in VR courses in order to improve their skills (Polidano & Mavromaras, 2010, 2011). Therefore, VR plays a vital role in equipping people with physical disabilities with the required occupational skills to find an appropriate job. In other words, VR is the main foundation for restoring, maintaining, and enhancing occupational skills for people with disabilities (Mpofu et al., 2015).

The disability prevalence of persons with disabilities generally is higher in developing countries than developed countries (Mitra, Posarac, & Vick, 2013; United Nations Fact Sheet, 2007) because of road traffic injuries, occupational injuries, diseases, and poverty (Sann, Haworth, J. King, & M. King, 2013; World Health Organization, 2011). Other possible reasons are unsafe work environments, and lack of health care and rehabilitation services (Mitra, Posarac, & Vick, 2013).

The prevalence rate often depends on the definitions of disability employed by each country and the ability of each country to manage issues related to disabilities. Saudi Arabia has a population of approximately 28.3 million (Al-Jadid, 2013). Approximately 65% of the Saudi population is situated in 3 main cities, namely, Riyadh, Jeddah and Dammam (Al-
In Saudi Arabia, it is estimated that 3.7% of the population have disabilities (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013; Japan International Cooperation Agency, 2002), and 33.6% of people with disabilities have physical disabilities (Al-Gain & Al-Abdulwahab, 2002). Physical disabilities comprise the largest proportion, with the rural areas in Saudi Arabia recording the highest prevalence of 59% (Japan International Cooperation Agency, 2002). However, most government organisations (e.g., Ministry of Health) are sensitive when reporting statistics on people with disabilities for security reasons, and usually the data they provide are understated (Al-Jadid, 2013; Japan International Cooperation Agency, 2002). The prevalence of persons suffering from physical disability due to traumatic SCI was 9.7% in 2002 (Japan International Cooperation Agency, 2002). Saudi Arabia currently has the highest rate of SCI in Asia, mainly caused by more road accidents, (Robert & Zamzami, 2013). In Saudi Arabia, road accidents are still the main cause of physical disabilities, particularly for young adult drivers (Al-Jadid & Robert, 2010).

In February 2013, it was estimated that 183,000 people with disabilities registered with the Ministry of Labour as searching for a job in Saudi Arabia (Azhar, 2014; Elsheikh & Alqurashi, 2013). The majority held university degrees, and approximately 100,000 were considered capable of work if they were to receive proper training and guidance (Azhar, 2014; Elsheikh & Alqurashi, 2013). Although the Saudi Arabian government has policies and regulations, which encourage employing people with disabilities in government and non-government organisations, employers are still allowed to refuse to hire applicants with disabilities solely because of their disabilities (Azhar, 2014; Elsheikh & Alqurashi, 2013). However, some employers accept people with disabilities just because they equate to four able-bodied employees for the purpose of meeting the requirements of Saudisation (Azhar, 2014). Saudisation is a national policy that encourages employment of Saudi nationals in the private sector (Azhar, 2014; Fakeeh, 2009).
People who have multiple disabilities or severe intellectual disabilities generally do not benefit from VR programs in Saudi Arabia (Japan International Cooperation Agency, 2002). The Ministry of Labour and Social Affairs in Saudi Arabia provides an aid program for people with severe disabilities with a grant of SR 10,000 (4avoura. $2,700 USD) annually, and SR 6,000 (4avoura. $1600 USD) annually for those who cannot benefit from VR programs (Japan International Cooperation Agency, 2002).

In Saudi Arabia VR programs generally are provided in comprehensive rehabilitation hospitals, which combine all rehabilitation services into one unit. These rehabilitation programs include VR for those with physical disabilities, and social rehabilitation for those with severe disabilities, which prevent them from working. The Ministry of Social Affairs established several VR centres, which provided VR training programs to 822 males and 213 females (Japan International Cooperation Agency, 2002). These VR centres were designed to provide people with physical disabilities with assessments of their capabilities and develop and explore their potential, in order to help them become productive individuals in society. In order to enrol in VR programs, applicants must be between 15 and 45 years of age. Although this study is about people with physical disabilities, the term ‘students with physical disabilities’ will be used consistently, given that the participants of this study, enrolled in the VR program, were considered students.

In Saudi Arabia, although the policy aimed at providing appropriate training and education for students with disabilities was part of the government’s plan for education in the late 1950s, vocational training and education for people with physical disabilities has developed slowly, and government departments arguably have been trying to catch up with the new developments (AlAhmadi, 2009). However, the first effective VR in the Kingdom of Saudi Arabia occurred mainly through individuals’ efforts (AlAhmadi, 2009).
In Saudi Arabia, the government created a policy in 2000, which aims at providing people with disabilities with free access to medical, psychological, social, educational, and rehabilitation services (Al-Jadid, 2013; Al-Nafissa, 2004). However, although it has been almost 16 years since this policy was created and approved, it still appears not to have been implemented effectively in Saudi Arabia (Al-Jadid, 2013).

Given recent studies of Social Cognitive Theory (SCT) (e.g., Bandura, 2000, 2001; Bray & Cowan, 2004; Dzewaltowski, Geller, Rosenkranz, & Karteroliotis, 2009; Huang, 2013; McCormick, Alavi, & Hanham, 2015; Priebe, Flora, Ferguson, & Anderson, 2012), discussed in Chapter 2, trainer self-efficacy, VR self-efficacy of people with physical disabilities, and proxy efficacy for the trainer, were incorporated into the theoretical framework of this study (see Figure 1.1). Different quantitative analyses were employed to study trainer self-efficacy and VR self-efficacy. Qualitative analysis was employed to study the free responses in the questionnaires. The advantages of multiple regression analysis among other analytical approaches are discussed in Chapter 3.

According to SCT, Bandura (1997) defined reciprocal determinism as interactions of the environment, personal factors, and behaviour (see Chapter 2). Despite the fact that previous studies have investigated SCT in a diversity of fields, relatively few studies have applied SCT in the context of VR training for students with physical disabilities. Several researchers (e.g., Hampton, 2004; Horn, Yoels, Wallace, Macrina, & Wrigley, 1998; Middleton, Tran, & Craig, 2007) have suggested that self-efficacy, as an important component of SCT, needs further research.

Keeping in mind that SCT emphasises that people possess cognitive ability to control behaviours (Bandura, 1977, 1997), only participants with SCI and amputees were selected for this study because they generally had the mental capacity to participate in this research.
1.2. Purpose and Significance of the Study

“In order to succeed, people need a sense of self-efficacy, to struggle together with resilience to meet the inevitable obstacles and inequities of life” (Bandura, 1977).

The objective of this research was to increase knowledge of VR phenomena in Saudi Arabia and make recommendations for improving VR services provided for people with physical disabilities. The main goal of this study was to enhance VR training performance for people with physical disabilities using a conceptual framework based on SCT, and to better understand VR self-efficacy in the context of VR training performance of people with physical disabilities, and with improved understanding, to enhance future practice.

There is no clear understanding as to the quality of VR services provided in Saudi Arabia, and phenomena related to the functioning of people with physical disabilities and their VR trainers. Moreover, there appears to be no research carried out focused on investigating the phenomena associated with VR of people with physical disabilities in Saudi Arabia. Although several studies have applied SCT in a variety of fields, relatively few (Bray & Cowan, 2004; Craig, Wijesuriya, & Tran, 2013; Krieshok, Ulven, Hecox, & Wettersten, 2000) have applied SCT in the context of VR of people with physical disabilities. Several researchers have suggested that self-efficacy, as an important psychological factor in the field of rehabilitation, needs to be investigated (Bray & Cowan, 2004; Craig et al., 2013; Middleton et al., 2007), and particularly self-efficacy beliefs and their relationships with VR (Krieshok, et al., 2000). Although there are several studies of self-efficacy and proxy efficacy, which have been conducted in different fields, this study is relatively new in the context of VR training performance of people with physical disabilities. Keeping in mind that the main goal of VR is to improve and equip people with physical disabilities with vocational skills by providing VR programs, it can be argued that it is important that people with
physical disabilities perceive themselves to be capable of performing tasks related to VR in order to improve their VR training performance.

Previous studies have focused on self-efficacy as an independent variable and how it predicts behaviours (Horn et al., 1998). However, there is a lack of research that has investigated the effects of self-efficacy among people with physical disabilities. Self-efficacy has been investigated widely and been found to influence health; such as, in the areas of addiction, heart disease, weight loss, and improvement after stroke (Middleton et al., 2007). Furthermore, there is very little research in which proxy efficacy has been applied; moreover, it has not been applied at all in the context of VR training performance of people with physical disabilities. Also, it is important to mention that there have been very few studies conducted on SCI in Saudi Arabia (Ageli & Zaidan, 2013; Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013; Al-shehri, Farahat, Hassan, & Abdel-fattah, 2008; Robert & Zamzami, 2013). Only limited studies have been conducted in Saudi Arabia in the context of disability and most of these studies have focused on children with disabilities (Al-Jadid, 2013). Al-shehri et al. (2008) stated, “despite the growing awareness of the community about the economic, psychological and medical impact of disability, limited research has been carried out to determine the pattern of disabilities in Saudi Arabia” (p.1). Thus, this led this study to develop a theoretical framework proposing relationships between trainer self-efficacy, VR self-efficacy, proxy efficacy for the trainer, and VR training performance. It is proposed that trainer self-efficacy, proxy efficacy for the trainer, and VR self-efficacy of people with physical disabilities may be determinants of VR training performance during the VR programs.

The relationship between Time Since Injury (TSI) and VR self-efficacy, and the relationship between TSI and proxy efficacy are explored in Chapter 4 and 5. Also, the relationship between gender and VR self-efficacy is discussed in Chapter 4 and 5.
1.3. Theoretical Framework

Research has shown that in the field of rehabilitation, self-efficacy may be an important predictor of career development (O’Sullivan & Strauser, 2009), especially in the context of vocational outcomes, and benefits may be seen in their performance in vocational training (McDonald, 1999; Regenold, Sherman, & Fenzel, 1999). VR self-efficacy of a student with physical disabilities is defined as his or her belief about her or his capability to effectively perform vocational training tasks (Donnay & Borgen, 1999; Hergenrather et al., 2008). According to SCT, achievement when facing, or coping with, an adverse situation can be predicted by an individual’s relevant self-efficacy beliefs (Bandura, 1977). McDonald (1999) argued that enhancing vocational self-efficacy should be a major goal of vocational training for students with physical disabilities. Training performance of a student with physical disabilities is defined as how well she or he completes training tasks assigned by the vocational trainer (Dimbisso, 2009).

Trainer self-efficacy for training refers to the trainers’ beliefs in their own capabilities to organise and lead the participants through a structured training course (Bray et al., 2001). Trainer self-efficacy may be expected to be a positive predictor of trainer performance because it will likely predict the amount of effort and persistence he or she will put into training students with physical disabilities (Bray, Brawley, & Millen 2006; Bray & Cowan, 2004; McDonald, 1999).

Other studies (Barlow et al., 2002; Hergenrather et al., 2008; Regenold et al., 1999) have found that VR self-efficacy of unemployed people with physical disabilities looking for employment, was the best predictor of success for gaining the necessary skills required for employment. Hergenrather et al. (2008) further suggested that VR self-efficacy could be
utilised by vocational trainers to enhance vocational training outcomes for students with physical disabilities.

Based on SCT, this study will consider relationships between behaviour and the environment (trainer self-efficacy) with important psychological components (VR self-efficacy and proxy efficacy for the trainer) (Bandura, 1986, 1997). The study will investigate VR self-efficacy in the context of the vocational training performance of students with physical disabilities in their vocational training activities. Furthermore, this study, will examine the relationships between trainer self-efficacy, VR self-efficacy, proxy efficacy for the trainer, and training performance of students with physical disabilities. Hypothesised relationships between trainer self-efficacy, proxy efficacy for the trainer, and VR self-efficacy are presented in Figure 1.1. Of course, there is a left to right relational direction, but it is likely that these relationships are not only linear but also dynamic.

![Figure 1.1. Relationships between proxy efficacy for the trainer, VR self-efficacy, and trainer self-efficacy.](image)

**1.3.1. Trainer self-efficacy as predictor of VR self-efficacy.** A study conducted by Tschannen-Moran, Woolfolk Hoy, and Hoy (1998), on teacher efficacy and its relationships with students’ learning and academic achievement at various levels in schools (elementary,
middle, and secondary school) found teacher efficacy was positively related to students’ academic self-efficacy. Tschannen-Moran and Woolfolk Hoy (2004) defined teacher efficacy as the teacher’s “judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (p. 783).

A study of 582 high school students, conducted by Johnson (2008), investigated the relationship between teacher mathematics self-efficacy and students’ mathematics self-efficacy, and found that as teachers’ beliefs in their mathematics self-efficacy increased so did their students’ mathematics self-efficacy, and vice versa. Arguably, the results of the Johnson (2008) study can inform research involving students with disabilities; trainer self-efficacy may be related similarly to VR self-efficacy for students with physical disabilities in the context of vocational training.

Past studies (Johnson, 2008; Tschannen-Moran et al., 1998) found positive relationships between teacher efficacy and student academic self-efficacy. It appears reasonable to expect similar relationships between trainer self-efficacy and VR self-efficacy in the proposed investigation. Judgments made by students of their trainer self-efficacy as a result of observations during training are likely to contribute to students’ VR self-efficacy. That is, the greater the trainer self-efficacy the greater the VR self-efficacy of the students. Therefore, the following hypothesis is posited:

Hypothesis 1. Trainer self-efficacy will be related positively to VR self-efficacy.

RQ1. Is trainer self-efficacy related to VR self-efficacy?

1.3.2. Trainer self-efficacy as predictor of proxy efficacy for the trainer. Bray et al. (2001) argued that trainer self-efficacy for training was related positively to participants’
proxy efficacy for the trainer, because when trainers have high self-efficacy for training people with physical disabilities, they likely have had mastery experiences through a successful vocational training, which might give students opportunities to observe trainers’ capabilities and shape to some extent a judgment of how capable trainers are to help them achieve their desired goals. Gunn (2010) investigated instructor self-efficacy for training and proxy efficacy for the instructor as predictors of exercise attendance and adherence to exercise during cardiac rehabilitation, and found that instructor self-efficacy for training was positively related to proxy efficacy for the instructor. The findings of studies carried out by Bray et al. (2001) and Gunn (2010) in the context of rehabilitation appear to be relevant to the proposed research, because it appears reasonable to expect trainer self-efficacy may be related similarly to proxy efficacy for the trainer in the context of vocational training.

The higher the trainer self-efficacy for training people with physical disabilities, the more likely she or he would tend to engage in difficult tasks and likely produce a high quality of performance, which would likely be observed by students which leads them to form reasonable judgments of how capable their trainers are. These judgments are likely to contribute to the formation of students’ proxy efficacy for the trainer. That is, the higher the trainer self-efficacy for carrying out training tasks, the greater the proxy efficacy the students will have for the trainers. Therefore, the following is hypothesised:

Hypothesis 2. Trainer self-efficacy will be related positively to proxy efficacy for the trainer.

RQ 2. Is trainer self-efficacy related to proxy efficacy for the trainer?

1.3.3. Proxy efficacy for the trainer as predictor of VR self-efficacy. Bandura’s (1997) argument that proxy efficacy may play a role in developing self-efficacy suggests that proxy efficacy for the trainer is likely to be related positively to VR self-efficacy. Bandura (1997) proposed that proxy efficacy and self-efficacy beliefs were likely to predict
behavioural adaptation, which is relevant to VR-oriented training programs. In a study of 29 cardiac rehabilitation outpatients enrolled in a 12-week hospital-based program, Bray and Cowan (2004) found proxy efficacy for the exercise consultant was related positively to patients’ exercise self-efficacy. Arguably, the higher the proxy efficacy for the trainer, the more likely students with physical disabilities will exert effort and engage in training activities because they may be expected to believe that they have a required component (capable trainer) to achieve desired results in their training, which might lead them to have mastery experiences which in turn would increase their VR self-efficacy (Elias & MacDonald, 2007; Shields & Brawley, 2006). With reference to Bandura’s (1997) argument that proxy efficacy may generally play a role in developing self-efficacy, Bray et al. (2001) conducted a multiple regression analysis of data from a 10-week controlled group fitness program in the context of rehabilitation to investigate the relationship between exercise self-efficacy and proxy efficacy for the exercise consultant, and found that proxy efficacy for the exercise consultant was related positively to exercise self-efficacy.

Applying findings discussed above (Bray & Cowan, 2004; Bray et al., 2001; Elias & MacDonald, 2007; Shields & Brawley, 2006) leads to the following hypothesis:

Hypothesis 3: Proxy efficacy for the trainer will be related positively to VR self-efficacy.

RQ 3. Is proxy efficacy for the trainer related to VR self-efficacy?

1.3.4. VR self-efficacy as predictor of VR training performance. Multon, Brown, and Lent (1991) conducted a meta-analysis of 36 studies examining academic self-efficacy and its relationships with academic performance. They found that academic self-efficacy was generally related positively to academic performance. Among students with physical disabilities, increased levels of VR self-efficacy have been associated with higher attendance
at VR (Barlow et al., 2002; Hergenrather et al., 2008). A study of 123 undergraduate students conducted by Jackson (2002) found that academic self-efficacy was positively related to academic performance. Another study conducted by Rahemi (2007) with 80 high school students investigated students’ English self-efficacy, and its contributions to their English learning achievements. The researcher found that the lower the students’ English self-efficacy the more likely they believed that they had low ability to learn English, chose less difficult tasks, and performed more poorly, and vice versa. Another study conducted by Mercer, Nellis, Martínez, & Kirk, (2011) with 193 5th-grade students investigated the relationship of students’ academic self-efficacy with students’ performance and found that academic self-efficacy was associated positively with academic performance. By applying findings (Jackson, 2002; Multon et al., 1991; Rahemi, 2007) to the context of the proposed study, it appears reasonable to expect a similar relationship between VR self-efficacy and training performance in the proposed investigation. Consequently, the following is proposed:

Hypothesis 4: VR self-efficacy will be related positively to training performance.

RQ 4. Is VR self-efficacy related to VR training performance?

1.3.5. Proxy efficacy for the trainer as predictor of VR training performance.

Individuals do not always have direct control over influences on their lives (Bandura, 1999b). For example, some challenges require involvement of others (Bandura, 1997). Bandura (2001b) stated that people often try to utilise those who are capable and have access to resources to perform on their behalf to achieve desired outcomes.

A study conducted by Gunn (2010) with 108 participants in the context of exercise-based cardiac rehabilitation, investigated proxy efficacy for the instructor as a predictor of exercise attendance, and found that, in the context of rehabilitation, the higher the proxy efficacy for
the exercise instructor the higher the participants’ exercise self-efficacy. Applying the findings mentioned above (Gunn, 2010) to the context of VR training, it is reasonable to expect a similar relationship between proxy efficacy for the trainer and VR training performance in the proposed study. As a result, the following is proposed:

Hypothesis 5: Proxy efficacy for the trainer will be related positively to VR training performance.

RQ 5. Is proxy efficacy for the trainer related to VR training performance?

1.4. Definition of Terms

Rehabilitation includes the use of medical, social, educational and vocational procedures, which aim at training people to gain the best possible functional abilities (Holmes, 2007). VR is a process that helps people with physical disabilities to overcome challenges to finding, maintaining, or returning to employment following injury (Croft, 1986; Holmes, 2007). In the context of this study, VR self-efficacy is defined as an individual’s belief about her or his capability to execute VR training to achieve a designated performance in a rehabilitation program (Bandura, 1986). Trainer self-efficacy is defined as a trainer’s belief in her or his capability to train effectively students with physical disabilities (Miller & McDaniel, 1989). Proxy efficacy for the trainer is defined as the belief, of a student with physical disabilities, of the extent of his or her trainer’s capabilities to organise appropriate training for her or him during vocational training sessions that assists the student to successfully complete training tasks (Bray, Brawley, & Millen, 2006). Outcome expectancies are individuals’ beliefs about the consequences of their behaviours (Landry, 2003). Self-regulation is the process whereby individuals stimulate and maintain their cognition, behaviour, and the environment’s influences, which affect the achievement of their goals.
(Zimmerman, 1989). Observational learning occurs by observing the behaviours and outcomes of others, especially behaviours of credible role models, and their outcomes (Galef & Laland, 2005).
CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Social Cognitive Theory (SCT) was developed by Albert Bandura in the early 1960s (Fertman & Allensworth, 2010; Schunk, Pintrich & Meece, 2008). Bandura's theory was originally referred to as Social Learning Theory (Bandura, 1977), but was later renamed Social Cognitive Theory (Bandura, 1986, 1997). SCT emphasises that human beings have feelings, can think, and can learn from their environments (Bandura, 1986; Burney, 2008; Fertman & Allensworth, 2010). SCT attempts to explain human behaviour by understanding and explaining cognitive processes.

The beliefs that people have in their own capabilities in which they can regulate their own behaviour plays a crucial role in pursuing rehabilitation activities (Bandura, 1997). The effects of self-efficacy, an important component of SCT, on health-related behaviours in the context of rehabilitation and patients’ education have been noted (Horn et al., 1998; Sakakibara, Miller, Routhier, Backman, & Eng, 2014). Self-efficacy has been found to influence health related behaviours such as the initiation of exercise (Horn et al., 1998), and weight loss (Walpole, Dettmer, Morrongiello, McCrindle, & Hamilton, 2013). Self-efficacy affects other health related rehabilitation behaviours such as alcoholic treatment, pain management, and other physical disabilities because self-efficacy beliefs play a vital role in adopting health behaviours, abandoning negative behaviours, and maintaining change (Schwarzer & Fuchs, 1996). In order to adopt a desired behaviour, ideally, people with physical disabilities form a desired goal and then attempt to execute the actions necessary to accomplish that goal (Bandura, 1986, 1989, 1997, 2001a, 2001b, 2012; Schwarzer & Fuchs,
Outcome expectations are important in order to form any desired goals, but are less effective than self-efficacy beliefs in action control (Schwarzer & Fuchs, 1996). Self-efficacy beliefs are very important in self-regulation of health behaviour (Schwarzer & Fuchs, 1996).

For the majority of people, employment provides a steady income, assists their access to needed health services, and helps them to have a personal identity in their society (Gobelet et al., 2007; Meade et al., 2006). Employment after spinal cord injury (SCI) has been found to have a positive relationship to the quality of life of people with physical disabilities (Meade et al., 2006). Although this study is about people with physical disabilities, the term student will be used consistently to refer to people undergoing the training.

The study investigated self-efficacy in the context of the performance of students with physical disabilities in their vocational training courses. Students with physical disabilities are expected to execute certain tasks in their vocational training in order to learn new skills, which could help them find appropriate jobs (Gobelet et al., 2007; Meade et al., 2006). As self-efficacy theory proposes that people regulate their behaviours based on their self-efficacy beliefs (Bandura, 1977; Bandura & Locke, 2003; Cherian & Jacob, 2013; Park & John, 2014), students with high self-efficacy are expected to perform better in their vocational training. Moreover, self-efficacy could play a vital role in enhancing the vocational training performance of people with physical disabilities.

2.2. Social Cognitive Theory (SCT)

SCT emphasises that interactions between personal, behaviour that people are involved in, and environmental influences can result in an outcome of human behaviour (Bandura, 1977, 1986, 1989, 2001a, 2001b, 2012; Burke & Mancuso, 2012; Deci & Ryan, 2012; Fertman & Allensworth, 2010; Steca, Greco, Cappelletti, D’Addario, Monzani,
Pancani, Ferrari, Politi, Gestra, Malfatto, Parati, 2015; Zikic & Saks, 2009). According to Bandura (1989), humans are able to learn in various ways, which include not only through direct experience, but also observations and interactions. Bandura (1986) argued, “Cognitive learning is fostered through tuition, favourable, and performance feedback” (p. 483). Rather than giving prominence to the influences of the environment alone on behaviour, SCT emphasises the importance of cognitive influences. Thus, SCT rejects behaviourism on the basis that behaviourism reduces complex human actions simply to cause and effect (Weiten, 2010). As human behaviour involves cognition, it generally that human are able to make rational decisions so that they can actively adopt new behaviours (Bandura, 1986, 1997, 2012; Gochman, 1997). Moreover, this means that individuals do not just copy what they observe in their environments, but are also likely to make effective decisions due to their justification on relatively complete information, including the consequences of different choices (Bandura, 1989).

The environment and personal factors, including people’s beliefs, thought patterns, and emotional reactions combine to determine a person’s behaviours (Bandura, 1986). In turn, the results of these behaviours would likely form the person’s future beliefs (Bandura, 1986). SCT utilises the interplay between the environment, outcome expectations, observational learning, self-efficacy, and reciprocal determinism (Bandura, 1986).

2.3. Understanding Social Cognitive Theory

2.3.1. Triadic reciprocal determinism. According to Bandura (1997), reciprocal determinism is interactions of the environment, personal factors, and behaviour. The causal interactions between personal, behavioural, and environmental factors are represented in Figure 2.1. Reciprocal determinism does not mean that the influences of the three factors are
equally strong at any particular time. SCT acknowledges that one factor may be stronger or weaker than the others, depending on the specific situation (Bandura, 1989). Furthermore, cognition plays a key role in an individual’s capability to modify his or her own behaviours (Bandura, 1999b). At the same time, the environment can be affected by an individual’s behaviour. With regards to environmental and personal factors, Bandura (1986) proclaimed that the environment may influence beliefs, emotional patterns, expectations, and intellectual processes.


Moreover, as stated by Lerner (1982), the environment may evoke diverse reactions in people. Another relationship worth mentioning is that between behaviour and environment. As such, behaviour may influence the environment, which may subsequently change behaviour. It is also for this reason that people are both producers and products of their
environments (Bandura, 1989). SCT asserts that some sources of influence are stronger than others and they do not necessarily all occur jointly. In fact, the interactions between the three factors will vary depending on the individual, the specific behaviour enacted, and the particular situation in which the behaviour occurs (Bandura, 1989, 1997). For example, students with physical disabilities will likely interpret the environment through cognitive processes because they tend to depend on their knowledge experience, and cognitive skills in order to produce desired results (Bandura, 1989). When people with physical disabilities act as their own agents, they would likely modify their behaviours in order to produce desired goals (Bandura, 1989).

Personal factors comprise an individual’s beliefs, thoughts, feelings, self-perceptions, goals, and intentions (Bandura, 1986). Bandura (1989, 1999b) stated that beliefs, thoughts, feelings, and goals shape behaviours. The perceptions that individuals have of a particular behaviour can affect how they will behave; it is important also to note that behaviours may vary in different situations. Personal factors include beliefs of personal efficacy, comprehension of goals, logical thinking, and effective self-reactions to different situations (Bandura, 1999b). In regards to interactions between the person and the environment, Bandura stated that, “People evoke different reactions from their social environment by their physical characteristics, such as their age, size, race, sex and physical attractiveness” (1999a, p. 8). They are also likely to evoke different reactions from their environment depending on their social roles and status. For example, personal factors could affect the environment when humans avoid difficult situations in which they believe they are unable to cope successfully, and seek other situations in which they believe they can act successfully (Guan, Deng, Sun, Wang, Cai, Ye, . . . & Li, 2013). As far as personal and environmental influences go they do not function as independent determinants. Furthermore, they determine each other. For example, people have the ability to influence and modify the
environments. The modifications in turn, may affect them personally (Bandura, 1999b; Corsini, Wedding, & Dumont, 2008). For example, once a vocational trainer understands the relationship that exists between personal factors and environment, she or he can attempt to use this knowledge to help the students by involving students with physical disabilities in sharing responsibilities (e.g., doing voluntary jobs during the rehabilitation program) which would likely install confidence in her or his cognitive processes which in turn can generate an active environment. Active individuals can produce an active environment (Bandura, 2000). For example, personal factors (students) can influence the environment (teacher) when teachers react to students with physical disabilities based on their levels of physical functioning rather than on the real ability of the students. In turn, a teacher’s positive feedback (environment) can increase students’ beliefs about their own capabilities (personal).

Personal factors may influence behaviour when individuals learn by observing others and could give confidence to some extent to the student for performing a particular behaviour. People with high self-efficacy for a task generally are more likely to engage in that task than would otherwise be the case (Bandura, 1997). On the other hand, people with lower self-efficacy for a task generally are less likely to engage in that task.

Although the notion of human rationality is incorporated into SCT, rational thinking on the other hand requires reasoning skills, which vary in different people and circumstances (Morris & Schunn, 2005). Furthermore, these are also not always used very effectively or well developed (Bandura, 1999b). Thus, individuals are not necessarily rational in an ‘objective’ way.

Individuals are likely to affect, and be affected by two broadly different kinds of environments. One is the physical environment, which refers to the external, tangible surroundings in which individuals live (Davison & Lawson, 2006; Motl, Dishman, Saunders,
Dowda, & Pate, 2007). For students with physical disabilities, the physical environment could include a wheelchair because it is an external surrounding. The second kind of environment is the social environment, which is likely to include the culture in which the individual lives, and people with whom, and institutions with which, a person interacts (Barnett & Casper, 2001).

The beliefs, cognitive competencies, and expectations of individuals can be influenced directly by the environment in which they live in (Dewan, Macdermid, & Packham, 2013). Furthermore, their behaviour are likely to be determined in part by their environment. The experience that people gain through their social and physical environment can modify and develop a set of beliefs, expectations and cognitive competencies (Fertman & Allensworth, 2010). SCT processes should not be misunderstood as mechanical, wherein individuals are merely inactive participants. People are not passive receptors of the different stimuli in their environments; in most circumstances, individuals have the potential to be free agents who actively seek out and process different information in order to choose appropriate actions (Bandura, 1997). Environmental factors may involve the socio-cultural contexts where continuous observation and learning, and reactions to environmental stimuli, shapes behaviour. In a school, a child who is poor in mathematics may hate the subject. The hatred may be extended to the subject teacher. However, modifying the environment to induce a positive attitude from the child may change the child’s negative attitude towards the teacher and the subject. For example, the teacher may start rewarding and praising students who finish their assignments on time, answer questions in class, as well as those who answer the question correctly. The new environment rewards active participation and hard work, and as such, learners may be motivated to behave in a supported environment. That is, the child may begin to answer questions in class and complete assignments on time. In the end, the student who initially disliked the subject may change his or her attitude. Personal factors such as
social persuasion and modelling can be influenced by the environment; tuition may alter cognition (Bandura, 1999b). In addition, teacher feedback (environmental factor) may influence the student’s self-efficacy (personal factor); a teacher saying, “you are doing great” could enhance a student’s self-efficacy and “I don’t think you can learn this” could lower students’ beliefs in their own capabilities. Students with physical disabilities may increase their self-efficacy in a sporting activity if they observe a person with a similar physical disability performing well in that sporting activity because they may start believing that they have the same range of capabilities and able to achieve similar goals.

The third component in triadic reciprocal determinism is behavioural factors; behaviour may be modified by the environment and personal factors (Bandura, 1986, 1989, 1999; Fertman & Allensworth, 2010), and behaviour can modify the environment. Behaviour can affect personal factors, cognitive processes, self-beliefs, and emotional reactions. Individuals generally choose activities that they are capable of succeeding at (Bandura, 1989). Through their actions, people create as well as select environments; behaviour determines which of the many potential environmental influences will be considered and what kind of actions people take. For example, in a workplace, employees who steal may cause a more restrictive regime to be instituted that prevents future theft. In turn, such an environment could cause employees to dislike their jobs, resulting in poorer work performance. This scenario portrays the influence of behaviour on the environment and vice-versa (S. J. Rosenholtz & S. H. Rosenholtz, 1981).

The classic interactions of the three reciprocal determinism factors can be found in the classroom. For example, during a lesson in class, the students in the classroom may be concentrating and paying attention to what the teacher is teaching them (environment influences cognition, a personal factor). Students who struggle and do not understand what the teacher is teaching them may hold their hand up to ask questions for support (cognition
influences behaviour). The teacher may then try and explain and demonstrate the content material in a simplified way (behaviour influences environment). Furthermore, the teacher may give the students a task (environment influences cognition, which influences behaviour). During the task that the students have been set, they may hold the beliefs that they are performing well (behaviour influences cognition).

To sum up, reciprocal determinism holds that human behaviour is not determined by a single factor. It points to the reciprocal relationships between the environment, individual behaviour and personal factors. In this light, reciprocal determinism explains that behaviour is determined by the individual, as a result of cognitive processes, and by the environment, through external stimuli. At the same time, the environment itself can be a product of behaviour when it is modified either to hold or form a particular behaviour. Learning does not necessarily mean that individuals will experience changes in their behaviours. Behaviourists argue that learning leads to changes in behaviours; however this is not entirely the case (Kendra, 2010). Kendra (2010) stated that individuals have the capacity to choose how they will behave in different situations because each possesses cognitive abilities, therefore, they can process stimuli and react accordingly.


Bandura (2006) stated that, human agency is exercised through different mechanisms and the most effective one is self-efficacy beliefs. Individuals’ levels of self-efficacy determine what kind of actions they desire to take, their goals, how persistent they will be to achieve these goals, how much effort they put in, the expected outcomes from their efforts, and how they can visualise their accomplishments (Bandura, 1997, 2000, 2012; Dewan, et al., 2013; Hen & Goroshit, 2012; Hojati & Abbasi, 2013; Maddison et al., 2014; E. Skaalvik & S. Skaalvik, 2014). Moreover, self-efficacy plays a vital role in human functioning because it influences behaviour, goals and motivation, outcome expectations, and individuals’ perceptions about their selves in their own environment (Bandura, 1999b, 2000; Dewan, et al., 2013; Hen, & Goroshit, 2012; Maddison, et al., 2014). Agency depends heavily on self-efficacy, which is essential for setting specific goals and managing difficulties when executing the courses of action needed to achieve desired outcomes (Bandura, 1999a, 2000). The level of self-efficacy beliefs influences the kind of goals that people set for themselves (Dewan, et al., 2013; McPherson & McCormick, 2006). Self-efficacy has been considered by many educational psychologists to be a predictor of academic success because it influences behaviour (McPherson & McCormick, 2006).

**2.3.2.1. Self-Efficacy mechanism.** According to SCT, self-efficacy is not a measure of someone’s skills, rather, it is the individuals’ beliefs about their own capabilities to execute a certain task with the skills they possess (Hen & Goroshit, 2012; Ibrahim & Callaway, 2012). Self-efficacy affects choice of activities, effort, and persistence (Bandura,
2012; Benka et al., 2013; Hen & Goroshit, 2012; McDonald, 1999; McPherson & McCormick, 2000; Park & John, 2014; Schunk et al., 2008; Wright, et al., 2014). Generally, when people have low self-efficacy for accomplishing a certain task, it is more likely they will avoid it, than if they had high self-efficacy for completing that task (Benka et al., 2013; Guan, et al., 2013; McPherson & McCormick, 2000; Vieira, Salvetti, Damiani, & Pimenta, 2014).

Bandura (2012) stated, “The self-efficacy portion of social cognitive theory addresses the origin of self-efficacy beliefs, their structure and functional properties, their diverse effects, the processes through which they work, and how to develop and enlist such beliefs for personal and social change” (page. 13).

Bandura (2012) claimed that individuals’ beliefs in their own capabilities toward executing certain behaviour differ across activity domains and situational conditions. Self-efficacy beliefs influence individuals’ behaviour through their cognitive and motivational processes (Bandura, 2012; Pella, 2014). Bandura argued that the level of self-efficacy beliefs influences whether people think pessimistically or optimistically (Bandura, 2012). The levels of self-efficacy beliefs influence how people may overcome obstacles and the effort they may put toward the goals they set for themselves (Bandura, 2012). The level of self-efficacy contributes to the kind of options that people canvass when they consider a certain action (Bandura, 2012).

2.3.2.2. Sources of self-efficacy. Bandura (1986, 1997, 2012) stated that, one’s beliefs about one’s own capabilities are developed primarily through four sources: performance accomplishment (or mastery experiences), vicarious experiences, verbal persuasion, and physiological and affective states, generally in decreasing order of strength (see Figure 2.2).
The first and the most influential source of efficacy information is performance accomplishments which is based on personal mastery experiences (Bandura, 1997, 2012; Dewan, et al., 2013; Ginis, et al., 2015; Maddison, et al., 2014; McCormick, Ayres, & Beechey, 2006; McCormick, et al., 2015; Prestwich, Kellar, Parker, Macrae, Learmonth, Sykes, … & Castle, 2013; Strauser, 1995; Warner, Schüz, Wolff, Parschau, Wurm, & Schwarzer, 2014). Success generally increases self-efficacy beliefs, while failure generally decreases efficacy beliefs (Bandura, 1997, 2012). Strong self-efficacy is likely to be developed through repeated successes (Bandura, 1997, 2012). For example, if people consistently manoeuvre successfully a wheelchair in an awkward space, it is likely they would have strong self-efficacy beliefs for this activity (Best, Miller, Eng, Routhier, & Goldsmith, 2014; Genis, Camic, & Harvey, 2015; Ginis, Papathomas, Perrier, & Smith, 2015; Sakakibara & Miller, 2015; Sakakibara, et al., 2014). However, when an individual experiences failure in a certain task, it may not necessarily lead to lower self-efficacy,
especially if that task has been performed successfully several times in the past (Bandura, 1997). Heppner, O’Brien, Hinkelman, and Flores, (1996) showed that performance accomplishment in vocational education could play a vital role in enhancing self-efficacy and interest. Their research emphasised the importance of examining positive and negative events that could affect graduate students’ persistence and performance in their future careers. In addition, successful performances accomplished under circumstances varying in levels of difficulty have been found to be more likely to increase self-efficacy than those achieved under conditions of limited difficulty (Lent, Brown, & Hackett, 1996). When students with physical disabilities have confidence in their own capabilities to succeed at a task, it is likely they will maintain their goals even if difficulties arise. Nevertheless, mastery experiences are not always possible (McCormick et al., 2006). For example, a pilot in training is likely to wait a long time before being able to fly a real airplane. The more challenging the task that someone successfully accomplished, the stronger the mastery experiences, and therefore, the higher the self-efficacy (Bandura, 2012). When people with physical disabilities execute a vocational task successfully, easily and without extreme effort, they might start expecting similar results in future, which in turn might discourage them from making the required effort (Bandura, 2012). Strong self-efficacy requires individuals to experience mastery of difficult tasks that require them to overcome obstacles by being persistent in their efforts (Bandura, 2012; Genis, et al., 2015). Bandura (2012) stated, “resilience is also built by learning how to manage failure so that it is informative rather than demoralizing” (page. 13).

The second source of self-efficacy is vicarious experiences, often through observing social models (Bandura, 1997, 2012; Dewan et al., 2013; Ginis et al., 2015; Maddison et al., 2014; McCormick et al., 2015; McCormick et al., 2006; Prestwich, et al., 2013; Sewell & George, 2000; Strauser, 1995; Warner et al., 2014). Vicarious learning occurs when an individual observes another performing the relevant task (Strauser, 1995). Observing
someone with similar capabilities and in a similar environment successfully accomplishing certain behaviour by persistent effort likely increases observers’ beliefs in their own capabilities. In the absence of performance accomplishments, vicarious experiences can be very important for the formation of self-efficacy beliefs. Observing others with similar capabilities and in similar circumstances successfully performing a certain task, may lead an individual to believe that she or he could also perform the task effectively (Dodds, 1989). In the same way, observing someone similar failing to perform a task could lead to the observer having lower self-efficacy for performing the task. SCT focuses on the effects of modelling and vicarious learning on self-efficacy and the achievement of new behaviours (Strauser, 1995). Strauser (1995) stated “Efficacy is also increased when an individual observes a variety of models achieving success, instead of just one model” (p. 8). For example, when a patient who is an amputee knows that other amputees with a similar condition can perform a task which the patient is unable to do, this may lead her or him to believe that the task is within his or her own capabilities. On the other hand, observing a comparable model failing in the task could decrease a person’s self-efficacy.

The third source of self-efficacy is verbal persuasion (Bandura, 1986, 1997, 1995, 2012; Dewan, et al., 2013; Ginis, et al., 2015; Maddison, et al., 2014; McCormick, et al., 2015; McCormick et al., 2006; Prestwich, et al., 2013; Sewell & George, 2000; Strauser, 1995; Warner, et al., 2014). People’s beliefs may be influenced by the messages conveyed by others (Brown, 1999). Bandura (1997) claimed that individuals who are encouraged verbally that they have the required capabilities to execute a certain behaviour are more likely to invest more effort than those who are not persuaded verbally. Verbal persuasion is weaker than the first two sources, but in the absence of experience can be important (McCormick et al., 2006). Strauser (1995) claimed that verbal persuasion might lead individuals to show an initial increase in their self-efficacy, however, self-efficacy would likely decrease if failure
were experienced. Verbal persuasion generally is an effective tool that has been used to influence people’s self-efficacy beliefs in the context of rehabilitation (Barlow, 2010). If a vocational trainer in the field of rehabilitation encourages students with physical disabilities through verbal persuasion to believe they have the capability to successfully complete a task, their self-efficacy will likely be raised (Dodds, 1989). On the other hand, a person with physical disabilities whose trainer says that the therapy exercises are too difficult for him is likely to develop lower self-efficacy than if the message were “you can perform these therapy exercises well”.

The final source of self-efficacy and generally the weakest is physiological states (Bandura, 1986, 1997, 1995, 2012; Dewan, et al., 2013; Ginis, et al., 2015; Maddison, et al., 2014; McCormick et al., 2006; Prestwich, et al., 2013; Sewell & George, 2000; Strauser, 1995; Warner, et al., 2014). Stress and anxiety generally have a negative effect on self-efficacy (Bandura, 2012; Ginis, et al., 2015; Maddison, et al., 2014; Strauser, 1995). Bandura (1977) stated “stressful and taxing situations generally elicit emotional arousal that, depending on the circumstances, might have informative value concerning personal competency” (p. 198). People take into consideration their own physical and emotional states when judging their beliefs in their own capabilities (Bandura, 2012). The less anxiety people have when executing a task the higher their self-efficacy beliefs are likely to be. For example, if students with physical disabilities tremble or sweat during a mobility lesson, they may conclude that they are not doing well, and should avoid similar tasks in future. People with low self-efficacy for a task may avoid that task when they believe they do not have the required competence to execute the task (Ehrenberg, Cox, & Koopman, 1991; Vieira, et al., 2014). Some arousal may be functional, e.g., trembling or sweating could be viewed as a result of weakness, or may be considered as determination to succeed (Bandura, 1995).
2.3.2.3. **Outcome expectations.** Based on SCT, outcome expectations refer to individuals’ expected outcomes of their behaviours (Bandura, 1997; Brown, Wiley, Wolitzky-Taylor, Roy-Byrne, Sherbourne, Stein, … & Craske, 2014; Conklin, Dahling, & Garcia, 2013; Hsu, Ju, Yen, & Chang, 2007; Phillips & McAuley, 2013). Outcomes occur through actions; an individual’s behaviour will likely determine the outcomes of his or her actions (Bandura, 1997; Phillips & McAuley, 2013). Self-efficacy may readily be confused with outcome expectations, however, the two are different from each other (Landry, 2003). The causal relation between self-efficacy and outcome expectations is explained in Figure 2.3. Self-efficacy is an individual’s belief that she or he can successfully execute a specific task using the necessary behaviours to achieve a desired outcome (Bandura, 1986; McPherson & McCormick, 2003). Outcome expectations are the individual’s beliefs that executing certain behaviour will likely lead to particular outcomes (Bandura, 1997; Resnick, Zimmerman, Orwig, Furstenberg, & Magaziner, 2000). In other words, individuals often are able to make judgements about likely outcomes before the behaviour takes place. Logically, personal efficacy beliefs and corresponding outcome expectations tend to be related. People who believe they have the capabilities to perform a certain task successfully in a given situation (e.g., playing volleyball) will more likely expect positive outcomes than those who doubt their capabilities (Hsu et al., 2007; Park & John, 2014). Consequently, self-efficacy beliefs and outcome expectations are likely to play important parts in human psychological functioning. Bandura (1999b) stated that, individuals generally are capable of adjusting their behaviours in accord with outcome expectations; behaviours likely to produce successful outcomes are commonly adopted and utilised. On the other hand, those that bring unfulfilling or unsatisfactory outcomes are more likely discarded.
Figure 2.3. The causal relationships between self-efficacy and outcome expectation. Adapted from “Self-efficacy: toward a unifying theory of 32avourable32 change” by A. Bandura, 1977, psychological review, 84(2), p. 193.

Individuals may modify an expectation by observing relationships between environmental events, and between actions, and their outcomes (Bandura, 1986). Bandura (1986) argued “in social, intellectual, and physical pursuits, those who judge themselves highly efficacious will expect 32avourable outcomes, self-doubters will expect mediocre performances of themselves and thus negative outcomes” (p. 392). Furthermore, Bandura (1986) claimed that outcome expectations cannot be disconnected from self-efficacy beliefs because outcome expectations depend highly on self-efficacy judgments.

Although outcome expectations and self-efficacy generally are connected, they may not coincide when outcomes are weakly linked with performance quality (Landry, 2003). For example, a worker with a disability may have high self-efficacy for using a particular machine, but not expect to do so successfully because her supervisor does not permit her to work with that machine.

SCT suggests that interactions of personal factors, behaviour and the environment predict certain outcome expectations that can lead to certain decisions (Bandura, 1989; Kwakye & Nor, 2011). This kind of interaction may lead individuals to set up goals to execute certain behaviours, or not (Kwakye & Nor, 2011). It is imperative to note that the motivation to choose certain behaviours is likely to depend on how desirable the expected
outcomes are (Cherian & Jacob, 2013; Guan, et al., 2013). In addition, self-efficacy significantly influences people’s motivation and behaviour (Guan, et al., 2013; Huang, 2013). Hence individuals with high self-efficacy generally are more likely to exhibit a related behaviour than those with low self-efficacy (Bandura, 1995). SCT emphasises that human cognition is likely to lead individuals to be aware of their own capabilities in order to achieve certain goals and to expect the outcomes associated with those goals (Bandura, 1989; Kwakye & Nor, 2011).

Extrinsic outcomes are rewards or punishments that come from outside the self, e.g., pay increases, promotions, and quality awards (Champoux, 2011). For example, employers can award or hold back extrinsic outcomes for an employee’s performance. Outcome expectations can be disconnected from self-efficacy judgments when extrinsic outcomes are linked to the quality of performance (Bandura, 1986, 1997). Outcome expectations are disconnected from self-efficacy beliefs when extrinsic outcomes are not linked to the level of performance, and when the level of productivity results in unchanging pay. That is, better performance results in no additional financial benefits (Bandura, 1986). Individuals may vary in self-efficacy and outcome expectations. Therefore, an individual may have high self-efficacy but not necessarily high outcome expectations (Schunk et al., 2008). For example, in the past, in baseball, some players were prevented from entering the major leagues because of their race, no matter how well they played (Bandura, 1997). By the same token, individuals may have low self-efficacy and high outcome expectations, for example, students with low self-efficacy for doing maths homework but who hold high outcome expectations about the result because someone else has helped them with the homework. Individuals low in self-efficacy and outcome expectations generally are likely to give up and not exert much effort. Students who have high self-efficacy and outcome expectations generally are more likely to persist in tasks and be more confident of achieving desired outcomes. Thus, self-efficacy and
outcome expectations are separated for the reason that “individuals can believe that a particular course of action will produce certain outcomes but they do not act on that outcome belief because they question whether they can actually execute the necessary activities” (Bandura, 1986, p. 392). Self-efficacy, goals, and outcome expectations play important roles in the formation of a person’s interests, goals, and actions (Bandura, 2012; Koumoundourou, Kounenou, & Siavara, 2012). They operate in concordance with personal, contextual, and learning variables such as, gender, ability, and social support to affect people's thought patterns. People with high efficacy beliefs tend to perceive difficult tasks as challenges to be accomplished rather than difficult tasks to be avoided (Bandura, 2012; Brooks, et al., 2014; Schunk et al., 2008).

2.3.3. Social Cognitive Career Theory. Employment and career development are influenced by many factors, including personal factors (e.g., interests and abilities), learning experiences, resources, opportunities, and barriers in the environments (Brown & Lent, 2013). Employment careers are shaped by complex interactions among those factors. Career related theories explain which factors interact with each other to determine career choices and development (Brown & Lent, 2013).

Social cognitive career theory (SCCT), was developed by Lent, Brown, and Hackett (1994), and originated from Bandura’s SCT (Corrigan, 2008; Mills, 2009). SCCT focuses on understanding educational and occupational behaviour and seeks to understand how people develop their vocational interests, make career choices, achieve career success and stability, and experience satisfaction in the work environment. (Brown & Lent, 2013; Kelly, 2009; Lent & Brown, 2006; Lent, Brown, & Hackett, 1994; Lent, Brown, & Hackett, 2000). SCCT is based on the interactions between personal, cognitive, and environmental factors (Jiang & Zhang, 2012; Rajabi, Papzan, & Zahedi, 2012). As in SCT, SCCT suggests that people have
the ability to exercise some degree of agency and are influenced by many factors (e.g., environmental factors, personal factors), which can strengthen or weaken personal agency (Brown & Lent, 2013).

SCCT explains how people pursue their occupational goals through their interests, choices, and education (Lent et al., 1994). Furthermore, SCCT emphasises that the environment and personal factors, including people's self-efficacy beliefs, thought patterns, outcome expectations, personal goals and emotional reactions combine to determine a person’s career development (Bandura, 1986; Jiang, & Zhang, 2012; Lent et al., 1994; Lent et al., 2000). Home, school, and community environments expose people over the course of life to many occupational related activities that shape the nature of their future careers (Brown & Lent, 2013; Lent, Hackett, & Brown, 1996; Michel, Hays, & Runyan, 2015). Through continued activity exposure, practising a variety of activities, and by receiving feedback about their performances, they gradually refine their skills, develop their own performance standards, form their self-efficacy beliefs for particular tasks, and form certain outcome expectations of their performances (Lent et al., 1996).

SCCT distinguishes between the type of career one wishes to achieve (personal goals) and the level of performance one plans to achieve within a given task or domain (Brown & Lent, 2013). Personal goals are means by which people exercise agency in regard to their vocational career (Brown & Lent, 2013). Brown & Lent, (2013) defined personal goals as “one’s intention to engage in a particular activity or to produce a particular outcome” (p. 119). Moreover, personal goals help people to manage, organise, and regulate their own behaviour (Brown & Lent, 2013). Brown & Lent (2013) indicated that the amount of progress that people are making toward their own goals could affect them by providing feelings of satisfaction or dissatisfaction, which in turn may help to reform their future goals
and choices. As mentioned earlier, SCT suggested that individuals’ levels of self-efficacy determine what kind of actions they desire to take, their goals, how persistent they will be to achieve these goals, how much effort they put in, and the expected outcomes from their efforts (Bandura, 1997, 2000, 2012; Brown & Lent, 2013; Dewan, et al., 2013; Hen & Goroshit, 2012; Hojati & Abbasi, 2013; Maddison et al., 2014; E. Skaalvik & S. Skaalvik, 2014). Progress in achieving personal goals is likely to influence self-efficacy beliefs and outcome expectations (Brown & Lent, 2013). When people achieve their desired goals, their self-efficacy beliefs likely increase (Brown & Lent, 2013). SCCT suggests that self-efficacy is related to outcome expectations, and these two constructs shape the individual’s level and type of career interests (Corrigan, 2008; Lent et al., 1994; Brown & Lent, 2013). For example, in a rehab programme, a person who’s recently injured might be involve in a volunteer job to help the recreational therapist providing recreational sessions (e.g., painting, cooking) for other patients with physical disabilities. He or she might execute the given tasks successfully, and therefore, her or his beliefs in his or her capabilities for doing recreational duties and the expected outcomes would likely to increase. Thus, her or his career interests in becoming a recreational therapist would likely increase. Interest in a certain activity is likely to be shaped and developed when individuals have high self-efficacy for that activity and expect that performing it will result in high outcomes (Brown & Lent, 2013). Simultaneously, people’s interest might decrease if they have low self-efficacy beliefs and low outcome expectations (Brown & Lent, 2013).

Self-efficacy and outcome expectations help in shaping people’s vocational interests (see Figure 1.1), which likely lead them to be involved in activities that are in line with those interests (Brown & Lent, 2013; Lent et al., 1994; Michel et al., 2015).
2.3.3.1. Vocational interest

Brown and Lent (2013) argued that interests, self-efficacy and outcome expectations form individuals’ goals, for improving and increasing their involvement in particular tasks. Brown and Lent (2013) stated that goals “increase the likelihood of activity practice, and subsequent practice efforts give rise to a particular pattern of performance attainments that, for better or worse, help to revise self-efficacy and outcome expectations within an ongoing feedback loop” (p. 121). However, career interests tend to be more stable with time and for some individuals, interests become more stable by late adolescence or early adulthood (Brown & Lent, 2013; Lent et al., 1994). SCCT suggests that interests’ stability depends mainly on the level of self-efficacy beliefs and outcome expectations (Brown & Lent, 2013; Brown & Lent, 2013; Lent et al., 1994). The changes in, or stability of, interests is determined by whether preferred activities become difficult and whether individuals are exposed to learning experiences (e.g., by engaging in leadership roles, using new technology) that help them to reconsider or increase their self-efficacy beliefs and the outcomes expected.
by different work activities (Brown & Lent, 2013). For example, in any workplace, when people with physical disabilities are exposed to new duties (e.g., using a new computer program) and successfully mastered these duties, their interests in their current career would likely to increase because they would likely to start thinking that they have the required capabilities to execute the job’s tasks successfully. Therefore, SCCT suggests that, any changes or solidification in interests depend mainly on self-efficacy beliefs and outcome expectations (Brown & Lent, 2013). Generally, many activities are endeavoured through individuals’ educational career, however, stable interests are likely to be developed in those tasks which individuals believe they can execute successfully and for which they have positive outcome expectations (Brown & Lent, 2013; Lent et al., 1994). Interests are expected to predict the kind of goals that people set for themselves and the nature of their behaviours. SCCT argues that people’s performances are predicted by their behaviours and the levels of their self-efficacy beliefs (Brown & Lent, 2013; Lent et al., 1994). The levels of success or failure in managing certain activities contribute to individuals’ self-efficacy beliefs (Brown & Lent, 2013) Brown and Lent (2013) stated that the effects of abilities and values on interest are shaped through self-efficacy beliefs and outcome expectations. Objective ability can increase or decrease self-efficacy beliefs, which can influence interests. In other words, self-efficacy beliefs operate as a link between people’s interests and their capabilities. Values are usually measured through individuals’ preferences for certain work conditions (e.g., workplace environment, wages). Self-efficacy beliefs and outcome expectations could predict career interests among people with disabilities (Corrigan, 2008).

2.3.3.2. Career choice

SCCT emphasises that choosing a certain career is not a single event. Rather, it is part of the interaction of self-efficacy beliefs and outcome expectations (Brown & Lent, 2013). As
Figure # shows, the development of self-efficacy beliefs and outcome expectations are seen as jointly promoting vocational interests, which foster related goals in different activity domains (Brown & Lent, 2013; Jiang & Zhang, 2012; Lent et al., 1994; Michel et al., 2015). When individuals with physical disabilities make their initial career choices, it is expected that there may be future changes because individuals are both producers and products of their environments (Bandura, 1986; Brown & Lent, 2013). Different environments and circumstances may also affect the initial choice making or career goals (Brown & Lent, 2013; Lent et al., 1994; Michel et al., 2015). Personal goals are relevant for people with SCI because one might expect those who are newly injured to revise their initial goals to new goals after they sustain their injuries and adjust to their physical conditions. If a person with physical disabilities holds a degree in civil engineering before the injury, she or he likely would have to change his or her initial career choice because physical fitness is vital for the work of civil engineers because they may have to climb on roofs, move or carry heavy loads. New vocational choices might be considered; challenges or misfortunes (e.g., job loss) may occur and vocational interests may change over the course of work life (Brown & Lent, 2013). Therefore, it is logical to think of vocational selection as parts of a continuing process with a variety of influences (e.g., educational background limitations, family pressures or economic and job markets) and career choices (Brown & Lent, 2013; Lent et al., 1994). In such circumstances, people with physical disabilities might consider adjusting their initial interests and make their career choices based on such considerations as what job is available, along with their self-efficacy beliefs (can I do this job?) and their outcome expectations (is the work wages and work environment worth the effort?) and their physical capabilities (physical conditions). Therefore, vocational choice is influenced by both the environment’s acceptance of the individual and the individual’s own beliefs about her or his own capabilities to execute the training and occupational tasks successfully (Brown & Lent, 2013;
Lent et al., 1994). In other words, environment plays a vital role in determining what kind of job individuals will do, where they will be doing it, for how long, and what kind of rewards they will receive (Brown & Lent, 2013). However, SCCT emphasises that individuals’ career choices are not necessarily supported by their environments, and individuals are not always free to pursue their initial interests (Brown & Lent, 2013; Jiang & Zhang, 2012). Thus, individuals’ interests may not have a direct influence on their career choices. As mentioned earlier, self-efficacy beliefs and outcome expectations are seen as jointly influencing career interests, which in turn foster career choice goals which are consistent with one’s interests (Brown & Lent, 2013). Choice goals then, encourage choice actions, or effort that supports the implementation of one’s goals (Brown & Lent, 2013; Lent et al., 1994). In turn, these choice actions are expected to produce a successful or unsuccessful performance (Brown & Lent, 2013). For example, when an individual with physical disabilities gets accepted in civil engineering college, he or she may face difficulty in completing the required field assignments because it required students to visit construction sites in order to execute the assignments tasks. She or he may start thinking that the natures of the assignments available in engineering do not suit her or his physical condition as had been initially expected. These learning experiences may cause the student to modify her or his self-efficacy beliefs and outcome expectations, leading him or her to a change in career interests and goals (e.g., selection of a new educational or career choice).

In conclusion, generally but not always, educational and vocational choices are linked to people’s interests. Workplace environment, labour market, economic conditions, culture and society, and many other circumstances sometimes require an adjustment and flexibility in one’s personal interests. Thus, career choices are subject to what options are available, the level of self-efficacy beliefs and outcome expectations, choice related resources, and the kind of support they receive (Brown & Lent, 2013).
### 2.3.3.3. Performance

Performance focuses both on what individuals achieve in work tasks and how persistent they are to execute these tasks, particularly when they face difficulties (Brown & Lent, 2013; Lent et al., 1994). Persistence is often viewed as a sign of successful performance because it is assumed that capable individuals will be more persistent in maintaining their career. According to SCCT, persistence is not viewed as a valid indicator of the quality of performance because individuals can change their career plans for reasons other than lack of capabilities (Brown & Lent, 2013; Lent et al., 1994). For example, an employee may decide to pursue different career options because she or he was laid off due to workplace downsizing.

SCCT emphasises that vocational performance involves the interaction between people’s actual capabilities, self-efficacy beliefs, outcome expectations, and performance goals (Brown & Lent, 2013). People evaluate the level of their self-efficacy and outcome expectations partly based on their own beliefs of the skills and capabilities they have for a certain tasks, how well they performed the tasks, and what kind of accomplishments they have received. In turn, self-efficacy beliefs and outcome expectations influence how people persist in performing their goals that they set for themselves (Brown & Lent, 2013; Lent et al., 1994). The higher the self-efficacy beliefs and positive outcome expectations the higher the goals people set for themselves, which in turn, help sustain and enhance their performance.

It cannot be assumed that higher self-efficacy is always positive, because the effects of self-efficacy beliefs depend on how high or low the beliefs are in relation to current levels of objective capabilities (Brown & Lent, 2013; Lent et al., 1994). People might face obstacles
if they misjudge their own capabilities either positively or negatively (Brown & Lent, 2013). Overestimating current capabilities (high self-efficacy) may lead someone to attempt to execute tasks, which are beyond their actual capabilities, which in turn could result in failure, and therefore, decrease their self-efficacy (Brown & Lent, 2013; Lent et al., 1994). On the other hand, when people underestimate their self-efficacy beliefs, this may influence their performances because they invest less effort and persistence, have lower goals, and avoid realistic tasks (Bandura, 1986; Lent et al., 1994).

2.3.3.4. Applying SCCT in the context of physical disabilities.

Several authors have argued that SCCT could be utilised to understand the career development of people with different type of disabilities (Fabian & Pebdani, 2013; Lent, Morrison, & Ezeofor, 2014; Rojewski, 2002). For example, Rojewski (2002) suggested that rehabilitation counsellors should consider the concepts of SCCT when organising or planning career interventions for adults with mild disabilities. Fabian and Pebdani (2013) suggested that SCCT could be further researched in order to understand the vocational behaviour of people with mental health disabilities. Lent et al. (2014) suggested that the resources of self-efficacy should be utilised to reduce the barriers for the career development of people with disabilities. Although the contexts of those studies were in different disability contexts, it can be argued, using the same reasoning, SCCT can be applied in the context of physical disabilities.

For people with disabilities, self-efficacy beliefs play a vital role in improving aspects that influence career development, such as making career choices, developing career interests, and maintaining employment by maintaining performance (Lent et al., 2014). In the context of vocational rehabilitation of people with physical disabilities, vocational interests
are shaped by the level of self-efficacy beliefs and the expected outcomes, which means that people with physical disabilities would likely form their interests in a certain activities when they believe that they have the required capabilities and positive outcome expectations (Lent et al., 1994). Vocational rehabilitation (VR) trainers could help people with physical disabilities to shape their vocational interests by providing activities appropriate and realistic for their physical conditions to increase the chances of success in executing these activities, which in turn would likely increase their self-efficacy beliefs and their interests.

Fabian and Pebdani (2013) argued that self-efficacy beliefs and career interests of people with disabilities play a vital role in forming their career choices. It is also important to expose people with physical disabilities to a variety of activities and experiences which could contribute to enhancing their career self-efficacy, such as volunteer job experiences, observing role models, and verbal persuasion (Fabian & Pebdani, 2013). VR trainers should evaluate the self-efficacy beliefs and the outcome expectations of people with physical disabilities in order to determine how these beliefs may have shaped their current career interests, career goals, and future career expectations (Fabian & Pebdani, 2013). Designed interventions to improve the self-efficacy beliefs of people with physical disabilities can be used by VR trainers to help the former form their career interests and future career (Fabian & Pebdani, 2013; Feller & O'Bruba, 2009). VR trainers should provide a variety of vocational options, and expose their students to models who have successfully obtain and maintain a job. The higher the self-efficacy beliefs people with physical disabilities have, the higher their beliefs in their capabilities to manage a job interview (Feller & O'Bruba, 2009).

The kind of disabilities could also affect the extent of negative thoughts related to making career choices and interests (Feller & O'Bruba, 2009). People with cognitive disabilities tend to have more negative thoughts regarding career decision than people with physical disabilities (Yanchak, Lease, & Strauser, 2005; Feller & O'Bruba, 2009). This is
because people with cognitive disabilities have impaired decision-making skills, which would likely result in having unrealistic outcome expectations about VR and future careers (Yanchak et al., 2005). People with physical disabilities, but no cognitive disabilities, may be expected to have more confidence in their decision-making skills and possess clearer understanding of their capabilities (Yanchak et al., 2005).

In conclusion, SCCT consists of three constructs, namely, vocational interest, career choice, and performance. SCCT emphasises the importance of cognitive factors, such as self-efficacy beliefs, along with other person and environment factors in forming individuals’ career options (Brown & Lent, 2013; Lent et al., 1994). Although SCCT highlights that people exercise varying levels of agency in their career development, it also acknowledges other conditions that can influence individuals’ ability to influence their own career paths (Brown & Lent, 2013).

### 2.3.4. Agency

SCT emphasizes that humans are not only influenced and controlled by environment factors; they have the power to change and shape the environments in which they live (Bandura, 1997, 2000, 2005, 2012). People have the capabilities to influence their own actions to become agents of their own behaviours and shape their environments (Bandura, 2005). Agency refers to the capabilities of individuals to set certain goals and act accordingly (Martin, 2004). In addition, people can determine their goals and what kind of actions they will take in order to achieve their goals; they regulate their behaviours (Bandura, 2006a). Bandura (2000) argued “People are partly the products of their environments, but by selecting, creating, and transforming their environmental circumstances they are producers of environments as well” (p. 75). Thus, agency gives them the ability to influence the environment by controlling the course of events and to be major participants in shaping their own lives (Bandura, 2000).
2.3.5. **Self-regulation.** Self-regulation refers to individuals’ capabilities to manage their own cognitive processes, performances, and the environment’s external influences, in order to obtain desired goals (Komarraju & Nadler, 2013; Zimmerman, 1989, 2000). In many contexts, individuals can be self-agents and more likely able to regulate their cognition and behaviours in order to execute certain performances to achieve their goals (Komarraju & Nadler, 2013; Maddison, et al., 2014; Zimmerman, 1989, 2000). In order to self-regulate, it is important that individuals pay sufficient attention to their own performances in order to have the ability to influence their own motivation and behaviours for a designated task (Bandura, 1991). Bandura (1986) stated “people shape their environment by their own self-regulated actions” (p. 369). Individuals set goals for themselves by predicting the expected outcomes of certain actions, then designing courses of action likely to produce rewarding consequences and avoid unrewarding ones (Bandura, 1999b, 2001b; Maddison, et al., 2014). Performances that generate positive outcomes generally are eagerly adopted and utilised, whereas those that are perceived to cause undesirable outcomes are more likely ignored (Bandura, 1999b).

Outcomes need not be experienced personally to play a part. People can make use of information from observing others’ successes and failures as well as their own (Bandura, 1999b). Individuals frequently attempt to set goals for themselves, and subsequently evaluate their accomplishments in relation to those goals, leading them either to persist, or adjust their behaviours, or change their goals (Bandura, 1989, 1999, 2001). Additionally, individuals are likely to develop an awareness regarding their own capabilities which then affects their behaviours when they decide what they are seeking to accomplish and how much effort they will put into their performances (Bandura, 1977).

Self-regulation is the capacity to develop a set of productive behaviours and control these behaviours (Bandura, 1991). Furthermore, self-regulation is modified to assist the
pursuit of personal goals in varying environments. Individuals generally are able to learn to become more self-regulated by developing strategies that are successful for them, and also enable them to enhance control of their own behaviours and environments (Bandura, 1991). Additionally, the effectiveness of self-regulation depends on individuals developing self-efficacy for self-regulating their own behaviour, and for performing to the best of their abilities (Bandura, 1989; Schunk et al., 2008).

Self-regulation is founded on a negative feedback system in which people attempt to reduce discrepancies between their performances and goals by a discrepancy reduction mechanism (Bandura, 1999b, 2001b). Bandura (2001b) argued that, people have the abilities to be productive and creative in their environments. Individuals’ self-regulation requires discrepancy production as well as discrepancy reduction (Bandura, 1989, 1999b, 2001b). Individuals generally set goals for themselves based on their own capabilities and the amount of effort they require in order to achieve the goals and avoid difficulties while executing plans (Bandura, 1989, 1999b). Bandura (1989, 1999b, 2001b) described discrepancy production as the motivation that guides individuals’ actions by setting themselves challenging goals and then adjusting their persistence and modifying their behaviours to accomplish them. When people achieve the goals, generally, those with high self-efficacy are likely to set more challenging goals for themselves; more challenging goals tend to generate new discrepancies to be mastered (Bandura, 1989, 1999b, 2001b). People attempt to analyse the goals they have set for themselves and compare the goals to their accomplishments, which will likely motivate the individuals to be more persistent and adjust their own performance to achieve the goals (Bandura, 1986, 1989, 1999b, 2001b).

When people have high self-efficacy they tend to use more efficient strategies in order to regulate their performances than those with low self-efficacy (Bandura, 2012). Among students who have similar capabilities but who differ in their self-efficacy beliefs, those with
higher self-efficacy generally plan their strategies better, are more persistent, have better time management, and choose better solutions in order to achieve desired goals (Bandura, 2012; Bouffard-Bouchard, Parent, & Larivee, 1991). Bandura (2012) argued that one’s beliefs in one’s capabilities is not enough to produce successful behaviours, rather, how one uses those capabilities determines the quality of the performance of one’s actions (Bandura, 2012). Bandura (2012) stated “a skill is only as good as its execution” (p. 19).

2.3.6. Proxy Efficacy. Although self-efficacy can predict physical activity, Bandura (2001b) claimed that “people do not have direct control over the social conditions and institutional practices that affect their everyday lives” (p. 13), and provide the context for their activity choices (Bandura, 2000, 2001b; Dzewaltowski, Geller, Rosenkranz, & Karteroliotis, 2010; Dzewaltowski, Karteroliotis, Welk, Johnston, Nyaronga, & Estabrooks, 2007; Priebe et al., 2012). In these social and physical conditions, people tend to seek other people who have expertise, influence and who have access to resources to act at their behest to help them achieve their desired goals and outcomes (Bandura, 2000, 2001; Bray & Cowan, 2004; Bray, Gyurcsik, Culos-Reed, Dawson, & Martin, 2001; Dzewaltowski, Geller, Rosenkranz, & Karteroliotis, 2009; Dzewaltowski et al., 2007; Dzewaltowski et al., 2010; Geller & Dzewaltowski, 2010a, 2010b; Geller, Dzewaltowski, Rosenkranz, & Karteroliotis, 2009; McCormick et al., 2015; Priebe et al., 2012). In some areas, successful performance usually depends to some extent on proxy efficacy to provide free time and effort to manage directly other aspects of life (Bandura, 2001). A proxy agent could be any third party, and in the field of vocational training and education for people with physical disabilities, a proxy agent is often likely to be the vocational trainer. For example, in a vocational training course, people with physical disabilities are likely to seek the help of vocational trainers to act for them. People may also depend on proxies because they want to avoid saddling themselves
with the difficult tasks needed to develop essential capabilities, and taking responsibility, which the exercise of control entails (Bandura, 2000, 2001b; Dzewaltowski et al., 2007; Dzewaltowski et al., 2010). Proxy efficacy depends on capability, influence, and favours of others (Bandura, 2000, 2001b). Bandura (2001b) stated “people do not live their lives in isolation. Many of the things they seek are achievable only through socially interdependent effort” (page. 13). Thus, they may have to cooperate with others to achieve desired goals, which they cannot achieve on their own (Bandura, 2000, 2001b).

In the field of rehabilitation, self-efficacy has important implications on rehabilitation outcomes (Sakakibara & Miller, 2015). Bandura claimed that self-efficacy is developed through four source of self-efficacy and mastery experiences are the most influential source (Bandura, 1986, 1997, 2001). When people with physical disabilities are enrolled in a vocational training course and they have confidence in their vocational trainer’s capabilities (high proxy efficacy), their own self-efficacy for completing vocational training tasks will likely be high, and vice versa (Bray & Cowan, 2004; Elias & Macdonald, 2007).

2.4. Disabilities

2.4.1. Introduction. Impairment is a loss or irregularity of a body function so that function is below normal levels in the general population, e.g., Down syndrome and deafness (Berry, 1990; Foreman & Arthur-Kelly, 2014). Impairment may result in a disability (Foreman & Arthur-Kelly, 2014). For example, because of the physical disabilities caused by SCI, an individual may not be able to walk without the assistance of crutches or a wheelchair. In other words, impairment may result in a disability when there is a lack of capability to execute a normal activity within the level considered normal and doable by human beings. The term disability generally refers to irregularity in the standard performance of an individual, including intellectual, psychological infirmity, sensory, physical, and cognitive
impairment and a variety of chronic ailments (Berry, 1990; Jette & Branch, 1981). A disability can become a handicap when society’s attitudes and physical impediments make it difficult to do what is expected in life (Berry, 1990; Foreman & Arthur-Kelly, 2014). For example, if an individual who uses a wheelchair is unable to gain physical access to a gym, then that individual has a handicap in relation to gym usage. A disability will not become a handicap when the individual can fulfil his or her needs and society’s expectations using suitable techniques.

There are several types of disabilities that may affect particular body parts, organs, or compromise the general participation of the affected person in life activities. Disability can be defined as an impaired functioning in an area such as walking, seeing, or hearing (Casey, 2005). Moreover, it is a potential-limiting of capability to execute a certain task that most other people can do.

**2.4.2. Physical disabilities.** Physical disabilities relate to the malfunctioning of major body parts including upper and lower limbs, physical agility, and impairment in the synchronisation of various body organs (Foreman & Arthur-Kelly, 2014). Physical impairments are either present at birth, acquired during one’s life, or due to certain diseases. Moreover, physical disabilities include SCI, which is damage to the spinal cord caused by an accident, illness, or an inborn condition (Foreman & Arthur-Kelly, 2014). The most commonly associated disabilities include difficulty in using limbs or incapacity of limbs, and/or absence of feeling in the affected parts of the body.

**2.4.3. Historical background of physical disabilities.** Historically, people with physical disabilities were viewed as burdens on society mainly because they were perceived unable to contribute efficiently to survival or the creation of wealth (Casey, 2005); most
people with physical disabilities were abandoned by their families, confined to hospitals, or given a beggar's bowl (Casey, 2005).

Various countries, such as the US, have now enacted laws that not only prohibit discrimination against people with physical disabilities, but also offer them equal opportunities (Nickels, 2002). Although major strides have been made to improve the lives of people with physical disabilities, they still face stereotyped discrimination, and lack of access to social amenities and facilities that are available to others (Nickels, 2002).

2.4.3.1. Spinal Cord Injury. SCI is one of the major causes of physical disability since it reduces the capacity to be fully functional (Australian Institute of Health and Welfare, 2009). This generally affects the employability of the person suffering from the injury, as almost all SCI involves damage of the lower and upper parts of the body (McDonald & Sadowsky, 2002). Krause and Reed (2009) found that employment opportunities for those suffering SCI were drastically diminished because of unsuccessful rehabilitation programs. Persons who have undergone successful rehabilitation programs have mostly been able to be integrated into normal life and live a more satisfied and functional life (Chapin & Holbert, 2009). Successful rehabilitation programs depend on preparing people with physical disabilities physically, sociologically, and vocationally to be active members in society by obtaining employment and being independent. Employment is also likely to affect life satisfaction and wellbeing (Chapin & Holbert, 2009).

2.4.4. Current trends towards managing physical disabilities in Saudi Arabia. Although there are laws in Saudi Arabia that accommodate people with physical disabilities, they do not fully represent the needs of people with physical disabilities, and this has impeded their integration into society (Al-Jadid, 2013). The level of awareness among
employers in Saudi Arabia of the employability and productivity of people with physical disabilities has been very low (Mansour, 2009). Society has placed greater emphasis on the provision of health services to people with disabilities than on improving their employability and education (Al-Jadid, 2013). Abdulwahab and Al-Gain (2003) concluded that health care professionals in Saudi Arabia had positive attitudes toward people with physical disabilities because they were educated and aware of the additional needs of people with physical disabilities. This contrasted with other people in the society who either had negative attitudes or were unaware of this group of people. More than 3.7% of the Saudi populations have been identified as disabled, often as the result of consanguineous marriages and car accidents (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013; Japan International Cooperation Agency, 2002).

In Saudi Arabia, ‘society’ commonly visualises people with physical disabilities as hopeless, undependable, and lacking productivity (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013; Al-Shehri et al., 2008). In Saudi society, people with disabilities are often not invited to social activities or gatherings, and even their relatives may have little to do with them (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013). People with disabilities are often seen only in hospitals (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013). In some families, females with disabilities are often left at home because they could be a reason for able-bodied sisters not to get married, as it is believed people will avoid approaching the family because of the disability (Al-Jadid, 2013). Keeping in mind that such attitudes could contribute negatively to the perceptions that people with disabilities have of themselves, there is a notable lack of educational campaigns aimed at family members of people with disabilities (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013). Awareness campaigns could contribute effectively to minimising the impact of physical disabilities on parents, other family members, and society in general (Al-Gain & Al-Abdulwahab, 2002).
2.4.5. Prevalence of SCI. SCI is one of the main causes of physical disability (Australian Institute of Health and Welfare, 2009). In Australia there were 14.9 cases of such injuries for every million people in the population in 2007 (Australian Institute of Health and Welfare, 2009). The major cause of SCI was transport related injuries, which accounted for about 52% of the incidents (Australian Institute of Health and Welfare, 2009). In the United States 11,000 SCI occur every year and 247,000 Americans are living with a spinal cord injury (Liverman, 2005). Seventy-eight percent of the SCI population are young adults and the major cause is traffic accidents (Liverman, 2005).

2.4.5.1. Prevalence of SCI in Saudi Arabia. The prevalence of persons suffering from physical disability due to traumatic SCI was 9.7% in 2002 (Japan International Cooperation Agency, 2002). Saudi Arabia currently has the highest rate of SCI in Asia, mainly caused by the increased number of road accidents, compared with most other Asian countries (Robert & Zamzami, 2013). It is important to mention that there have been very few studies conducted on SCI in Saudi Arabia (Al-Gain & Al-Abdulwahab, 2002; Al-Jadid, 2013; Al-Shehri et al., 2008; Ageli & Zaidan, 2013; Robert & Zamzami, 2013). In Saudi Arabia, road accidents are still the main cause of SCI, particularly for young adult drivers (Al-Jadid & Robert, 2010). A study conducted by Ansari, Akhdar, Mandoorah and Mou (2010) between 1971 and 1997 found that 564,762 people had died or been injured in road traffic accidents. In a hospital-based study conducted by Ansari et al. (2010), they found that 79.2% of patients with SCI had sustained their injuries in road accidents. Several studies have claimed that during the month of Ramadan (the ninth month in the Islamic calendar and a period of fasting), the number of road traffic accidents generally is higher than in other months (Khammash & Al-Shouha, 2006; Robert & Zamzami, 2013), because of the dietary habit changes and lack of sleep during the period of fasting (Taoudi, Roky, Toufiq, Benaji, Hakkou & Therapie, 1999).
2.5. Education and Employment of People with a Physical Disability

2.5.1. Vocational rehabilitation (VR). VR generally seeks to help people with physical disabilities to overcome challenges to finding, maintaining, or returning to employment following injury (Croft, 1986; Holmes, 2007). The development of VR is one of the important strategies of education development in both developing and developed countries (Tabbron & Yang, 1997).

2.5.1.1. VR for individuals with physical disabilities. Employment provides benefits but is not always available for people with physical disabilities (Meadea et al., 2006; Mpofu et al., 2015). VR services generally assist people with physical disabilities to return to work or start a new job (Crowther et al., 2010; Dutta et al., 2008; Gobelet et al., 2007; Meadea et al., 2006; Middleton et al., 2015; Nevala et al., 2015; Yamamoto & Alverson, 2014). The goal of VR for individuals with physical disabilities is to help people to successfully find a job or to continue their education according to their interests in order to help them participate in society as active members (Gobelet et al., 2007; Meadea et al., 2006). People with physical disabilities who cannot work in their previous jobs because of their new injuries often can enrol in VR courses in order to improve their skills (Polidano & Mavromaras, 2010, 2011). In other words, VR is the main foundation for restoring, maintaining, and enhancing vocational skills for people with disabilities (Mpofu et al., 2015).

2.5.1.1.1. VR for individuals with physical disabilities in the Kingdom of Saudi Arabia. The Ministry of Labour and the Ministry of Social Affairs in Saudi Arabia is responsible for the VR programs conducted in the country (Japan International Cooperation Agency, 2002). These programs are often meant to rehabilitate students with physical disabilities and help them adapt to their new circumstances. There are several VR centres that
cater for students with physical disabilities; there are three centres for males at Taif, Riyadh and Damman, and two for females at Taif and Riyadh (Japan International Cooperation Agency, 2002). The Saudi government has also set up programs to involve the private sector in the provision of VR services in order to be able to integrate as many productive individuals with physical disabilities within the society as possible (Al-Dekhayyel & Abdulgabar, 2001). Moreover, VR institutes accommodate students with physical disabilities and provide them with full educational, social, health, and psychological services consistent with Islamic principles to ensure that people with physical disabilities are well prepared to have a decent quality of life (Japan International Cooperation Agency, 2002). There are currently ten major centres in Saudi Arabia, which provide VR services for people with physical disabilities. These VR centres provided training services to 1035 trainees, of whom 822 were males and 213 females (Japan International Cooperation Agency, 2002).

2.5.2. Employment benefits of VR. Those who have undergone VR often enjoy a wide range of employment benefits. These include improved income and job satisfaction, increased employment chances, increased mobility in employment, increased skills, and better working conditions (Hoeckel, 2008). The productivity of employees also is likely to rise with increased benefits from this training, such as the successful completion of VR (Polidano & Mavromaras, 2010). Mustapha, Ali, Bari, and Amat, (2001) found a high correlation between VR qualification attainment and increased employment and job satisfaction.

2.5.2.1. Employment benefits for people with a physical disability. Employment plays a vital role in individuals’ lives since it provides them with social integration and a way of acquiring essential financial income for their wellbeing. This is true for people generally
Various studies have shown that VR qualifications greatly improve the opportunities of people with a physical disability not only to retain their employment positions but also to become employed in another area (Mustapha et al., 2001; Polidano & Mavromaras, 2010, 2011). Aside from the benefits that generally accrue to people undertaking VR, people with physical disabilities are also able to enjoy certain benefits that are relevant to their situation. The completion of a VR program significantly increases the probability of overcoming the disadvantages of dormancy in one’s career, thereby increasing one’s employability (Dutta et al., 2008).

2.5.2.1.1. Employment benefits for people with a physical disability in the Kingdom of Saudi Arabia. The VR centres for people with disabilities provide courses in a variety of specialties (Japan International Cooperation Agency, 2002). These centres focus on rehabilitation of people between the ages of 15 and 45 with a physical disability (Al-Shehri & Abdel-Fattah, 2008; Japan International Cooperation Agency, 2002). Rehabilitation is customised for each person and courses are designed to develop unexploited human potential in order to create productive individuals who can adapt socially and psychologically to become effective members of society (Japan International Cooperation Agency, 2002). People with physical disabilities benefit from the following services during training:

- medical, social and psychological care, physiotherapy services and assistive devices;

- accommodation; and,

- a monthly allowance of SR1600 ($425 USD approx.), and a daily allowance to cover the cost of transportation to and from the centre (Japan International Cooperation Agency, 2002).
Labour Law encourages the employment of people with physical disabilities. Any company that employs 50 or more people, and the nature of their work allows the employment of people with disabilities who have been vocationally trained and rehabilitated, must employ people with physical disabilities to 2% of the total number of their employees (Japan International Cooperation Agency, 2002). The employer must send to the Ministry of Social Affairs a list of the positions occupied by people with disabilities and the salary of each one of them (Japan International Cooperation Agency, 2002). The ministry of social affairs should take responsibility to provide campaigns to enhance awareness about such social issues as the employability of people with physical disabilities. The regulations and the law should be understandable by employers and encouragement should be substantial for government and non-government organisations, which hire people with physical disabilities (Mansour, 2009).

People with physical disabilities can be as productive as other active members of society (Pati & Stubblefield, 1990). When individuals with physical disabilities experience difficulty in adjusting to their disabilities, they will likely lose interest in participating in rehabilitation activities (Strauser, 1995). Self-efficacy plays a vital role in people adjusting to their new disabilities (O'Sullivan & Strauser, 2009; Strauser, 1995). Individuals with physical disabilities caused by a new injury may enrol in a rehabilitation program with low self-efficacy beliefs for working since they have lost their jobs and their financial income (Strauser, 1995). One of the major outcomes of rehabilitation counselling is to help individuals with physical disabilities to obtain employment (Chapin & Holbert, 2009; Strauser, 1995). In addition, improving the self-efficacy of people with physical disabilities through rehabilitation counselling can help them deal with the fact that they are physically disabled, and improve the possibility of going back to their jobs or finding a new job to suit their needs (Strauser, 1995). Strauser (1995) stated that, self-efficacy theory could be useful
in the field of rehabilitation counselling. The sources of self-efficacy could be utilized during the rehabilitation process in order to increase efficacy expectations, which could produce desired rehabilitation outcomes for people with physical disabilities. Moreover, a counsellor might use self-efficacy theory to gain greater understanding of the behaviours of people with physical disabilities, which likely would lead them to be involved in the rehabilitation process successfully (Everett, Salamonson, & Davidson, 2009; Strauser, 1995). As a result, enhancing self-efficacy of people with physical disabilities likely will help them to become more productive members of society and likely assist them to gain employment.

2.5.3. Self-efficacy and SCI. Self-efficacy has been found to be an important factor influencing health in diverse areas, including SCI (Middleton et al., 2007). Self-efficacy was found to be an important element of quality of life for people with SCI when compared to other kinds of disabilities (Middleton et al., 2007). Craig, Hancock, and Chang (1994) found that people with SCI generally have low self-efficacy for controlling their behaviour because of long-term depression. The study of Middleton et al. (2007) emphasise the importance of self-efficacy in the quality of life of people with SCI rather than just factors related to disability. A study of 231 outpatients with SCI and a group of university students without any disability, conducted by Hampton (2001), investigated the influence of self-efficacy on quality of life of Chinese people with SCI, and found that self-efficacy and social support contributed a significant amount to life satisfaction compared to disability factors. Hampton (2001) claimed that despite the social support, the higher the self-efficacy beliefs, the better adjusted to their lives people were, compared to people with low self-efficacy. Hampton’s study raises the likelihood that self-efficacy beliefs are relevant for VR for people with SCI. A study of 110 people with SCI conducted by Middleton et al. (2007) investigated the interaction between quality of life of people with SCI and self-efficacy, and found that people
with SCI who had lower self-efficacy reported significantly lower levels of quality of life than those who had higher self-efficacy.

A study conducted by Shnek, Foley, LaRocca, Gordon, DeLuca, and Schwartzman (1997), investigated the relationships between self-efficacy, learned helplessness, and depression for people with physical disabilities and they found that self-efficacy and helplessness significantly predicted depression. Self-efficacy beliefs is an important factor in predicting wellbeing (Hampton, 2004). Generally, the higher the self-efficacy of people with physical disabilities the higher their participation in physical activities (Nicitopoulos, Ginis, & Latimer, 2009). Bandura (1995) stated “the stronger the perceived self-efficacy, the higher the goal challenges people set for themselves and the firmer is their commitment to them” (p. 2).

Horn et al. (1998) stated “self-efficacy significantly affected many other health-related rehabilitation behaviours such as chronic obstructive lung disease, pain management, alcoholic treatment, epilepsy self-management, arthritis, and numerous other physical disabilities” (p. 138). A study conducted by Horn et al. (1998) investigated the influence of self-efficacy for people with physical disabilities and found that less severe neurological impairment was associated with high self-efficacy. Therefore, it is likely that self-efficacy could contribute to lowering disability impact on people with physical disabilities, regardless the severity of the pain.

2.5.4. Factors related to employment after SCI. A physical disability is one of the most disturbing injuries that can occur and it could change an individual’s career and daily life (Hess, Ripley, McKinley, & Tewksbury, 2000). Several disability studies have investigated the importance of employment for people with physical disabilities because
work and financial income are vital elements that can affect the lives of people with physical disabilities (Hess et al., 2010; Krause, Sternberg, Maides, & Lottes, 1998; Krause, Terza, & Dismuke, 2010; Lidal, Hjeltnes, Roislien, Stanghelle, & Biering-Sorensen, 2009). The employment of people with physical disabilities has been found to be positively associated with their psychological adjustment after injury (Hess et al., 2010; Krause et al., 1998; Krause et al., 2010; Lidal et al., 2009). Nevertheless, there are social barriers that can affect the employment or future career of people with physical disabilities.

2.5.4.1. Gender and employment in Saudi Arabia for people with physical disabilities. Gender inequality has been one of the most common issues in developing countries (Qureshi, 2014). There are factors that generally determine women’s rights in society, such as social, economic, and political factors (Alsaleh, 2014), which are shaped by religious interpretations (Alsaleh, 2014; Rajkhan, 2014). Culture has been considered the main factor affecting female inequality in Saudi Arabia (Alsaleh, 2014; Qureshi, 2014). Saudi Arabia has been considered more restrictive of women’s public activities than other Arab societies due to the widespread implementation of Islamic principles in society (Alsaleh, 2014). Charrad (2009, 2011) stated that religious scriptures interpreted the Qur’an in a way that ignored the equality message of Islam and disadvantaged females, excluded them from integrating actively in society, and created discrimination against women in Islamic law. In other words, religious scholars have demonstrated that principles of the Qur’an can be interpreted in different ways and that the religious scriptures ignored the possibility of interpretations, which favour women’s rights (Charrad, 2009, 2011; Kanawati, 1993). The acceptance and the use of only one religious interpretation of Qur’an which strongly encourages the authority of males is a very problematic issue (Charrad, 2009; Kanawati, 1993). In some cases, the Qur’an’s texts have been interpreted literally, which has
tended to silence women’s voices in the name of Islam (Charrad, 2011). Charrad (2011) stated “some scholars have underscored the diversity of interpretations within the Islamic tradition by examining how the interpretations have varied over time and vary today from country to country. They have documented considerable differences on the basis of time and place” (p. 418).

Until 2002, the Department of Religious Guidance supervised all levels of education for females, while the Ministry of Education supervised the education of boys (Rajkhan, 2014). Rajkhan, (2014) stated “This was to ensure that women’s education did not deviate from the original purpose of female education, which was to make women good wives and mothers, and to prepare them for ‘acceptable’ jobs such as teaching and nursing that were believed to suit their nature” (p. 7). In Saudi Arabia many males and females believe that females are different from males, and therefore, females are not allowed to work in the same jobs as men, which explains why only certain jobs are open to women (Rajkhan, 2014).

Several studies have suggested that oil production decreases the employment opportunities for females in countries with occupational isolation (Charrad, 2009; Kang, 2009; Ross, 2008). The more females are ignored in the workforce, the fewer employment opportunities they have for becoming influential and active in society, the more likely they will have lower levels of education, and have less influence within the family (Kang, 2009; Ross, 2008). Ross (2008) indicated that oil-rich countries tend to invest in sectors such as construction and to neglect sectors such as agriculture and manufacturing, which usually include a large number of female workers. It is important to mention that some oil-producing countries such as New Zealand and Australia have not experienced reductions in the female work force in the industry because these countries generally supported equality of female involvement before the existence of the oil industry (Charrad, 2009; Ross, 2008).
In recent years, there has been an increasing focus on the vocational training and employment of women in Saudi Arabia (Al Masah Capital Ltd, 2012). The Saudi Arabian government made resources available for the development of the vocational sector for women and announced plans to build more than 17 technical colleges for females (Al Masah Capital Ltd, 2012).

Several studies have found that after SCI, women generally were less likely to be employed (Krause et al., 1998; Krause et al., 2010; Lidal et al., 2009). They also found that generally women who were employed had lower earnings than men (Krause et al., 1998; Krause et al., 2010). Krause et al. (1998) indicated that “…gender also appear to be important predictors of employment status.” (p. 616). This could be because women tend to have different employment interests from men, following SCI (Krause & Clark, 2014). Ottomanelli and Lind (2009) argued that females generally tend to engage in less competitive jobs, such as homemaking, than men after SCI.

Several studies have indicated that transportation is one of the main barriers to employment for individuals with physical disabilities (Castle, 1994; Franceschini, Pagliacci, Russo, Felzani, Aito, & Marini, 2012; Krause et al., 1998; Krause et al., 2010; Lidal et al., 2009; Lidal, Huynh, & Biering-Sorensen, 2007; Ottomanelli & Lind, 2009). Transportation could also affect community reintegration of people with physical disabilities, and thus, influence their employment status (Lidal et al., 2007; Ottomanelli & Lind, 2009). Keeping in mind that women are not allowed to drive in Saudi Arabia (Rajkhan, 2014), this could be one of the main factors that affect negatively women’s opportunities to be employed.

2.5.4.2. Gender and computers in Saudi Arabia for people with physical disabilities.
Several studies have found that computers have been considered more suitable for males than
for females (AlJabri, 1996; Comber, Colley, Hargreaves & Dorn, 2006; Shashaani, 1993; Whitley, 1997) because females generally have been found to be less confident than males in using computers and to have more anxiety about using computers (AlJabri, 1996; Comber et al., 2006; Shashaani, 1993). Comber et al. (2006) investigated the relationship between gender and computer attitudes of 278 secondary school students in Leicestershire, and found that males reported more positive attitudes towards computers than females.

Moreover, it has been argued that when females and males have equal access to using a computer, females are more likely to avoid doing so than males because of a perception that computing is a male activity (Comber et al., 2006). Many young people have grown up in environments in which computer games and software are related more to males than to females (Whitley, 1997). Moreover, Whitley (1997) stated “computer use in schools has been linked to traditionally 'masculine' subjects such as science and mathematics, but not to traditionally 'feminine' subjects such as art and literature” (p. 2). In addition, young males generally have been more likely to have more experiences with computers in school (Whitley, 1997). Gender differences in society may have caused females generally to have negative attitudes toward computers and to tend to avoid participating in computer-related activities, which would likely result in a gap between males and females in this area (Canada & Brusca, 1993; Whitley, 1997). A study conducted by Whitley, (1997), found that females had lower self-efficacy for using a computer than males. The researcher argued that females’ low self-efficacy for using a computer was because men overvalue their abilities, or females and males evaluate themselves in different ways (Whitley, 1997). Shashaani (1993) in a study conducted in five suburban public schools in Pittsburgh USA, found that females were less receptive to using a computer than males. In Shashaani’s study (1993) the females stated that it was difficult for them to learn how to do computer programming and they expressed anxiety of using a computer. Moreover, the researcher found that only 22% of the parents...
believed that using was necessary for their daughters (Shashaani, 1993). She also found that teachers and counsellors expected better performance from males in using a computer than females (Shashaani, 1993).

When males and females make educational or career choices, they are often associated with their expectations of success (Shashaani, 1993). Shashaani (1993) argued:

*educational and vocational behavior are functions of perceived task value, or the value that an individual attaches to various options. The sex differences on subjective value are influenced by differential past experience and gender-role socialization, especially the behaviors and goals of one’s parents, teachers, role models, and peers (p. 171).*

Thus, because males and females generally have been socialised differently, gender differences in expectation are likely to lead both males and females to make different educational and career decisions (Shashaani, 1993; Whitley, 1997).

A study conducted by AlJabri (1996) examined gender differences in computer attitudes among secondary school students in Saudi Arabia and found that male students were less anxious than females when using computers. The researcher argued that these differences between males and females may have been because there is a relationship between computer anxiety and maths anxiety (AlJabri, 1996). In Saudi Arabia females generally have tended to believe that computers and mathematics belong to the male domain (AlJabri, 1996). Females tend to be less confident using a computer because of the strict Saudi culture, which they encounter because they tend to use computers as tools to accomplish certain tasks, whereas males tend to consider computers as toys (Oshan & Khudair, 2008).
2.5.4.3. Time since injury (TSI) of people with physical disabilities. The majority of individuals with physical disabilities do not return to work instantly after they receive their rehabilitation (Anderson, Dumont, Azzaria, Bourdais, & Noreau, 2007). The longer people with physical disabilities have lived with SCI the more their ability to maintain their daily activities likely declines because of the increase of the ill effects of their physical disabilities (Castle, 1994; Franceschini et al., 2012; Hirsh et al., 2009; Lidal et al., 2009; Ottomanelli & Lind, 2009). In addition, Hirsh et al. (2009) stated “because individuals with SCI experience age-related functional declines at an increased rate, their ability to maintain gainful employment over time and as they age may be compromised” (p. 2).

2.5.4.4. TSI and employment for people with physical disabilities. Hirsh et al. (2009) stated, “The longer an individual has lived with an SCI (i.e., duration of injury), the more likely that person is to be employed” (p. 2). That is the longer the TSI the more likely they became adjusted to their physical condition, the less dependent they were on the trainers and the lower their proxy efficacy. Krause and Clark (2014) indicated that vocational interests are at the centre of vocational choice for people with physical disabilities. Rohe and Krause (1998) investigated the stability of vocational interests, development of interests, and the relationship between abilities and interests of males with physical disabilities, and found vocational interests were stable over 11 years follow-up from when they completed the Strong Interest Inventory. The longer the TSI of people with physical disabilities the more likely there are positive employment outcomes (Ottomanelli & Lind, 2009). This is probably is because the longer the TSI the more likely the students have had sufficient time to become psychologically and physically adjusted, which in turn has a positive influence on employment (Hess et al., 2000; Kent & Dorstyn, 2014; Ottomanelli & Lind, 2009). When
persons with physical disabilities become employed, their adjustment is likely to improve, and vice versa (Kent & Dorstyn, 2014; Ottomanelli & Lind, 2009).

2.6. Applying self-efficacy theory to the field of rehabilitation

2.6.1. The importance of self-efficacy in learning and motivation of students with physical disabilities. SCT maintains that significant human behaviour may be self-regulated and people generally regulate their behaviours based on their self-efficacy beliefs (Bandura, 1977; Bandura & Locke, 2003). Students with physical disabilities are likely to avoid situations, in which they believe they are unable to cope successfully, and are likely to create self-limiting and avoidance behaviours that block opportunities for new experiences (Hergenrather, Turner, Rhodes, & Barlow, 2008). Self-efficacy of people with physical disabilities is likely to be related directly to their capabilities to perform vocational training activities successfully (Hergenrather et al., 2008). Furthermore, VR self-efficacy is likely to be important for successful performance of tasks required for employment (Hergenrather et al., 2008).

One of the primary aims of VR institutions is to instil learning and development in students with physical disabilities (Polidano & Mavromaras, 2010). Schools are required to provide education and disseminate knowledge and values to students (Ehrenberg et al., 1991). Educational institutions and educators can face problems related to student academic achievement and poor motivation that can interfere with the education of students (Landry, 2003; Zimmerman, 2000). SCT emphasises the importance of self-efficacy in the learning and motivation of students with physical disabilities (Ehrenberg et al., 1991).

Zimmerman (2000) considered self-efficacy generally to be an important element in the learning and the motivation of students. Among people with physical disabilities who are
looking for a job, increasing the level of VR self-efficacy has been associated with higher attendance at VR programs (Barlow, Wright, & Cullen, 2002; Hergenrather et al., 2008). Moreover, knowledge of the sources of self-efficacy may be used to improve vocational programs for people with physical disabilities (Strauser, 1995). Providing people with physical disabilities with a set of tasks of increasing difficulty may enable them to believe they are active members of society, and that they have the capabilities to function effectively (Dodds, 1989). Furthermore, self-efficacy may motivate a person with physical disabilities to expend effort to achieve success. On the other hand, if a student with a physical disability is assigned a task for which he or she lacks capability, then her or his self-efficacy for that task is likely to be reduced. For example, if a vocational therapist allows clients insufficient time to practise a new skill, it is likely their self-efficacy will be low, and likely clients would avoid similar situations in the future.

Emotions or moods are personal factors that can affect development of self-efficacy (Bandura, 1997). Ehrenberg et al. (1991) showed a negative relationship between depression and self-efficacy. That is, the lower students’ self-efficacy, the higher the level of depression, and vice versa (Ehrenberg et al., 1991). By strengthening self-efficacy in the classroom, students with physical disabilities would likely be motivated to perform well in class and maximise learning (Sewell & St George, 2000). Creative problem solving is an instructional strategy used to increase students’ self-efficacy for academic tasks, (Sewell & St George, 2000). Sewell, and St George (2000) found that the use of creative problem solving strategies created positive effects on students’ self-efficacy, suggesting self-efficacy could be further developed inside the classroom by making use of instructional strategies that promote motivation in learning for people with physical disabilities. This would likely be beneficial information for educators as well as students for promoting learning and motivation among students with physical disabilities.
Hergenrather et al. (2008) stated:

*Job-seeking skills are identified as the skills needed to competitively pursue employment which include: writing, reading, basic mathematics, how to look for a job, where to look for a job, completing an employment application, preparing a resume, interview skills, social skills competence, interests, abilities...*(p. 35).

Among unemployed people with physical disabilities looking for employment, the level of self-efficacy is the best predictor of success for employment (Hergenrather et al., 2008). Application of self-efficacy theory appears promising in vocational education for people with physical disabilities (McDonald, 1999). The importance of self-efficacy rises when people with physical disabilities experience negative expectations and personal barriers to their career choices (Hergenrather et al., 2008). Increased self-efficacy could be achieved by assisting them to reset their defective cognitive processes through counselling strategies based on SCT (McDonald, 1999). McDonald (1999) argued that enhancing self-efficacy should be a major goal of vocational education for people with physical disabilities.

**2.6.2. The importance of self-efficacy for individuals with physical disabilities.**

Assisting people with physical disabilities to improve their self-efficacy should be a primary goal for VR therapists (O’Sullivan & Strauser, 2009). In the field of VR for people with physical disabilities, educators generally have emphasised the importance of looking at the motivation of people with physical disabilities (Wehmeyer, 1998). Having doable expectations about their future competencies is one of the most important elements of adjustment for people with physical disabilities (Dodds, 1989). Establishing these expectations may occur through successes at relevant tasks in daily life, and by having opportunities to regain lost competencies through vocational programs. When a vocational trainer encourages clients to connect their successes to their abilities and efforts, and attribute
failure to task difficulty and external factors, their self-efficacy will likely be increased (Dodds, 1989). On the other hand, if trainers allow clients to associate failure with lack of ability or lack of capability to put in more effort, the clients’ self-efficacy would likely decrease (Dodds, 1989).

There have been studies that support the view that self-efficacy is an important factor to consider in the rehabilitation of individuals with visual impairments. It has been suggested that most people experiencing visual loss develop beliefs of incompetence that are likely to result in their failure to cope with new tasks (Dodds, 1989). Therapists working with people with physical disabilities arguably should consider developing self-efficacy as a clear goal of rehabilitation (Strauser, 1995).

Self-efficacy has been identified as being important for individuals with developmental disorders (Dodds, 1989). Video self-monitoring is a strategy to support the development of self-efficacy among individuals with developmental disorders (Steinkopf, 2003). In video self-modelling, individuals learn creative behaviours by observing themselves engaging in positive behaviours on a pre-recorded video (Steinkopf, 2003). This particular strategy was found to help improve self-efficacy of students with developmental disorders (Steinkopf, 2003). When people observe themselves performing a task successfully, this provides them with clear information on how to best perform, which strengthens their self-efficacy for performing the task (Steinkopf, 2003).
2.6.3. Some examples of applying SCT. In the field of education, SCT research has shown that some children’s emotional and behavioural difficulties can be traced to their personal beliefs and behaviours which are shaped by their environments and interactions within the family (Merrell, 2008).

SCT has been applied to career counselling for women preparing to leave abusive relationships. Morris, Shaffer and Newsome (2009) stated that SCT was used in the counselling of such women, to enable them to understand their predicaments, and begin to make better decisions. By using a modified version of SCT, abused women were empowered toward taking steps to explore better options for their future careers.

In the context of academic and career behaviour, Lent, Brown, Brenner, Chopra, Davis, Talleyrand, and Suthakaran (2001) developed Social Cognitive Career Theory (SCCT), which aimed at explaining how people develop their own educational and career interests, make and modify their academic and vocational goals, and finally, how they perform in their chosen educational and career pursuits. This is relevant to this study because it emphasises the important contribution of SCI in people’s careers, vocational interests and performances.

Since SCT is concerned with understanding human actions through cognition, self-beliefs and behaviour, it can contribute to understanding of health communication. One example is entertainment-education. Entertainment-education uses fictional characters in order to increase the persuasiveness of health messages they publicise (Egbert, Mickley, & Coeling, 2004). Entertainment-education, however, has appeared to have significant effects on beliefs and attitudes that may often precede changes in self-efficacy (Slater & Rouner, 2002). Several health variables are influenced in a way explainable by SCT because increased self-efficacy beliefs have been shown to enhance positive health behaviours. Moreover, the context thus provides a framework that joins people’s self-perception and the influence of the environment of which they are a part (O’Brien Cousins, 1998). According to
O’Brien Cousins (1998), interventions based on SCT are likely to increase and even maintain positive health behaviours. She found “People who hold positive thoughts for activity will be more likely to move downward through the various cognitive phases and successfully reach a point of action and possibly commitment to regular physical activity” (p. 210). For cancer patients, this positive change is often considered to bring about an improved Quality Of Life (QOL) (Desmond & Price, 1988).

2.7. Summary

SCT states that the behaviour of individuals is likely to be explained by interactions between their personal factors, behavioural factors, and their environments. These interactions are important for explaining behaviours in particular situations, for they involve decision-making processes. SCT states that the three components of triadic reciprocal determinism may be necessary to understand the basis of an individual’s behaviour (Bandura, 1997).

SCT proposes that although individuals may learn from the environment, this does not necessarily mean that they merely react to stimuli without analysing the implications of their actions. Although reciprocal determinism states that the environment affects the behaviours of humans, humans can also affect their environments through their behaviours. Since humans are not mere receptors, they have the power to create their own behaviours through cognitive processes. There is a need to understand that humans are not programmed to accept everything as is; they have the capacity to decipher and understand the situations in which they find themselves, as well as make sound decisions regarding how they should act in particular situations.

SCT may be utilised in different fields and has provided understanding, as well as solutions, for different issues. SCT and self-efficacy theory in particular may be expected to
be very useful in the VR area for people with physical disabilities sector. They provide a comprehensive analysis of the relationships among personal effects, environmental effects and behavioural effects.
3.1. Introduction

Methodology refers to a set of methods for collecting information or data (Crisan & Borza, 2015). The aim of methodology is the employment of correct procedures to find answers to questions (Cohen & Manion, 1994; Crisan & Borza, 2015; Groves, Fowler, Couper, Lepkowski, Singer, & Tourangeau, 2004). In almost any research, methodology is used to specify what kind of activity will be used in that research, how to carry out that activity, how to measure the development of it, and how to measure what leads to success, or vice versa (Alreck & Settle, 1995; Cohen & Manion, 1994; Crisan & Borza, 2015; Groves et al., 2004; Johnson & Christensen, 2008; Rajasekar et al., 2013).

3.2. Sampling

Sampling refers to the process of taking any portion of a population considered to be representative of that population (Johnson & Christensen, 2008; Kerlinger, 1986). The main purpose of studying the characteristics of a sample is to understand the characteristics of the larger population (Johnson & Christensen, 2008; Kerlinger, 1986). Generally, the larger the sample size, the better, because larger samples generally result in smaller sampling errors, which means that the sample values (the statistics) will be closer to the true population values (Johnson & Christensen, 2008).

The actual specification of a sampling design starts with identifying the population to be surveyed (Kerlinger, 1986).
3.2.1. Random sample. Random samples are usually used in survey research, which usually is a form of non-experimental research in which questionnaires are used to gather information (Johnson & Christensen, 2008). A characteristic refers to distinguishing traits, quality, intelligence, looks, skin, colour and race of a person, and so on (Simpson & Weiner, 1989). If the sample is not random, some factor or factors unknown to the researcher may predispose her or him to select a biased sample (Kerlinger, 1986). Random selection does not allow the researcher’s biases to operate (Kerlinger, 1986). Moreover, random sampling is more likely to include the characteristics typical of the population if the characteristics are in the population (Kerlinger, 1986; White & McBurney, 2013).

3.3. Quantitative and Qualitative Research

Basic research can be quantitative, qualitative, or both (Creswell, 2014, 2015; Rajasekar et al., 2013). Quantitative research involves numerical data, whereas qualitative research depends on non-numerical data (Alreck & Settle, 1995; Balnaves & Caputi, 2001; Cooksey, 2014; Creswell, 2014, 2015; Johnson & Christensen, 2008; Quinlan, Babin, & Carr, 2015). Quantitative and qualitative research approaches generally provide different perspectives (Johnson & Christensen, 2008).

3.4. Survey Methodology

Surveys are usually used to gather information about particular groups of people (Cohen & Manion, 1994; Creswell, 2014, 2015; Groves, et al., 2004; Neuman, 2014; Rubin & Babbie, 2015; Walter, 2013; White & McBurney, 2013). This information may help to identify the nature of existing conditions that could determine the relationships that exist between certain events (Cohen & Manion, 1994; Creswell, 2014, 2015; Groves, et al., 2004; Walter, 2013; White & McBurney, 2013). In other words, survey methodology is used to
collect a numerical description of trends, behaviour, or beliefs of a population by studying a sample of that population (Creswell, 2014, 2015; Quinlan, et al., 2015; Rubin & Babbie, 2015; White & McBurney, 2013). The sample allows the researcher to draw implications about the population from which the sample was gathered (Creswell, 2014, 2015). A survey may be carried out using one or more of the following data-gathering techniques: self-completed questionnaires, interviews, and attitude scales (Cohen & Manion, 1994; Groves, et al., 2004; Kerlinger, 1986; Quinlan, et al., 2015; Rubin & Babbie, 2015). Survey methodology typically involves examining correlations between responses gathered from participants, which could identify patterns of behaviour or other phenomena (Groves, et al., 2004; White & McBurney, 2013). Although surveys are considered to be one of the quantitative methods (Quinlan, et al., 2015), their value may be enhanced through combination with qualitative methods (Rubin & Babbie, 2015). Qualitative methods can be combined with surveys through the use of free responses (Quinlan, et al., 2015). Rubin and Babbie (2015) claimed that surveys are considered best for describing large populations, which cannot be observed directly.

Surveys are important to the extent that they provide information about the relationships between different observed properties of the subjects studied and the researcher can draw conclusions from these about relationships in the population from which the samples were drawn (McDonald, 1984). Survey methodology utilises a variety of instruments and methods to study relationships, effects and comparisons between groups (M. Gall, J. Gall, & Borg, 2007).

3.4.1. Questionnaire. Questionnaires generally are a precise, systematic method for gathering data (Quinlan, et al., 2015). A questionnaire should start with a short and clear statement describing the goal of the study and any important information (Creswell, 2014,
2015). For example, it may be important to remind the respondents that there are no right or wrong answers, and the main goal is to understand what respondents think is true or important (Weisberg, Krosnick, Bowen, & Weisberg, 1996). This will likely help the respondents to feel more comfortable about expressing their true opinions. Additionally, it is important to emphasise the confidentiality of the responses.

Questions may be open-ended or closed-ended (Creswell, 2014, 2015; Quinlan, et al., 2015; Rubin & Babbie, 2015; Walter, 2013; Weisberg et al., 1996; White & McBurney, 2013). Open-ended questions allow participants to use their own words to answer the question, which could help explain the reasoning behind their responses (Creswell, 2014, 2015; de Vaus, 2014; Rubin & Babbie, 2015; White & McBurney, 2013). Open-ended questions are best used when the researcher has little or no knowledge of the phenomena and needs to investigate the responses (Creswell, 2014, 2015). Moreover, open-ended questions allow participants to express their own answers according to their own experience, whereas, the closed-ended questions depend heavily on the researcher’s experience (Creswell, 2013, 2014, 2015; Neuman, 2014). Closed-ended questions are those, which can be answered using a series of alternatives such as on a scale (Creswell, 2013, 2014, 2015; de Vaus, 2014; Quinlan, et al., 2015; Rubin & Babbie, 2015), and limit the participants to options constructed in advance by the researcher (Rubin & Babbie, 2015; White & McBurney, 2013). Closed-ended questions are easier to code and analyse (White & McBurney, 2013). A common format is to read a statement and ask the respondents to rate their agreement using scales from strongly disagree to strongly agree. Although survey methodology has limitations (DeVellis, 2012; Walter, 2013), it can provide researchers with important information if used correctly.

Like any other methodology, survey research has advantages and disadvantages. One of the advantages is that valuable information can be collected from a large population
(Kerlinger, 1986; Kerlinger & Lee, 1999; Rubin & Babbie, 2015), and because of the ability of survey research in making a large sample feasible, findings are considered to be more generalisable than other methods (Rubin & Babbie, 2015). Although it is expected to have sampling error, the data collected through a survey research still can be accurate (Kerlinger, 1986; Kerlinger & Lee, 1999). Unlike observations, survey research can provide accuracy in examining documents and provide statistical figures, such as birth or divorce (Rubin & Babbie, 2015). Survey research can allow the researcher to examine more than one variable at the same time (Rubin & Babbie, 2015). By using survey research, the researcher could ask many questions about the phenomena under study, which provide the researcher with flexibility when doing the analysis (Rubin & Babbie, 2015). On the other hand, survey research is costly in terms of expense and time, especially when conducted in a large sample (Kerlinger, 1986; Kerlinger & Lee, 1999). Moreover, survey research has a limited ability to conclude any form of cause and effect (Rubin & Babbie, 2015).

3.4.1.1. Face-to-face questionnaires. With face-to-face questionnaires, the researcher gives the questionnaire to the participant to fill out on paper or using a computer in the researcher’s presence (Chang & Krosnick, 2009; de Vaus, 2014; Tymms, 2012; Walter, 2013; White & McBurney, 2013). Face-to-face questionnaires generally provide high response rates, and they also allow the use of visual aids if needed (Chang & Krosnick, 2009; Walter, 2013; White & McBurney, 2013). One of the advantages of face-to-face questionnaires is that they permit the researcher to notice when participants misunderstand a question and clarify any misconception (White & McBurney, 2013). The main disadvantage of face-to-face questionnaires is that the presence of the researcher might cause biased responses (White & McBurney, 2013).
3.4.2. Questionnaire design. Johnson & Christensen (2008) defined a questionnaire as a “self-report data collection instrument that each research participant fills out as part of a research study” (p.170). Researchers typically use a questionnaire to measure different kinds of characteristics such as, attitudes, beliefs, feelings, personality, and behavioural intentions of research participants (Johnson & Christensen, 2008).

In order to develop a questionnaire statement, the researcher should engage concepts related to the hypotheses of the study (DeVellis, 2012; Weisberg et al., 1996). Several items may be necessary to measure different aspects of a concept (DeVellis, 2012).

There are several issues that should be considered in the development of questionnaire items. Questionnaire items should be brief and clear to avoid any misconceptions. In addition, while developing the statements, the researcher should avoid any technical terms with which respondents may not be familiar. It is also important to avoid double-barrelled items, which express two ideas at the same time (DeVellis, 2012; Johnson & Christensen, 2008; Kerlinger, 1986). This may cause confusion and make the responses difficult (DeVellis, 2012; Johnson & Christensen, 2008).

When developing a questionnaire, the researcher should be clear about why it is an effective tool with which to gather data (DeVellis, 2012; Kervin, Vialle, Herrington & Okely, 2006). The researcher must consider the rationale for using a questionnaire and how this will support a specific research project. Furthermore, it is important to consider the purpose of the questionnaire, the type of information that is needed; and the design of the questionnaire (DeVellis, 2012; Kervin et al., 2006).

When designing a questionnaire, it is important to consider the physical appearance of the questionnaire (Crawford, 1997; DeVellis, 2012; Kerlinger, 1986; Kervin et al., 2006). The physical appearance of a questionnaire can have a significant effect on both the quantity and quality of data collected (Crawford, 1997). The formatting is important to ensure that it is
easy for the participants to read and complete, which would make it easy for the researcher to score (Crawford, 1997; Kervin et al., 2006). In the case of self-completed questionnaires, data quality could be affected by the physical appearance of the questionnaire if there are confusing layouts, which make it difficult for respondents to complete the task accurately (Crawford, 1997).

3.4.3. Instrument development. The reliability and validity of any survey depend on the way in which every aspect of the survey is planned and performed, but the questions or items addressed to the respondents are the most important part (Alreck & Settle, 1995; Punch, 2003).

Every question or item should focus directly on a specific issue or topic and be concise. The longer the items, the harder the response task will be, because short items are less subject to error (Alreck & Settle, 1995; Punch, 2003). Also, long items are more likely to lack focus and clarity (Punch, 2003). The meaning of the survey items must be clear to all respondents. Clarity likely means that almost every respondent will interpret the item in exactly the same way.

In order to achieve meaningful responses, questions or items must be interpreted accurately (Alreck & Settle, 1995; Groves, et al., 2004; Punch, 2003). In addition, the words must be combined and arranged in a way that is appropriate to the respondents (Alreck & Settle, 1995; Groves et al., 2004; Johnson & Christensen, 2008; Punch, 2003). Thus, both vocabulary and grammar are very important when structuring survey items (Alreck & Settle, 1995; Groves et al., 2004; Punch, 2003). If the words in an item are not in the vocabulary of some respondents, it is likely they will not understand what is being asked, which might cause error or bias in the data. Items must be appropriate for all respondents in the sense that they can reply, based on their own experiences (Alreck & Settle, 1995; Johnson &
Thus, researchers should write questionnaire items that help respondents to feel free to provide the best; honest answers possible (Johnson & Christensen, 2008).

The first section of the questionnaire should be designed to gather demographic information about participants so they can be grouped and compared as they could help explaining the phenomena under investigation. The second section should be designed to introduce the survey to the respondents (Alreck & Settle, 1995). The internal sections contain the items and scales to measure the survey topics in a logical sequence (Alreck & Settle, 1995).

The researcher should analyse individual survey items to examine whether the items are one-dimensional (Burton & Mazerolle, 2011). A survey item should be one-dimensional and help to explain only one construct, not multiple constructs (Burton & Mazerolle, 2011). When establishing content validity, it is important to pilot test the instrument (Burton & Mazerolle, 2011). By piloting the instrument, the researcher will see if the respondents understand the items, the scale, and the instructions (Alreck & Settle, 1995; Burton & Mazerolle, 2011). It will also help the researcher to observe how long it takes them to complete and how easy or difficult they find it (Alreck & Settle, 1995). While forming the items, it is important to reduce the number of items in the survey to be generalised and applicable to all respondents (Burton & Mazerolle, 2011).

It is advisable to have one or more experts to review each item for focus, brevity, clarity, and readability and recommended changes (Burton & Mazerolle, 2011). Checking one’s own work is difficult because the researcher knows what is proposed, but others can only approach the items strictly on their content and wording (Alreck & Settle, 1995).
3.4.4. Quantitative research. Quantitative approaches generally are used to measure a quantity or amount (Cooksey, 2014; Quinlan et al., 2015; Rajasekar et al., 2013). By using statistical methods, quantitative research often starts with collecting a set of data, usually based on a theory, hypotheses, or experiment (Rajasekar et al., 2013; Rubin & Babbie, 2015). Experimental research often employs quantitative approaches (Rajasekar et al., 2013). Quantitative research is often used to test a specific theory using existing information, through developing hypothesised relationships and predicted outcomes (Charoenruk, 2010; Guba & Lincoln, 1998; Johnson & Christensen, 2008). In terms of methodology, the research processes used in quantitative research may include descriptive, correlational, and experimental data (Charoenruk, 2010; Guba & Lincoln, 1998; Johnson & Christensen, 2008).

Quantitative research attempts to quantify the problem and understand how common it is in a relatively large population (Johnson & Christensen, 2004). It is often confirmatory because researchers try to confirm their hypotheses (Johnson & Christensen, 2008).

Quantitative researchers generally use a ‘narrow-angle lens’ in the sense that only one or a few factors are studied at the same time (Guba & Lincoln, 1998; Johnson & Christensen, 2008). They often reduce measurement to numbers (Johnson & Christensen, 2008). In survey research, for example, self-efficacy is usually measured by rating scales (Guba & Lincoln, 1998; Johnson & Christensen, 2008).

3.4.5. Qualitative research. Conrad and Serlin, (2011) described qualitative research as “allowing a detailed exploration of a topic of interest in which information is collected by a researcher through case studies, ethnographic work, interviews, and so on” (p. 148), and is often used to study a phenomenon involving quality (Cooksey, 2014; Creswell, 2014, 2015; Quinlan et al., 2015; Rajasekar et al., 2013). Qualitative research is often used when little is known about the problem or to develop an approach to the problem (Johnson & Christensen,
2008; Rajasekar et al., 2013; Rubin & Babbie, 2015). Often, qualitative research can depend on the inductive component of the scientific method and it is used to generate new hypotheses and/or theories (Conrad & Serlin, 2011; Johnson & Christensen, 2008) rather than test a priori proposition.

Qualitative researchers do not usually collect data in the form of numbers, as they usually conduct observations and/or interviews, and the data are often in the form of words (Guba & Lincoln, 1998; Johnson & Christensen, 2008).

3.4.6. Experimental research. Experimental research often is used to determine cause-and-effect relationships (Johnson & Christensen, 2008; Kerlinger, 1986). Researchers usually attempt to identify causal relationships because they measure, under controlled conditions, the effect of manipulating one independent variable (Johnson & Christensen, 2008; Kerlinger, 1986). Particularly, the researcher will systemically vary an independent variable and examine its effects on a dependent variable (Johnson & Christensen, 2008).

3.4.7. Non-experimental research. Non-experimental research does not involve manipulation of the independent variables, and the researcher observes how variables are related to one another (Johnson & Christensen, 2008; Kerlinger, 1986; White & McBurney, 2013). Despite its limitations, non-experimental research is vital in the education sector because many educational variables cannot be manipulated or created in the laboratory (Johnson & Christensen, 2008). The difference between experimental and non-experimental research is the amount of control that the researcher has over the participants and the nature of the research (White & McBurney, 2013). The data gathering methods in non-experimental investigations generally sacrifice some control in order to obtain data (White & McBurney, 2013). Non-experimental research is often referred to as correlational research because often
it investigates behaviour by studying the relationships among variables (White & McBurney, 2013).

3.4.8. Interviews. Interviews are used to understand participants’ experiences (Kvale, 1996, 2007; Merriam, 2014). One of the main purposes of interviews is to gather descriptions of the interviewees’ attitudes toward, or experiences of, a certain phenomenon and then interpret the meaning of the descriptions (Kvale, 2007; Merriam, 2014). The use of the interview method becomes essential when the researcher cannot observe participants’ behaviours or feelings (Merriam, 2014). Gathering these descriptions can be done using different methods; face-to-face interview is the most common (Kvale, 1996, 2007; Merriam, 2014; Opdenakker, 2006). However, the financial cost and time consumption that face-to-face interviews require and the development of communication technology have encouraged the use of telephone interviews (de Vaus, 2014).

Interviewers should be familiar with, and knowledgeable about, the interview topic and be able to understand voice and face expressions (Kvale, 2007; Merriam, 2014; Rubin & Babbie, 2015). They should encourage the interviewees to clearly explain what they experience and feel (Kvale, 2007; Rubin & Babbie, 2015). Interviewees’ responses can include vague statements and sometimes a statement can have several meanings. Interviewees may also give inconsistent responses during an interview (Kvale, 2007).

There are slight differences between face-to-face and telephone interviews; in contrast, there is a lot of commonalities between them. Because telephone interviewing was employed as part of the methods that were used in this study, further discussion will be focused on telephone interviews.
Telephone interviews. A telephone interview is the process of gathering data verbally through the phone (Creswell, 2014, 2015; de Vaus, 2014; Kerlinger, 1986; Tymms, 2012). Telephone interviews have become a popular method for gathering data in social science research (King & Horrocks, 2010; Merriam, 2014) and been used in several research areas (Glogowska, Young, & Lockyer, 2011; King & Horrocks, 2010; Neuman, 2014; Opdenakker, 2006). Telephone interviews are often used in follow-up mail or face-to-face surveys (Kerlinger, 1986; Massey, 1986; Walter, 2013). Berg and Lune, (2012) stated that telephone interviews are utilised best when the researcher has specific questions in mind. Telephone interviews have most of the validity of face-to-face interviews (Glogowska et al., 2001; Neuman, 2014). The most important advantages of using telephone interviews are saving money and time (Berg & Lune, 2012; de Vaus, 2014; Rubin & Babbie, 2015; White & McBurney, 2013), because they are usually used when there is a physical distance from participants (King & Horrocks, 2010), and therefore, they can be conducted without participants and researchers required to travel (White & McBurney, 2013). In telephone interviews, it is important to introduce the purpose of the interview and the nature of the study to the interviewees (Berg & Lune, 2012; Glogowska et al., 2011). The interviewer should answer any questions asked by the interviewees during the interview (Glogowska et al., 2011). Answering the interviewees’ questions during the interview is considered an important element in gaining the interviewees’ trust and maintaining the conversation (Glogowska et al., 2011).

Telephone interviews are preferred when the topic is sensitive because the greater the anonymity the more likely participants willingly engage freely in the interview and share their personal experiences than if the interview is face to face (King & Horrocks, 2010; Opdenakker, 2006). Moreover, several researchers (Berg & Lune, 2012; de Vaus, 2014; White & McBurney, 2013; Wilson, Roe, & Wright, 1998) have claimed that the anonymity
of telephone interviewing, caused by the absence of the visual channel is greater than face-to-face, postal or email surveys, and therefore, decreases interviewer bias.

In conclusion, a telephone interview is an effective method to gather data when interviewers are well prepared and appropriately organised (Musselwhite, Cuff, McGregor, & King, 2006). Market, social and educational research have been widely conducted by telephone interviews (Musselwhite et al., 2007).

3.4.8.1.1. Timing of telephone interviews. Telephone interviews are often shorter than face-to-face interviews (Glogowska et al., 2011; King & Horrocks, 2010; Wilson et al. 1998). They can take up to 30 minutes (de Vaus, 2014; Glogowska et al., 2011; Wilson et al., 1998), whereas, face-to-face interviews often take longer than 30 minutes (de Vaus, 2014; Wilson et al., 1998). Ideally, the length of telephone interviews depends on the context of the participants and nature of the study under investigation (de Vaus 1991; Wilson et al., 1998). If the interview is meant to take 20 minutes and it goes beyond 20 minutes, the interviewer should check that the respondent is still happy to continue the interview (Glogowska et al., 2011).

3.4.8.1.2. Technical considerations when conducting telephone interviews. When conducting telephone interviews, researchers need to record the whole interview in order to produce transcripts for analysis (Glogowska et al., 2011; King & Horrocks, 2010). In order to ensure the clarity and quality of sound recording, the researcher should use a device with good sound quality (Glogowska et al., 2011). A clear recording facilitates the transcription process, making it less time consuming and increasing accuracy (Glogowska et al., 2011). The researcher should explain the need for audio recording (Glogowska et al., 2011).
3.4.8.1.3. Transcribing telephone interviews. The next stage after recording telephone interviewees is to transcribe the interviewees’ statements from oral to written words, which constitutes an initial analysis (Kvale, 1996, 2007). The transcribing method depends on the purpose of the study, the available funding, and most importantly, availability of a patient typist (Kvale, 1996, 2007). The amount of time needed for transcribing telephone interviews likely depends on the quality of the sound recorded, the researcher’s typing experience, and the demand for accuracy (Kvale, 1996, 2007).

3.4.8.1.4. Issues to be considered when administering telephone interviews. When planning telephone interviews it is important to consider if telephone interviews are appropriate for the nature of the research, context, and research questions (Glogowska et al., 2011). The researcher should also consider the context of the study (Glogowska et al., 2011). In general, most people are comfortable with the use of telephones, however, using telephone interviews is not appropriate when participants have communication difficulties or are cognitively disabled (Glogowska et al., 2011).

Musselwhite et al. (2007) claimed that participants likely hesitate to answer unclear questions during telephone interviews. Thus, the researcher must maintain clear communication in order to avoid misconceptions (Glogowska et al., 2011; Musselwhite et al., 2007). The researcher should speak clearly and repeat the question if needed, and should allow sufficient time for participants to answer questions (Glogowska et al., 2011; Musselwhite et al., 2007).

It is suggested to avoid asking questions that contain a large number of response categories because it might be difficult for participants to remember all categories while they answer the questions (de Vaas, 2014; Wilson et al., 1998).
Some family members could be overprotective and believe that participating in an interview could be disturbing or tiring for interviewees, and therefore, tend to protect their relatives from participating (Musselwhite et al., 2007). The main family members should be informed about the participation of their relatives in the study and that the participant had been informed and consented to be involved in a telephone interview (Musselwhite et al., 2007). It is also important to assure the family members of the participant’s privacy (Musselwhite et al., 2007).

3.4.9. Free responses. Free-response allows respondents freedom in their responses and adds richness to the data which is unobtainable from closed questions (Case & Swanson, 1993; Johnson & Christensen, 2008; Walter, 2006). Free responses allow respondents to write in their own words to justify their responses (Cohen, Manion & Morrison, 2000). It is also useful for obtaining information that cannot be classified into specific categories and to obtain data that might require a large number of categories (Cohen et al., 2000).

There are some limitations encountered when conducting free-response questionnaires. The participants generally have been asked to only respond to the statement provided (Braun & Clarke, 2006; Clarke & Braun, 2013). The researchers should be able to refine the responses; otherwise this would become a limitation (Braun & Clarke, 2006; Clarke & Braun, 2013). Because this is part of a questionnaire, the researcher cannot ask any questions to clarify any vague responses.

3.5. Reliability & Validity

Reliability and validity reflect the trustworthiness of research findings, which depends on the research question, how the data were collected, how the data were analysed, and what kind of results were founds (Roberts & Priest, 2006).
In quantitative research, reliability refers to the extent of consistency or stability of the data or measurement (Hernon & Schwartz, 2009; Johnson & Christensen, 2008; Quinlan, et al., 2015). Hernon and Schwartz (2009) defined consistency as “the extent to which the same results are produced from different samples of the same population, or to what degree an instrument measures the same way each time it is used under similar conditions with the same subjects” (p. 73).

In quantitative research, validity describes the extent of generalising the results of a study to a population (external validity), and if the tools used correctly measure what it meant to measure (internal validity) (Hernon & Schwartz, 2009; Kerlinger, 1986; Rubin & Babbie, 2015; White & McBurney, 2013). Internal validity describes the extent to which the research has the accurate interpretation of the findings (Hernon & Schwartz, 2009; Johnson & Christensen, 2008; Roberts & Priest, 2006; White & McBurney, 2013). There are three major types of validity that may be considered when designing research, namely, content validity, criterion-related validity, and construct validity (Hambleton, 2012; Creswell, 2014, 2015; Kerlinger, 1986). Content validity refers to the sampling adequacy of the content of a measuring instrument (Creswell, 2014, 2015; Hambleton, 2012; Johnson & Christensen, 2008; Kerlinger, 1986). Kerlinger (1986) argued, “construct validity is one of the most significant scientific advances of modern measurement theory and practice” (p. 420). Construct validity refers to evidence that scores from a test can be interpreted in terms of the construct, which the test was proposed to measure (Creswell, 2014, 2015; Hambleton, 2012; Kerlinger, 1986). In other words, construct validity refers to the evidence that could decide whether the results support the theory (White & McBurney, 2013).

The most important advantage of validity is that the researcher makes sure that her or his instrument is measuring what he or she purports it to measure for a particular sample in a particular context (Johnson & Christensen, 2008; Kerlinger, 1986).
Although validity and reliability are related to each other they are separate concepts, for example, if one exists, the other may not necessarily exist (Hernon & Schwartz, 2009; Johnson & Christensen, 2008; Kerlinger, 1986). Almost in any research, there should be a section describing the procedures that relate the study design and methodology, and to reliability and validity (Hernon & Schwartz, 2009).

3.5.1. Scales of measurement. Scales are often used to obtain responses that will be comparable to one another (Alreck & Settle, 1995; Johnson & Christensen, 2008; Kerlinger, 1986). Measurement can be categorised according to the type of information communicated by numbers that are assigned (Hambleton, 2012; Johnson & Christensen, 2008). The numeric codes that represent answers to questions are easier to manipulate than words (Alreck & Settle, 1995). There are mainly four types of scales; namely, nominal, ordinal, interval, and ratio (de Vaus, 2014; Hambleton, 2012; Johnson & Christensen, 2008). All four scales are valuable in social science research because they have major implications for the handling of measurements in any statistical analysis (Hambleton, 2012).

3.5.1.1. Nominal scale. Johnson and Christensen (2008, p. 138) stated, “nominal scales are the simplest form of measurement” because they use symbols, such as words or numbers to classify or identify people or objects (Hambleton, 2012; Johnson & Christensen, 2008; Runyon & Haber, 1980; White & McBurney, 2013). For example, nominal scales could be gender, qualifications, or a school type (Hambleton, 2012; Johnson & Christensen, 2008). The nominal scale is important because many observations made by researchers take place at this level (Johnson & Christensen, 2008; Runyon & Haber, 1980). Moreover, nominal data play an important role in helping to describe the research sample and preparing
the data for some analysis (e.g., splitting a sample of data into combinations of gender and qualification) (Hambleton, 2012).

3.5.1.2. Ordinal scale. Ordinal scales inform about order (Alreck & Settle, 1995; de Vaus, 2014; Hambleton, 2012; Johnson & Christensen, 2008; Runyon & Haber, 1980; White & McBurney, 2013). White and McBurney (2013) defined an ordinal scale as “a measure that both assigns objects or events a name and arranges them in order of their magnitude” (p. 125). The ordinal scale allows the researcher to make ordinal judgments (Johnson & Christensen, 2008). For example, it helps the researcher to determine which individual is higher or lower than another individual on a variable of interest. Alreck and Settle (1995) stated “the principal advantage of the ordinal scale is the ability to obtain a measure relative to some other benchmark” (p. 121). With ordinal-level data, the researcher can categorise individuals based on some characteristic according to their positions on that characteristic (Johnson & Christensen, 2008; Runyon & Haber, 1980; White & McBurney, 2013).

3.5.1.3. Interval scale. In the interval scale, the difference between any two adjacent numbers on the scale is equal to the difference between any two other adjacent numbers (Johnson & Christensen, 2008; Runyon & Haber, 1980; White & McBurney, 2013). The numbers are reported on an interval scale when the numbers communicate information about the differences, as they might on a performance test or personality survey (Hambleton, 2012; Runyon & Haber, 1980). Moreover, interval scales help to make the differences between the numbers on the scale meaningful, which can include both nominal and ordinal information (de Vaus, 2014; White & McBurney, 2013).
3.5.1.4. **Ratio scale.** The fourth level of measurement is the ratio scale, which, represents the highest level of quantitative measurement (Johnson & Christensen, 2008). The ratio scale has all the properties of the nominal (labelling), ordinal (rank ordering), and interval (equal distances) scales and has a true zero point (Johnson & Christensen, 2008; White & McBurney, 2013). The number zero represents an absence of the characteristic being measured (Johnson & Christensen, 2008). Most physical measurements (such as, height, weight, or age) are done at the ratio level (Johnson & Christensen, 2008).

3.5.1.5. **Self-efficacy scale.** Different types of measurement scales may be used to develop a questionnaire (DeVellis, 2012). For example, Bandura (1997, 2001) proposed an 11-point scale to measure efficacy beliefs, as the purpose is to measure the extent of the participants’ confidence, which likely will be reported by percentages (0% to 100%). When constructing a questionnaire, it is important to note that there are complex variables that cannot be measured with only one item (Bandura, 2012, Pajares & Urdan, 2006; Rubin & Babbie, 2015). Rubin and Babbie (2015) defined scales as “The composite or cumulative measures of complex variables” (p. 166). Scales are used to help the researcher measure these multifaceted variables with scores, which could provide a variety of information about a concept being measured (Quinlan et al., 2015; Rubin & Babbie, 2015). Scales that include few items are considered to be less reliable because they cannot provide differentiating information (Bandura, 2012; Pajares & Urdan, 2006). Therefore, scales that include several degrees of strength to measure self-efficacy beliefs are a stronger predictor of performance than those with a few items (Bandura, 2006b, 2012; Pajares & Urdan, 2006).

As defined earlier, self-efficacy refers to people’s beliefs in their own capabilities to execute a certain task successfully (Bandura, 2012). Bandura (2012) claimed that individuals’ self-efficacy beliefs vary one from another, and also vary for each domain. (Bandura, 2012;
Pajares & Urdan, 2006). When constructing scales to measure self-efficacy beliefs, they must include items related to the specific domain being measured (Bandura, 2006b).

The standard scale for measuring self-efficacy beliefs requests participants to rate their confidence in their own capabilities to successfully carry out the activities presented with different levels of task demands (Bandura, 2006b, 2012). Respondents are required to identify the percentage that most closely matches their confidence on an 11-point scale, ranging in 10-unit intervals which starts from 0 “Not at all confident”, through moderate degrees of confidence, 50 “Moderately confident”, to the highest confidence, 100 “Completely confident” (Bandura, 2006b).

Bandura (2012) stated that the questionnaire’s items should be specific and suitable to the phenomena being measured. Furthermore, the questionnaire’s items should specify the kind of activities to be performed, how these activities are going to be accomplished, and the nature of the goals they set (Bandura, 2007, 2012). When constructing a self-efficacy scale, it is vital that to use a statement of self-efficacy. ‘I can’ is a statement of self-efficacy; whereas ‘I will’ is a statement of goal (Bandura, 2012). Bandura stated, “A statement of intention should not be included in a self-efficacy scale” (p. 16). The more response options the scale has the more appropriate and reliable the scale because it would offer distinguishing information (Bandura, 2007, 2012; Pajares & Urdan, 2006). Bandura stated “an efficacy scale with multiple gradations of strength of self-efficacy is a stronger predicator of performance than one with only a few choices” (p. 16). Scales with restricted response options would misrepresent the relations that exist among variables (Bandura, 2007, 2012).

The collection of background information about participants may be valuable for the researcher in the context of a particular study (Kervin et al., 2006). A demographic section can be designed to collect a variety of information about the participants such as their ages, gender, levels of education and experience with the main focus of the research (Alreck &
Settle, 1995; Kervin et al., 2006). In addition, demographic information should be related to the nature of the research (Alreck & Settle, 1995; Kervin et al., 2006). It can provide the researcher with relevant information about respondents, which could possibly allow the researcher to compare participants’ responses to their demographic information, and help the researcher make an assessment of the generalisability of the results (Alreck & Settle, 1995; Griffith, Cook, Guyatt & Charles, 1999). In addition, demographic information can enable comparisons among important respondent subgroups and adjustment for differences among them (Alreck & Settle, 1995; Griffith et al., 1999).

3.6. Quantitative Analytical Techniques

The following sections describe the main quantitative techniques for collecting and analysing data for this study.

3.6.1. Statistical methodology. Statistics is defined as a collection of numerical facts that are expressed in terms of summarising statements and which have been collected from numerical data (Runyon & Haber, 1980). Statistical methodology refers to a group of statistical techniques used to process data and show the relationships between and among variables (Crawford 1997; Kervin et al., 2006; Runyon & Haber, 1980). Some quantitative analytical procedures will be used in this study, namely, correlational analysis, factor analysis, descriptive analysis, frequency distribution, and multiple regression analysis.

3.6.2. Correlational analysis. A correlation is a statistic that can show the strength of association that may exist between variables (Hair et al., 1992; Johnson & Christensen, 2008; White & McBurney, 2013), without asserting that one causes the other (Borga, 2001; White
A positive correlation or relationship is found when an increase in one variable causes an increase in the other variable, however, when there is an increase in one variable that causes a decrease in the other variable, it is considered to be a negative correlation (Cohen et al., 2000; Cohen & Manion, 1989, 1994; Cooksey, 2014). Furthermore, it cannot be concluded that one variable causes the other one even if strong correlation exists between them (Cooksey, 2014). Relationships or correlations among variables, which found by applying correlational analysis provides a sign of the predictability between two variables (Borg et al., 2007; Cohen et al., 2000). Correlational analysis is mainly concerned with finding out how two variables are related and to understand the phenomena by studying the relationships between these two variables according to the theoretical framework (Cooksey, 2014).

3.6.3. Factor analysis. Factor analysis is a statistical method, which is used to examine the interrelationships among a large set of variables, and then explain these variables according to their common factors (Cohen & Manion, 1994; Cooksey, 2014; de Vaus, 2014; Fabrigar, Wegener & Strahan, 1999; Hair, Anderson, Tatham & Black, 1992).

Cooksey (2014) stated that factor analysis “seeks to condense the number of observed variables into a smaller number of composite variates which highlight or represent the underlying structure of the domain from which the variables were derived” (p. 157).

Factor analysis techniques can be either exploratory or confirmatory (Cooksey, 2014; Hair, 1998; Hair et al., 1992). Exploratory factor analysis can be used to explain the structure among a set of variables (Cooksey, 2014; Hair, 1998; Hair et al., 1992). Exploratory factor analysis can also be used as a data reduction method (Cooksey, 2014; Hair, 1998; Hair et al., 1992). If the researcher has formed judgments on the actual structure of the data, based on the theoretical framework, then she or he may wish to test hypotheses involving such issues by

The researcher can run factor analysis using a statistical software program (such as SPSS), look at the results, and find out if the tested items appear to measure one dimension or more than one dimension (Johnson & Christensen, 2008). Despite the contribution of computer programs, the most important element when using factor analysis is the researcher’s judgments (Johnson & Christensen, 2008). These judgments likely affect the results and interpretations of the data (Henson & Roberts, 2006).

Since factor analysis uses a correlation matrix, the variables should at least be measured at an interval level (Field, 2009). Secondly, in order to generalise the results of the analysis, the variables should be approximately normally distributed (Field 2000, 2009). Thirdly, the researcher should consider the sample size, as it might influence the reliability of the factor analysis (Field, 2009).

3.6.3.1. The suitability of the data for factor analysis. Kaiser-Meyer-Olkin (KMO) is often used to measure sampling adequacy, which is a method that helps to determine whether factor analysis is appropriate for the data (Hutcheson & Sofroniou, 1999; Pallant, 2010). Generally, the sample is acceptable when the value of KMO is greater than 0.5 (Field, 2009). When the value is close to 1, factor analysis is considered to be appropriate (Field, 2009; Pallant, 2010). Field (2005) suggested not accepting values less than 0.5. Field (2009) considered that “values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb” (p. 6).

3.6.3.2. Extraction of factors. This step starts when the researcher has selected the variables to be used in the factor analysis, then factor extraction is used to help the researcher
decide what factors best describes the relationships among the variables (Cooksey, 2014; Hutcheson & Sofroniou, 1999; Pallant, 2010). The main purpose of extracting factors is to reduce all items into possible and interpretable factors (Williams, Onsman, & Brown, 2010), by analysing a set of variables (Cooksey, 2014). In other words, researchers extract factors, which they believe are relevant, and delete irrelevant factors (Abdi, 2003). Generally, the number of extracted factors is ordered according to differences in the original data, which these factors can explain (Abdi, 2003). Pallant (2012) states that, “this involves balancing two conflicting needs: the need to find a simple solution with as few factors as possible; and the need to explain as much of the variance in the original data set as possible” (p. 175).

### 3.6.3.3. Factor rotation.

When the relevant factors are determined, rotations help researchers to interpret these factors (Abdi, 2003; Hair, 1998; Hair et al., 1992; Hutcheson & Sofroniou, 1999; Pallant, 2010), by determining which variables are related to which factors (de Vaus, 2014). Rotation is an important component in factor analysis (Hair, 1998; Hair et al., 1992), because it help the researcher interpret the real meaning behind the selected factors by rotating these factors according to their meaning (Abdi & Williams, 2010; de Vaus, 2014). Moreover, rotation is also used to identify differences that exist between factors (Pallant, 2010). When rotating factors, the term loading generally refers to the bases of matrix (Abdi & Williams, 2010). When variables load high in a certain factor, it is likely that they relate to that factor (de Vaus, 2014). In the rotated matrix, the high and low loadings help the researcher to determine which variables are related to which factors (de Vaus, 2014). When a variable loads high in two or more factors, it is considered to relate to the factor, which it loads highest in (de Vaus, 2014). However, When a variable loads low in two or more factors, it is considered to not relate to any of them, and therefore, should be removed from the analysis (de Vaus, 2014).
3.6.3.4. **Factor interpretation.** The next step is to interpret the rotated factors by determining what items best represent a factor, and then naming that represented factor according to its meaning (Williams et al., 2010). For example, if a factor includes five items, which are related to job searching skills, the researcher could name that factor “job searching skills”. Generally, any factor is loaded by a minimum of two variables in order to interpret the factor in a meaningful way (Williams et al., 2010).

3.6.4. **Multiple regression analysis.** Multiple regression analysis is used to evaluate the strength of the relationship between a single dependent variable and a linear combination of independent variables using principles of correlation and regression (Cooksey, 2014; Hair et al., 1992; Hair et al., 1998; Kerlinger, 1986). Thus, in order to use multiple regression analysis, the researcher should divide the variables into independent and dependent variables (Hair et al., 1992; Kerlinger, 1986). Multiple regression analysis is used to provide a prediction equation, which could justify the relationship between the predictors and the criterion variable (Cooksey, 2014).

Multiple regression is a method that should be used when independent and dependent variables are metric (Hair, 1998; Hair et al., 1992). However, the research can include categorical data as variables (Hair, 1998; Hair et al., 1992).

Multiple regression analysis can be used to predict changes in the dependent variable when change occurs in the independent variables (Hair, 1998; Hair et al., 1992). Thus, multiple regression analysis helps the researcher to predict the level of the dependent variable (Hair, 1998; Hair et al., 1992). The researcher must decide which variables are to be dependent and which independent before using multiple regression analysis (Hair, 1998; Hair et al., 1992). In the proposed study, regression analysis will be employed in order to
investigate the relationships between factors identified by factor analysis, and to test the hypothesised relationships described in the theoretical framework.

3.7. Qualitative Analytical Techniques

Qualitative techniques used in this study are represented and explained in the following sections.

3.7.1. Thematic analysis. Thematic analysis is a technique used to categorise, analyse, and report the core ideas in the data collected (Braun & Clarke, 2006; Roulston, 2001). There is a rapid growth in using thematic analysis in the field of psychology (Braun & Clarke, 2006; Roulston, 2001). The role of thematic analysis is to identify, understand and write the clear ideas within the participant’s story (Guest, MacQueen & Namey, 2012). Clarke, and Braun, (2013) stated that “we view thematic analysis as theoretically flexible because the search for, and examination of, patterning across language does not require adherence to any particular theory of language, or explanatory meaning framework for human beings, experiences or practices” (p. 120). This signifies that thematic analysis could be applied in a variety of theoretical frameworks (Clarke & Braun, 2013). Theme is defined as the patterns, ideas, and concepts, which represent the meaning of a particular statement or the core meaning of the story, told by the interviewee (Guest et al., 2012). King and Horrocks (2010) argued that, “themes are recurrent and distinctive features of participants’ accounts, characterising particular perceptions and/or experiences, which the researcher sees as relevant to the research question” (p. 150). Themes exist at the interface between the researcher and the data being analysed (Guest et al., 2012).

Themes serve as a representation of patterns that exist in the data, which can discover an interesting idea or a new understanding regarding the research topic (Braun & Clarke,
2006; King & Horrocks, 2010). It is hard to establish rules on how to identify a theme, as King and Horrocks (2010) claimed that themes are not something obvious in the data. Finding themes always depends on the researcher’s thought patterns, judgments, and to what extent he or she understands the nature of the study (Braun & Clarke, 2006; King & Horrocks, 2010). Furthermore, it is the researcher who decides what statement to include or discard according to its relation to the study and how to analyse and categorise these statements (Braun & Clarke, 2006; King & Horrocks, 2010). Braun and Clarke (2006) claimed that a theme represents a repeated idea or concept rather than an idea that appeared only once. Moreover, similar ideas or concepts found repeated in two or more different interviews may be considered to be a theme, however, it is possible to find a theme in a single interview (Braun & Clarke, 2006; King & Horrocks, 2010). It is essential that themes are different from each other (Braun & Clarke, 2006).

Thematic analysis is considered useful in a variety of research areas as a basic method (Clarke & Braun, 2013). This might be because it can be used for a high quantity of interview or survey responses, which usually deal with participants’ experiences of particular phenomena in a certain context (Clarke & Braun, 2013).

3.7.1.1. Balancing clarity and inclusivity. Qualitative research is designed to provide in depth and detailed analyses (Clarke & Braun, 2013; King & Horrocks, 2010). This possibly means that when the researcher is conducting a thematic analysis, she or he should include the largest amount of related data in the themes that is possible (King & Horrocks, 2010). The main reason for modifying and organising the themes is to help the researcher justify his or her understanding of the story behind the data to the readers (King & Horrocks, 2010). The organisation and categorisation of the themes has to be understandable and
comprehensive (King & Horrocks, 2010). An efficient method to present the themes to the readers is in a Table depicting the levels of themes and sub-themes (King & Horrocks, 2010).

3.7.1.2. Discovering themes. In order to find themes using thematic analysis, the researcher should have enough knowledge about the analytic objectives (Guest et al., 2012; Ryan & Bernard 2003). This is because analytic objectives structure the way that the researcher views the data and then decides what should be defined as themes (Guest et al., 2012; King & Horrocks, 2010; Ryan & Bernard, 2003). When the researcher has enough knowledge about the analytic objectives, he or she should start reviewing the data with the intention of considering these objectives (Guest et al., 2012). It is expected that some themes will not show any kind of relationship to the research objectives and may show relevance in later stages of the analysis. One of the useful techniques for recognising themes is paying attention to themes that are repeated in more than one interview (Guest et al., 2012; King & Horrocks, 2010; Ryan & Bernard, 2003). There are no set rules for the number of repetitions required to determine which is a theme and which is not, rather it all depends on the relevance of the themes to the nature of the research and the researcher’s decision (Guest et al., 2012; Ryan & Bernard, 2003).

3.7.1.3. Doing thematic analysis. Mainly, there are six phases to consider when using thematic analysis. However, these phases are not limited to thematic analysis, because they could be applied to other qualitative research approaches (Braun & Clarke, 2006).

3.7.1.3.1. Phase 1: the researcher should be familiar with the data. It is very important that the researcher has a complete understanding of the data collected and the nature of the materials (Guest et al., 2012). Braun and Clarke (2006) suggested that the
researcher should read the materials in the data one or more times before starting to
categorise, as the researcher’s understanding and finding potential themes will build up
during his or her reading. While reading through the data set, the researcher should write
notes of any ideas or interesting thoughts that could be useful for coding (Braun & Clarke,
2006). If the data are verbal, such as telephone interviews, the researcher has to transform the
data into written words in order to analyse it. If the data collected are in another language, the
researcher will need to translate it to the language in which the research is written. For
eexample, if the research is written in the English language and data are Arabic, then the data
would be translated from Arabic to English. Unfortunately, transcribing can often take
considerable time, and be frustrating, and boring sometimes for researchers, but transcribing
can be very beneficial for the researchers as it will help them develop understanding of the
data (Braun & Clarke, 2006).

3.7.1.3.2. Phase 2: generating initial codes. When the researcher has reread the data
multiple times, become familiar with it, and also has identified a set of patterns and ideas
about the nature of the data collected, then, she or he starts generating primary codes from the
data set, which would likely help the researcher to identify and categorise any part of the data
that is found related (Braun & Clarke, 2006; Guest et al., 2012).

3.7.1.3.3. Phase 3: searching for themes. This stage readjusts the analysis to finding
themes and sub-themes, instead of coding, and includes organising the codes into possible
themes (Braun & Clarke, 2006; Guest et al., 2012). When searching for themes, the
researcher is required to examine the codes and the list of ideas, and find out how some codes
might be combined to represent a theme (Braun & Clarke, 2006; Guest et al., 2012).
3.7.1.3.4. Phase 4: reviewing themes. By the time the researcher has developed a set of potential themes, which also includes modifying those themes, the researcher might find that one or more of the possible themes should not be considered as themes (Braun & Clarke, 2006; Guest et al., 2012). Moreover, other themes may need to be merged together to represent a clear idea or concept (Braun & Clarke, 2006). In order to simplify the structure of the themes, the researcher could break down a theme into subthemes.

3.7.1.3.5. Phase 5: defining and naming themes. The researcher should start describing potential themes and enhance them by reviewing them repeatedly in order to get them ready for the analysis (Braun & Clarke, 2006). In this stage, the researcher should be able to find and explain the core story behind each theme (Braun & Clarke, 2006). The researcher should avoid complicating the meaning of the themes and should not include any irrelevant information. The researcher is required to analyse every single theme in detail. Thus, the researcher will have to think about the themes as a whole, and consider the relationship of each individual theme to the others. When refining the themes, the researcher needs to determine if a theme could be broken down to sub-themes (Braun & Clarke, 2006). Braun and Clark (2006) stated, “Sub-themes are essentially themes within a theme” (p. 22). Sub-themes could be utilised to simplify a broad and complex theme (Braun & Clarke, 2006).

3.7.1.3.6. Phase 6: producing the report. The reason for writing a thematic analysis is to simplify for the reader the story behind the data (Braun & Clarke, 2006). The analysis should be brief, comprehensible, consistent, and interesting when telling the reader the story behind each theme (Braun & Clarke, 2006). It is also important when writing the analysis report to consider providing appropriate evidence of the themes under investigation.
3.8. Research Ethics

Research ethics refers to the principles and guidelines that help the researcher maintain the things that have value and to assist researchers in conducting ethical studies (Johnson & Christensen, 2004, 2008).

3.8.1. Informed consent. Johnson and Christensen (2008) stated that research participants must give informed consent before they participate in a study. That is, before an individual can participate in a study, the researcher must give the potential participant a description of the study, which could to some extent influence his or her decision to participate. The participants have to be fully informed about what the research is about and what kind of participation will be involved (de Vaus, 2014; Habibis, 2006). The main criterion used to ensure that the participants are fully informed is the information sheet, which includes a comprehensive explanation about what the study is about and its objectives (de Vaus, 2014; Habibis, 2006).

3.8.2. Additional consent. Some studies require the cooperation of non-participants, such as teachers, trainers, and principals (Johnson & Christensen, 2008). Often, these individuals must give their approval to the researcher to gather data (Johnson & Christensen, 2008). All questions and/or inquiries posed by the participants must be answered, and they have the right to choose whether to participate or to discontinue participation in the study at any time if they wish (Johnson & Christensen, 2008).

The researcher should provide the participants comprehensive information about the purposes, goals, and the nature of the study in which they are being asked to participate (Johnson & Christensen, 2008). By doing do, they can evaluate the procedures to be followed
and make decisions as to whether they want to participate or not (Johnson & Christensen, 2008).

3.8.3. Confidentiality and anonymity. Confidentiality refers to the participant’s identity not being revealed to any person except the researcher (de Vaus, 2014; Johnson & Christensen, 2008). When the researcher does not know the identity of the participants, this is called anonymity (de Vaus, 2014; Johnson & Christensen, 2008). The confidentiality of both the data and the participants should be protected at all times (Johnson & Christensen, 2008). Confidentiality and anonymity are very fundamental in research, particularly to avoid connecting the participants with any information that could cause embarrassment or harm (Johnson & Christensen, 2008).

3.9. Results and Data Analysis

The data for this study were mainly quantitative, obtained from questionnaires, however, there were some qualitative data from a free response in the questionnaire and some follow-up telephone interviews.

3.9.1. Procedures. A preliminary step in the selection of a sample involved obtaining permission from the Human Research Ethics Committee at the University of Wollongong in order to approach VR centres for participation in the study (see Appendix A). An approval from the Ministry of Social Affairs in Saudi Arabia was obtained to collect data from VR centres, which are managed by the same Ministry. A participation information sheet explaining briefly the nature of the study was given to both students with physical disabilities and trainers. All participants agreed to participate in the questionnaires and signed the consent forms, which were obtained by the trainers (see Appendix B). The trainers’ signed
consent forms were obtained by the researcher. Participants were given a brief introduction about the nature and goal of the study. The researcher assured students that their responses would be confidential and be used for research purposes.

The students’ questionnaire was completed at the end of, or right after, the VR course. Each student completed a questionnaire separately to enable privacy. The students completed the questionnaire in their own time over a period of one day. The questionnaire was given to students by a third party, namely, a trainer, physical therapist, or occupational therapist, to avoid bias; the third party was one member of a multidisciplinary team providing rehabilitation and consultation services to the students. The trainers’ questionnaire was completed at the end of, or right after, the VR course. Each trainer completed a questionnaire independently to enable privacy. Trainers completed the questionnaire in their own time over a period of two days. The questionnaire was given to trainers by the researcher.

3.9.2. Sample. The questionnaires were administered in 11 VR centres in Saudi Arabia. The sample was selected from the population of three cities, namely, Riyadh, Jeddah, and Dammam. Each VR centre was contacted by telephone to seek its participation in the study. If a VR centre expressed an interest in participating in the study, the researcher arranged to send a brief introduction to explain the nature of the study and what was required if the centre participated in the study.

The participants were students with physical disabilities and their trainers. Only participants with SCI and Amputees were selected because the majority of people in the 11 VR centres have SCI or Amputee and they generally had the mental capacity to participate in this research. Based on the author’s work history, when patients admitted to the rehabilitation hospital, the psychologist and occupational therapist would obtain a pre-
assessment regarding the patient’s mental and physical capacity. Thus, the author assured that all participants were mentally capable.

The sample comprised 224 students aged 19 to 46 (mean age=29.84), including 36 females (16.1%) and 188 males (83.9%). The longest TSI was 11 years and the shortest TSI was two months. A total of 32 trainers responded to the questionnaires, comprising six females (13.4%) and 26 males (86.6%). Twelve students and four trainers provided free responses. Nine students participated in the telephone interviews.

As stated earlier, although the participants were patients and students, the term students with physical disabilities will be used consistently when referring to participants.

3.9.3. Instruments

The quantitative data were analysed using correlational analysis, factor analysis, and multiple regression analysis to test the hypotheses developed in chapter 2. In the following sections, methods and the design of the study will be explained, and the results will be presented.

3.9.3.1. Administration of the questionnaires. Three questionnaires were used in this study. VR self-efficacy, trainer self-efficacy, and VR performance were measured with reference to Bandura’s recommendation (Bandura, 1997, 2001) to develop context and task specific items. The construction of the VR self-efficacy, trainer self-efficacy, and VR performance scales relied on knowledge of the activity domains. The context was a VR training centre based and the language used in the questionnaires was matched to the participants’ expected language competency. The concepts involved were designed to be
straightforward and expected to match students’ perceptions and understanding of VR training experiences, so the questionnaires could be completed without involvement of the researcher.

The VR self-efficacy, trainer self-efficacy, and VR performance questionnaires items were developed based on common activities provided in the VR training courses. These items were developed from discussions with VR trainers and directors of the rehabilitation departments where the sample was collected. The VR self-efficacy items were developed to inquire into the students’ belief in their capabilities to execute certain tasks in the VR training course. The approach was to ensure that the items allowed sufficient scope for students to report their beliefs in their own capabilities and in their VR trainer’s capabilities meaningfully without feeling that they were expected to respond in a certain way. The VR questionnaire was expected to emerge as multidimensional, containing both a VR self-efficacy scale and a proxy efficacy scale. The trainer self-efficacy items were developed to inquire into the trainers’ belief in their own capabilities to train effectively students with physical disabilities. The approach was to ensure that the items allowed sufficient scope for trainers to report their beliefs in their own capabilities meaningfully without feeling that they were expected to respond in a certain way. The VR performance questionnaire items matched items in the VR self-efficacy questionnaire, however, it was not a self completed questionnaire, rather, it was administered by a third party to assure accuracy. The third party asked the participants to execute certain tasks (as provided in the VR course) and the administrator was asked to judge how well each student performed each task.

VR self-efficacy, trainer self-efficacy, and VR performance scales are unipolar, ranging in 10-unit intervals from 0 “Not at all confident”, through moderate degrees of confidence, 50 “Moderately confident”, to the highest confidence, 100 “Completely confident” (Bandura, 2006b). The questionnaires do not include negative numbers because a
judgment of incapability (0) has no lower gradations (Bandura, 2005). VR self-efficacy, trainer self-efficacy, and VR performance items were developed in order to accurately reflect the construct of the study. In general, self-efficacy beliefs are concerned with perceived capability, therefore, the items were phrased in terms of “I can…” rather than “I will…”, because “can” is a judgment of capability, while “will” is a statement of intention (Bandura, 2005). Each item in the student VR self-efficacy and trainer self-efficacy scales started with “I can…” followed by the statement.

The VR self-efficacy, trainer self-efficacy, and VR performance questionnaires were identified by medical identifiers rather than by participants’ names. Participants were informed that their responses would remain confidential and would be used only with medical numbers by the researcher. In order to encourage straightforward responses, the researcher explained to the participants the value of their contribution to the research and informed them that the knowledge gained from their responses would assist the development of VR courses.

Questionnaires were translated to Arabic, the participants’ main language in Saudi Arabia, and the language used in the questionnaires was matched to the participants’ language competency. The items and concepts used were designed to be clear and appropriate for students’ understanding of the VR and trainers’ perceptions and understanding of VR and people with physical disabilities.

In the following sections, the nature and objective of each questionnaire will be explained.

3.9.3.1.1. **VR self-efficacy questionnaire.** The VR self-efficacy questionnaire was developed to measure students’ VR self-efficacy beliefs and proxy efficacy beliefs for the trainer, and consisted of four sections (see Appendix C). The first section of the questionnaire
gathered personal demographic information from participants, including their medical or file number, age, gender, qualification, TSI and reason for enrolling in the VR course. Students were requested to report their medical or file number so that they could be matched to their trainers. At the end of the demographic section, students were asked to state their reasons for enrolling in the VR course. The second section consisted of nine items designed to assess students’ beliefs in their own capabilities to carry out the VR activities. Students were asked to respond to the following statement:

*The items listed below are designed to assess your beliefs in your capability to carry out the vocational training activities listed below. For example, if you have complete confidence that you can carry out the task successfully, circle 100%. If you have no confidence that you can carry out the task successfully, circle 0%. If your confidence lies somewhere in between, please circle the percentage that most closely matches your confidence.*

Some examples of items are “I can use the Internet as a job searching tool” and “I can complete a job application online”. The third section consisted of eleven items designed to assess students’ beliefs in their trainer’s capabilities to help them achieve their training goals. Students were asked to respond to the statement:

*Please note: The items listed below refer to your trainer. For example, if you have complete confidence that your trainer can help you to achieve your training goals, circle 100%. If you have no confidence that your trainer can help you to achieve your training goals, circle 0%. If your confidence lies somewhere in between, please circle the percentage that most closely matches your confidence.*

Some examples of items are “train me to use the Internet effectively as a job searching tool” and “train me to prepare for a job interview”. In the fourth section of the questionnaire the
students were asked to “Please write any comments you wish about your vocational training experience and how your trainer helps you to achieve your training goals”.

3.9.3.1.2. Trainer self-efficacy questionnaire. Trainer self-efficacy questionnaire consisted of 20 items and was designed to assess the trainers’ beliefs in their own capabilities to carry out VR activities in training students with physical disabilities (see Appendix D). Trainers were asked to respond to the following statement:

*The items listed below are designed to assess your beliefs in your capabilities to carry out the vocational activities listed below in training students with physical disabilities. For example, if you have complete confidence that you can carry out a training task successfully, circle 100%. If you have no confidence that you can carry out a training task successfully, circle 0%. If your confidence lies somewhere in between, please circle the percentage that most closely matches your confidence.*

Some examples of items are “I can accurately evaluate the capacity of my students’ employability skills” and “I can organise appropriate training courses for my students”. Trainers were asked to write any comments they wished about their experiences in the VR that they provide for students with physical disabilities.

3.9.3.1.3. VR performance questionnaire. The VR performance questionnaire consisted of 10 items and was designed to measure students’ performances during their VR (see Appendix E). In the last item the questionnaire’s administrator was asked to describe each student’s overall performance in their VR training. The VR students’ performance questionnaire was administered by a third party, namely, a trainer, physical therapist, or occupational therapist, to avoid bias, and it was completed at the end of the VR course. The third party measured the students’ performance in the most common tasks in VR. The
questionnaire’s administrators were asked to respond to the statement “The items listed below are designed to measure the student’s performance during his or her vocational training. Please circle the percentage score that most closely describes how well the student performs the following vocational tasks”. Some examples of items are “Create her/his own curriculum vitae” and “Complete a job application online without assistance”.

3.10. Data Analyses

Quantitative analyses including factor analysis, correlational analysis, and multiple regression analysis were used to test the hypotheses developed in chapter 2.

3.10.1. Factor analyses. Exploratory factor analysis (EFA) was applied to items related to students’ VR self-efficacy, proxy efficacy for the trainer, and training performance. Factor analysis was carried out using SPSS. Factor extraction criteria included eigenvalues greater than one, scree test and most importantly, interpretation. Varimax rotation was used to facilitate interpretation of the different factors. In this study, item loadings of .30 and above were accepted. Items were first factor analysed to identify any underlying factors, achieve data reduction by creating factor scores, which were then be used in multiple regression analysis in order to test the stated hypotheses. Eigenvalues greater than 1. For the scree plot, the number of factors preceding the beginning of the scree.

3.10.1.1. Factor analysis of students’ VR self-efficacy items. The items from the students’ VR self-efficacy questionnaire were analysed using principal axis factoring. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.76 and Bartlett’s Test of Sphericity was 738.0 ($p < .01$), and therefore factor analysis was considered appropriate for these data. The scree test suggested a possible three-factor solution (see Figure 4.1).
3.10.1.1.1. First principal axis factor solution for VR self-efficacy items. Principal axis factoring produced three possible, interpretable factors from the students’ self-efficacy for VR items, with eigenvalues 3.9, 1.5, and 1.1, accounting for 43.9%, 16.8%, and 11.9% of the variance respectively. Table 3.1 shows the item loadings.

Intermediate Factor 1 was named *VR self-efficacy job search*, because all the loading items appear to be related to looking for a job. Factor 1 consists of items that reflect aspects of students’ capabilities for searching for a job. Item 5 “I can write in Arabic using a keyboard”, item 6 “I can use the basic functions of a computer”, and item 7 “I can carry out all the activities required in the training sessions”, loaded fairly highly on Intermediate Factor 2, and it was named *VR self-efficacy computer*. Item 7 is related to using a computer because almost all the activities in the training sessions depended on using computers.

Item 4 “I can fully participate in my vocational training activities/sessions” loaded on Factors 2 and 3. In order to improve the integrity of this factor, item 4 was removed before another factor analysis was carried out.
Table 3.1  
First principal axis factor solution for VR self-efficacy items

<table>
<thead>
<tr>
<th>Factor/ Item</th>
<th>Factor/Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE2: I can use the Internet as a job searching tool.</td>
<td>0.88</td>
</tr>
<tr>
<td>SE1: I can create my own curriculum vitae</td>
<td>0.83</td>
</tr>
<tr>
<td>SE3: I can complete a job application online.</td>
<td>0.80</td>
</tr>
<tr>
<td><strong>Factor 1: VR self-efficacy job search</strong></td>
<td></td>
</tr>
<tr>
<td>SE5: I can write in Arabic using a keyboard.</td>
<td>0.70</td>
</tr>
<tr>
<td>SE6: I can use the basic functions of a computer.</td>
<td>0.58</td>
</tr>
<tr>
<td>SE7: I can carry out all the activities required in the training sessions.</td>
<td>0.54</td>
</tr>
<tr>
<td>SE4: I can fully participate in my vocational training activities/sessions.</td>
<td>0.42 0.35</td>
</tr>
<tr>
<td><strong>Factor 2: VR self-efficacy computer</strong></td>
<td></td>
</tr>
<tr>
<td>SE8: I know the organisations that provide vocational services.</td>
<td>0.66</td>
</tr>
<tr>
<td>SE9: I know how to apply for private project funding.</td>
<td>0.65</td>
</tr>
</tbody>
</table>

Intermediate Factor 3 relates to obtaining government support, and was tentatively named *obtaining government support*. These items were intended to measure the students’ beliefs in their capabilities to learn how to carry out the tasks mentioned above. These items were future-oriented as one could conceive of a task of learning how to apply for private project funding, and know of the organisations that provide VR services. However, the items in possible Factor 3 are quite different from the items in the other two factors, in that each item starts with “I know”. When these items were first designed, they were intended to be prospective and to communicate a capability to find out by learning. Unfortunately, it appeared reasonable to question the validity of these items as measures of self-efficacy. Hence, conservatively, it was decided to eliminate items 8 and 9 and to repeat the factor analysis with the items of possible Factor 1 and possible Factor 2.
3.10.1.1.2. Final factor solution of students' self-efficacy for VR items. Factor analysis was carried out after the removal of items 4, 8 and 9 to generate two possible interpretable factors. Table 3.2 shows the item loadings and reliability coefficients.

<table>
<thead>
<tr>
<th>Factor/ Item</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: VR self-efficacy job search (α=.91)</strong></td>
<td></td>
</tr>
<tr>
<td>2: I can use the Internet as a job searching tool.</td>
<td>0.91</td>
</tr>
<tr>
<td>1: I can create my own curriculum Vitae</td>
<td>0.86</td>
</tr>
<tr>
<td>3: I can complete a job application online.</td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Factor 2: VR self-efficacy computer (α=.68)</strong></td>
<td></td>
</tr>
<tr>
<td>5: I can write in Arabic using a keyboard.</td>
<td>0.74</td>
</tr>
<tr>
<td>6: I can use the basic functions of a computer.</td>
<td>0.68</td>
</tr>
<tr>
<td>7: I can carry out all the activities required in the training sessions.</td>
<td>0.44</td>
</tr>
</tbody>
</table>

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.78 and Bartlett's Test of Sphericity was 679.0 (p < .01), and therefore factor analysis was appropriate for these data. Principal axis factoring produced two interpretable factors with eigenvalues 3.2 and 1.3, accounting for 54.0% and 21.7% of the variance respectively. Factor 1 was named VR self-efficacy job search, because all the loading items appear to be related to looking for a job. Factor 2 consists of items related to the students’ capabilities in using the basic functions of a computer, and was named VR self-efficacy computer.

3.10.1.2. Factor analysis of students’ proxy efficacy for the trainer items. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.83 and Bartlett's Test of Sphericity was 793.9 (p < .01), and therefore factor analysis was considered appropriate for these data. The scree test suggested a possible three factors structure (see Figure 4.2).
3.10.1.2.1. *First intermediate factor analysis of students’ proxy efficacy for the trainer items*. The data from the students’ proxy efficacy instrument were analysed using principal axis factoring. The same extraction criteria were used as previously. Varimax rotation again was used to assist interpretation of the factors. Principal axis factoring produced three possible, interpretable factors with eigenvalues 4.4, 1.1, and 1.0, accounting for 40.3%, 10.3%, and 9.1% of the variance respectively. Table 3.3 shows the item loadings.

Factor 1, *proxy efficacy computer* consists of items that reflect the student’s proxy efficacy for the trainer to train her or him to use the basic functions of a computer. However, item 14 appears to be related to job searching.

Factor 2 consists of items that reflect students’ beliefs of the extent of their trainers’ capabilities to help them understand the course requirements and content. Thus, Factor 2 was named *proxy efficacy understanding*. It is not clear whether item 12 fits with Factor 2, as it appears related to proxy efficacy job search. Thus, item 12 was deleted and factor analysis repeated. Item 13 “Can train me to request a job application form” cross-loaded on Factor 1 and was deleted and the factor analysis repeated in order to achieve a simple factor structure.
Table 3.3.
*First intermediate principal axis factor solution for students’ proxy efficacy for the trainer items*

<table>
<thead>
<tr>
<th>Factor/Item</th>
<th>Factor/Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Factor 1: proxy efficacy computer</strong></td>
<td></td>
</tr>
<tr>
<td>16: can train me to use the basic functions of a computer</td>
<td>0.74</td>
</tr>
<tr>
<td>15: can train me to write in Arabic using a keyboard</td>
<td>0.69</td>
</tr>
<tr>
<td>14: can train me to complete a job application online</td>
<td>0.57</td>
</tr>
<tr>
<td>17: can train me to use computer programs</td>
<td>0.48</td>
</tr>
<tr>
<td><strong>Factor 2: proxy efficacy understanding</strong></td>
<td></td>
</tr>
<tr>
<td>11: can assist me to decide which course suits me</td>
<td>0.69</td>
</tr>
<tr>
<td>10: can assist me to understand how to complete the training tasks</td>
<td>0.57</td>
</tr>
<tr>
<td>12: can train me to use the Internet effectively as a job searching tool</td>
<td></td>
</tr>
<tr>
<td>13: can train me to request a job application form</td>
<td>0.40</td>
</tr>
<tr>
<td><strong>Factor 3: proxy efficacy job search</strong></td>
<td></td>
</tr>
<tr>
<td>19: can train me to prepare for a job interview</td>
<td>0.81</td>
</tr>
<tr>
<td>20: can assist me to understand the course content</td>
<td>0.50</td>
</tr>
<tr>
<td>18: can train me to create my own curriculum Vitae</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Factor 3 was named *proxy efficacy job search* and consists of items that reflect students’ beliefs of their trainers’ capabilities to train them to acquire job searching skills. Item 18 “can train me to create my own curriculum vitae” cross-loaded on Factor 2 and was deleted and the factor analysis repeated in order to find a simple factor structure.

3.10.1.2.2. *Second intermediate factor analysis of proxy efficacy for the trainer items.*

Further factor analyses were carried out with the removal of items 12, 13 and 18 to generate two possible, interpretable factors. Factor analysis generated two interpretable factors with eigenvalues 3.7, and 1.0, accounting for 44.5%, and 13.0% of the variance respectively (see Table 3.4). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.83 and Bartlett’s
Test of Sphericity 528.0, \((p < .01)\) was significant, and therefore factor analysis was appropriate for these data.

<table>
<thead>
<tr>
<th>Factor/ Item</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>16: can train me to use the basic functions of a computer</td>
<td>0.71</td>
</tr>
<tr>
<td>15: can train me to write in Arabic using a keyboard</td>
<td>0.67</td>
</tr>
<tr>
<td>20: can assist me to understand the course content</td>
<td>0.65</td>
</tr>
<tr>
<td>17: can train me to use computer programs</td>
<td>0.58</td>
</tr>
<tr>
<td>19: can train me to prepare for a job interview</td>
<td>0.52</td>
</tr>
<tr>
<td>14: can train me to complete a job application online</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**Factor 2: Proxy efficacy understanding**

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>11: can assist me to decide which course suits me</td>
<td>0.85</td>
</tr>
<tr>
<td>10: can assist me to understand how to complete the training tasks</td>
<td>0.53</td>
</tr>
</tbody>
</table>

It is not clear whether item 19 fits with Factor 1, as it seems to be related to searching for a job. Thus, item 19 was deleted and factor analysis repeated. Once again, item 14 “can train me to complete a job application online” appears to be related to job searching, but carrying out the task required knowledge of using a computer.

3.10.1.2.3. Third intermediate factor analysis of proxy efficacy for the trainer items.

Further factor analyses were carried out after the removal of item 19, to generate two possible, interpretable factors. Table 3.5 shows the item loadings.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.83, and falls into the range of being great (Hutcheson & Sofroniou, 1999), and Bartlett’s Test of Sphericity was 442.0 \((p < .01)\), therefore, factor analysis was appropriate for these data. Principal axis factoring produced two possible, interpretable factors from the students’ proxy efficacy for
the trainer items with eigenvalues 3.3, and 1.0, accounting for 46.8%, and 14.6% of the variance respectively.

Table 3.5.
Third intermediate principal axis factor solution for students’ proxy efficacy for the trainer items

<table>
<thead>
<tr>
<th>Factor/ Item</th>
<th>Factor/Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: Proxy efficacy computer</strong></td>
<td></td>
</tr>
<tr>
<td>16: can train me to use the basic functions of a computer</td>
<td>0.74</td>
</tr>
<tr>
<td>15: can train me to write in Arabic using a keyboard</td>
<td>0.69</td>
</tr>
<tr>
<td>17: can train me to use computer programs</td>
<td>0.59</td>
</tr>
<tr>
<td>20: can assist me to understand the course content</td>
<td>0.55</td>
</tr>
<tr>
<td>14: can train me to complete a job application online</td>
<td>0.54</td>
</tr>
<tr>
<td><strong>Factor 2: Proxy efficacy understanding</strong></td>
<td></td>
</tr>
<tr>
<td>10: can assist me to understand how to complete the training tasks</td>
<td>0.77</td>
</tr>
<tr>
<td>11: can assist me to decide which course suits me</td>
<td>0.59</td>
</tr>
</tbody>
</table>

It is not clear whether item 20 fits with Factor 1, as it appears related to proxy efficacy understanding. Thus, item 20 was deleted and factor analysis repeated.

3.10.1.2.4. Final factor analysis of proxy efficacy for the trainer items. Further factor analyses were carried out with the removal of items 12, 13, 18, 19, and 20 to generate two possible, interpretable factors. Table 3.6 shows the item loadings and reliability coefficients.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.78, and it falls into the range of being good (Hutcheson & Sofroniou, 1999), and the Bartlett’s Test of Sphericity was 357.0 ($p < .01$), therefore, factor analysis was appropriate for these data.

Principal axis factoring produced two possible, interpretable factors from the students’ proxy efficacy for the trainer items with eigenvalues 2.9, and 1.0, accounting for 48.0%, and 16.9% of the variance respectively.
Table 3.6.  
*Final factor solution for students’ proxy efficacy for the trainer items*

<table>
<thead>
<tr>
<th>Factor/ Item</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: Proxy efficacy computer (α=.79)</strong></td>
<td></td>
</tr>
<tr>
<td>16: can train me to use the basic functions of a computer</td>
<td>0.74</td>
</tr>
<tr>
<td>15: can train me to write in Arabic using a keyboard</td>
<td>0.68</td>
</tr>
<tr>
<td>17: can train me to use computer programs</td>
<td>0.61</td>
</tr>
<tr>
<td>14: can train me to complete a job application online</td>
<td>0.53</td>
</tr>
<tr>
<td><strong>Factor 2: Proxy efficacy understanding (α=.67)</strong></td>
<td></td>
</tr>
<tr>
<td>10: can assist me to understand how to complete the training tasks</td>
<td>0.85</td>
</tr>
<tr>
<td>11: can assist me to decide which course suits me</td>
<td>0.53</td>
</tr>
</tbody>
</table>

An examination of the item loadings on each factor suggested that the factor names were still appropriate. Thus, they were named *proxy efficacy computer* and *proxy efficacy understanding*.

**3.10.1.3. Factor analysis of training performance items.** The data from the training performance questionnaire were analysed using principal axis factoring. Factor extraction criteria were the same as reported earlier. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.83 and Bartlett's Test of Sphericity was 1855.0 (*p < .01*). This provided evidence that factor analysis was appropriate for these data. The scree test suggested two possible factors (see Figure 4.3).
3.10.1.3.1. *First intermediate factor analysis of training performance items.* Principal axis factoring produced two possible, interpretable factors with eigenvalues 5.8, and 1.4, accounting for 57.5%, and 14.0% of the variance respectively. Table 3.7 shows the items loadings.

It is important to remind the reader that these factors describe how well students performed the VR tasks during the VR sessions. As mentioned earlier, assessments were carried out by third parties, namely, trainer, physical therapist, or occupational therapist to avoid bias.

Factor 1 consists of items that reflect the students’ training performances related to searching for a job. Hence, Factor 1 was named *performance job search.* Item 2 “Use the internet as a job searching tool”, described how well the students performed the use of the internet as a job-searching tool. However, item 5 “write in Arabic using a keyboard”, and item 6 “Use the basic functions of a computer” appear to be related to using the basic functions of a computer rather then job searching skills.

Factor 2 consists of items that reflect how well students demonstrated an understanding of the training tasks and its goals. Hence, Factor 2 was named *performance understanding.*

Item 8 “know the organisations that provide vocational services” loaded on possible factor 2. It was considered that some of the issues related to self-efficacy and proxy efficacy items including “know” also applied here. Hence, conservatively, it was decided to eliminate item 8 and repeat the factor analysis.
Table 3.7. 
*First intermediate principal axis factor solution for training performance items*

<table>
<thead>
<tr>
<th>Factor/Item</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: performance job search</strong></td>
<td></td>
</tr>
<tr>
<td>2: Use the Internet as a job searching tool</td>
<td>0.87</td>
</tr>
<tr>
<td>4: Complete a job application online without assistance</td>
<td>0.83</td>
</tr>
<tr>
<td>1: Create her/his own curriculum vitae</td>
<td>0.74</td>
</tr>
<tr>
<td>5: Write in Arabic using a keyboard</td>
<td>0.73</td>
</tr>
<tr>
<td>3: Know how to apply for a job</td>
<td>0.71</td>
</tr>
<tr>
<td>6: Use the basic functions of a computer</td>
<td>0.67</td>
</tr>
<tr>
<td><strong>Factor 2: performance understanding</strong></td>
<td></td>
</tr>
<tr>
<td>10: Demonstrate her/his ability to use the training equipment in this training course</td>
<td>0.82</td>
</tr>
<tr>
<td>9: Demonstrate his/her understanding of the training tasks</td>
<td>0.80</td>
</tr>
<tr>
<td>8: Know the organisations that provide vocational services</td>
<td>0.66</td>
</tr>
<tr>
<td>7: Contact the organisations that advertise employment opportunities for further information</td>
<td>0.65</td>
</tr>
</tbody>
</table>

3.10.1.3.2. *Second intermediate factor analysis of training performance items*. Principal axis factoring was carried after removal of item 8. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was slightly lower, at 0.84, and Bartlett's Test of Sphericity was 1625.0, ($p < .01$), therefore factor analysis was appropriate for these data. Table 3.8 shows the items loadings.

Principal axis factoring produced two possible, interpretable factors from the training performance items with eigenvalues 5.4, and 1.2, accounting for 60.2%, and 13.6% of the variance respectively.
Table 3.8.

Second Intermediate Principal Axis Factor Solution for Training Performance Items

<table>
<thead>
<tr>
<th>Factor/Item</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: performance job search</strong></td>
<td></td>
</tr>
<tr>
<td>2: Use the Internet as a job searching tool</td>
<td>0.89</td>
</tr>
<tr>
<td>4: Complete a job application online without assistance</td>
<td>0.87</td>
</tr>
<tr>
<td>3: Know how to apply for a job</td>
<td>0.75</td>
</tr>
<tr>
<td>1: Create her/his own curriculum vitae</td>
<td>0.72</td>
</tr>
<tr>
<td>5: Write in Arabic using a keyboard</td>
<td>0.72</td>
</tr>
<tr>
<td>6: Use the basic functions of a computer</td>
<td>0.67</td>
</tr>
<tr>
<td>7: Contact the organisations that advertise employment opportunities for</td>
<td>0.55</td>
</tr>
<tr>
<td>further information</td>
<td></td>
</tr>
<tr>
<td><strong>Factor 2: performance understanding</strong></td>
<td></td>
</tr>
<tr>
<td>9: Demonstrate his/her understanding of the training tasks</td>
<td>0.88</td>
</tr>
<tr>
<td>10: Demonstrate her/his ability to use the training equipment in this</td>
<td>0.88</td>
</tr>
<tr>
<td>training course</td>
<td></td>
</tr>
</tbody>
</table>

3.10.1.3.3. *Final factor analysis of training performance items.* Further factor analyses were carried out after the removal of items 5, 6, and 8 to generate two interpretable factors. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.82, and Bartlett's Test of Sphericity was 1153.0 \( (p < .01) \), therefore factor analysis was appropriate for these data. Principal axis factoring produced two possible, interpretable factors from the students’ proxy efficacy for the trainer items with eigenvalues 4.3, and 1.2, accounting for 62.1%, and 17.3% of the variance respectively. Table 3.9 shows the item loadings and reliability coefficients.

An examination of the item loadings on each factor suggested that the suggested factor names were still appropriate. Thus, they were named performance job search and performance understanding.
Table 3.9.  
*Final factor solution for training performance items*

<table>
<thead>
<tr>
<th>Factor/ Item</th>
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</thead>
<tbody>
<tr>
<td><strong>Factor 1: performance job searching (α=.91)</strong></td>
<td></td>
</tr>
<tr>
<td>2: Use the Internet as a job searching tool</td>
<td>0.89</td>
</tr>
<tr>
<td>4: Complete a job application online without assistance</td>
<td>0.87</td>
</tr>
<tr>
<td>3: Know how to apply for a job</td>
<td>0.81</td>
</tr>
<tr>
<td>1: Create her/his own curriculum vitae</td>
<td>0.71</td>
</tr>
<tr>
<td>7: Contact the organisations that advertise employment opportunities for further information</td>
<td>0.54</td>
</tr>
<tr>
<td><strong>Factor 2: performance understanding (α=.92)</strong></td>
<td></td>
</tr>
<tr>
<td>10: Demonstrate her/his ability to use the training equipment in this training course</td>
<td>0.90</td>
</tr>
<tr>
<td>9: Demonstrate his/her understanding of the training tasks</td>
<td>0.88</td>
</tr>
</tbody>
</table>

3.10.2. Reliability analyses for the trainer self-efficacy for training people with physical disabilities items. Thirty-two trainers participated in this study. MacCallum, Widaman, Zhang, & Hong (1999) recommended that when applying factor analysis the sample size should be at least 100. Thus, the data from the trainer self-efficacy questionnaire were analysed only using reliability analysis. It was decided that the reliability of a possible single scale would be explored. The strategy was to estimate the Cronbach alpha for the full set of items, calculating the alpha if items were removed and eliminating items when an improvement was indicated. The initial Cronbach alpha for all items was .892 and subsequently, items 13, 14, 16, 18, 19, and 20 were deleted one at a time. Items retained for the trainer self-efficacy scale, and the Cronbach alpha are, .895, .899, .904, and .911, respectively. The third decimal place was considered during this exercise. The final Cronbach alpha for all items was .92 (see Appendix H).
3.10.3. **Correlational analysis.** After the factor solutions were finalised, the procedure was repeated and regression factor scores were generated. Correlations between factors were examined before carrying out multiple regression analyses. It should be emphasised that relationships identified may not be interpreted as causal. One-tailed tests of significance were employed as the directions of the relationships were expected or hypothesised. Table 3.10 shows intercorrelations of variables under study. Trainer scores were matched to students. That is, all of a trainers’ students had the same trainer self-efficacy score.

3.10.3.1. **Statistically significant correlations between TSI, trainer self-efficacy, proxy efficacy computer, and performance job search.** TSI is negatively correlated with trainer self-efficacy (r=-.14) (see Table 3.10). This means that the longer the TSI the less receptive the students were to the training. Note that directionality here may be considered as the students’ receptivity to training could not affect the time since injury. It is likely that the longer the TSI, students were perhaps isolated from society, spending more time in their homes, and so forth. Furthermore, these students perhaps became habituated to living with the injury without real goals for rehabilitation. Therefore, it is possible they adjusted to their situations resulting in lack of interest in the VR. Trainers may have observed this and the more experience of lack of success they had, the lower their self-efficacy.

TSI is negatively correlated with proxy efficacy computer (r=-.11). As TSI decreases proxy efficacy computer increases, and vice versa. As discussed above, the shorter the TSI, the more receptive students may have been to training and actively engaged in learning how to use a computer, and were more likely to form stronger beliefs in their trainers’ capabilities to provide appropriate training programs.

TSI is significantly and positively correlated with performance job search (r=.17). This means, the more recent the injury the lower the students’ actual performance in job
searching, and vice versa. It is likely because, the more recent the injury the less time students may have had to adjust to their disabilities, be impaired by the disabilities, and therefore, perform more poorly. On the other hand, the longer the TSI, the more adjusted they may have become to their disabilities and the more receptive they generally were to the training.

Table 3.10

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>9</th>
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<td>-.06</td>
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<td>.20**</td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Correlation coefficients ≥ .30 are in boldface.*

1. Age
2. TSI
3. Trainer self-efficacy
4. VR self-efficacy job search
5. VR self-efficacy computer
6. Proxy efficacy computer
7. Proxy efficacy understanding
8. Performance job search
9. Performance understanding

* p < .05, one-tailed
** p < .01, one-tailed

3.10.3.2. Statistically significant correlations between trainer self-efficacy, VR self-efficacy computer, proxy efficacy understanding, and performance understanding. Note that trainer self-efficacy was coded as a student variable that is conceptualised as a property of the student for the sake of analysis. Trainer self-efficacy is positively correlated with VR self-efficacy computer (r=.18) (see Table 3.10). The significant positive relationship between trainer self-efficacy and VR self-efficacy computer means that, in general, the more self-efficacious the trainers were for training students with physical disabilities to use a computer, the higher VR self-efficacy for using a computer the students were likely to have, and vice
versa. Also, generally the higher the trainer self-efficacy for training people with physical disabilities, the more likely trainers adopted appropriate training tasks, taking account of each student’s physical condition. This might have led, to some extent, to help the students to experience mastery in using a computer, which likely increased their VR self-efficacy for using a computer. This finding supports hypothesis 1, trainer self-efficacy will be related positively to VR self-efficacy.

Trainer self-efficacy is positively correlated with proxy efficacy understanding \((r=.14)\). The positive relationship between trainer self-efficacy and proxy efficacy understanding means that the more self-efficacious trainers generally were for training people with physical disabilities to understand course requirements and contents, generally the more successful they were likely to be in doing their work. Consequently, students likely believed their trainers were capable of working on their behalf to make the course content understandable. The finding supports hypothesis 2, trainer self-efficacy will be related positively to proxy efficacy for the trainer. A similar explanation can be used for the positive relationship between trainer self-efficacy and performance understanding \((r=.19)\).

Again, in general, the more self-efficacious the trainers were for training people with physical disabilities, the more likely they did a good job of making the course understandable, and positively affect the students’ training performances. The argument can also be made in the opposite direction. That is, the better the performances of the students, the more likely the trainers believed they played a part in the success, enhancing their self-efficacy.

3.10.3.3. Statistically significant correlations between VR self-efficacy job search, proxy efficacy computer, proxy efficacy understanding, and performance job search. VR self-efficacy job search is significantly correlated with proxy efficacy computer \((r=.22)\). In
general, the higher the proxy efficacy the students had for the trainer to help them use a computer, the more capable the students believed their trainers were in helping them to use a computer effectively, and the more effectively they could use a computer the more capable they believed themselves to be searching for a job, that is, VR self-efficacy job search. The finding supports hypothesis 3, proxy efficacy for the trainer will be related positively to VR self-efficacy.

VR self-efficacy job search is positively correlated with proxy efficacy understanding ($r=.17$). Generally, the higher the VR self-efficacy the students had for job searching, the more confidence they had that their trainers would make the course content understandable, and vice versa. Possibly, the more confidence the students had in their trainer to help them understand the course, the more likely the students were engaging actively in the course which might lead them to gain some mastery experience in doing the job searching tasks. Hence, the students’ VR self-efficacy job search likely increased. This finding supports hypothesis 3, proxy efficacy for the trainer will be related positively to VR self-efficacy.

The moderate positive relationship between VR self-efficacy job search and performance job search ($r=.35$) means the more self-efficacious the students generally were for job searching, the better their performances in the training course for job searching, and vice versa. The more self-efficacious the students were for job searching, the more likely they believed that they had high ability in engaging in VR training, chose more difficult tasks, and performed more strongly. This finding supports hypothesis 4, VR self-efficacy will be related positively to training performance.

3.10.3.4. Statistically significant correlations between VR self-efficacy computer, proxy efficacy computer, and proxy efficacy understanding. VR self-efficacy computer is significantly correlated with proxy efficacy computer ($r=.36$) (see Table 3.10). It is possible
that the higher the students’ VR self-efficacy computer, the more effort they were likely to exert in general in their training, the better they were likely to perform, and therefore, they may have experienced mastery in using a computer. Also, students likely developed beliefs their trainer would provide appropriate training to help them to use the computer, because, the students may have had opportunities to observe their trainers’ capabilities in using computers. This finding supports hypothesis 3, proxy efficacy for the trainer will be related positively to VR self-efficacy.

VR self-efficacy computer is significantly correlated with proxy efficacy understanding ($r = .33$). It is likely that the higher the students’ VR self-efficacy computer the more likely they performed well in using a computer, which would result to some extent in believing in their trainer capabilities to make the course content understandable. The finding further supports hypothesis 3, proxy efficacy for the trainer will be related positively to VR self-efficacy.

3.10.3.5. **Statistically significant correlations between proxy efficacy computer, proxy efficacy understanding, and performance understanding.** Proxy efficacy computer is positively correlated with proxy efficacy understanding ($r = .20$) (see Table 3.10). It is likely that the higher the proxy efficacy the students with physical disabilities had for their trainers to provide appropriate training to help them to understand the course, in general, the more likely they had higher proxy efficacy for the trainer to train them to use a computer effectively. Because these two variables are closely associated with each other, it is not surprising that an increase in one would predict an increase in the other.

Proxy efficacy computer is significantly correlated with performance understanding ($r = .15$). It is likely that the higher the proxy efficacy the students had for their trainers to train them to use a computer, the more likely they exerted effort in their VR training than would
otherwise be the case, because they may be expected to believe they had a required component (capable trainer) to achieve desired results in their training. When the students believed that they had capable trainers, it is likely the more interested they were in engaging in the training activities effectively and the better they performed.

3.10.4. Multiple regression analyses. Categorical variables in the data (gender, qualification, reasons for enrolment, centre) were transformed into dummy variables to allow them to be included in the regression models.

Several regression models were carried out to test the posited hypotheses (see Chapter 2). Each path of the framework was traced and has its own regression analysis. For each analysis, a temporal hierarchical ordering, based on theoretical and logical considerations, was applied: gender, age, academic qualification, TSI, reasons for enrolment, centre, trainer self-efficacy, VR self-efficacy Factor 1 "VR self-efficacy job search" and Factor 2 "VR self-efficacy computer", proxy efficacy Factor 1 “proxy efficacy computer” and Factor 2 “proxy efficacy understanding”, and performance Factor 1 “performance job search” and Factor 2 “performance understanding”. Arguably, gender is determined at birth, and may be expected to have the most long-standing effect, so this was the first demographic variable entered in the model. Age was entered next because life experiences, from the outset of life, generally can be related to age. Academic qualifications were mostly gained before the injury occurred, so these were entered next in their respective order. Following the same logic, because TSI may be expected to precede the reasons for enrolment, these two variables were entered next in that order. Then, centre was entered. The demographic variables were entered into regression models with dual purposes: examining their possible relationships with dependent variables, and controlling for their statistical effects.
After the entry of demographic variables, other independent variables were entered into the models. Two approaches were used, namely, hierarchical regression and stepwise regression, when no theoretical criterion was evident, were used to include or remove an independent variable at each step. Based on the proposed conceptual framework (see Chapter 2), blocks of independent variables were entered in the following order: trainer self-efficacy, proxy efficacy computer, proxy efficacy understanding, VR self-efficacy job search, VR self-efficacy computer, performance job search, and performance understanding.

### 3.10.4.1. Regression of performance job search (dependent variable) with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding.

Three demographic variables, qualification, centre, and TSI, are statistically significant predictors of performance job search, accounting for 5%, 10% and 3% of the variance, respectively (see Table 3.11).

Scheffe’s test suggested that there are no statistically significant differences between qualifications. Examination of the qualification means shows that holders of middle school had higher levels of performance job search (see Appendix I).

The results of the Scheffe’s test suggested that there are statistically significant differences between centres 5, 9, and 10 and the other centres in performance job search (see Table 3.12). Examination of the centre means shows that students who had their VR at centre 5 had higher levels of performance job search (see Appendix J). TSI was a statistically significant predictor of performance job search. Again, this might mean that the longer the TSI, generally the more adjusted the students may have become to their disabilities and the more receptive they generally were to the training. Moreover, the more adjusted the students were to their new physical condition the more likely they were interested in finding a job, and they performed well in searching for a job.
Table 3.11
Regression of performance job search with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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</thead>
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<tr>
<td></td>
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<td>B</td>
<td>SE B</td>
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<td>.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.00</td>
</tr>
</tbody>
</table>

1- Gender 4- TSI 7- Trainer self-efficacy
2- Age 5- Enrolment† 8- Proxy efficacy computer
3- Qualification† 6- Centre† 9- Proxy efficacy understanding
*p < .05, one-tailed  ** p < .01, one-tailed  *** p < .001.

Note: † Dummy variables.
Table 3.11. Continued

| Variable | Model 6 | | | Model 7 | | | Model 8 | | | Model 9 | | |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|          | Δ adj R² | β      | B     | SE B   | Δ adj R² | β      | B     | SE B   | Δ adj R² | β      | B     | SE B   |
| 1        | .13      | -.33    | .17    |        | .10      | -.25    | .18    |        | .11      | -.28    | .19    |        |
| 2        | .01      | -.00    | .01    |        | .01      | -.00    | .01    |        | .00      | .00     | .01    |        |
| 3        | .10*     | -       | -      | -      | .01*     | -       | -      | -      | .01*     | -       | -      | -      |
| 4        | .10      | .01     | .00    |        | .10      | .01     | .00    |        | .10      | .01     | .00    |        |
| 5        | -        | -       | -      | -      | -        | -       | -      | -      | -        | -       | -      | -      |
| 6        | .10*     | -       | -      | -      | .01*     | -       | -      | -      | .01*     | -       | -      | -      |
| 7        | .01      | .18     | 1.93   | 1.09   | .16      | 1.69    | 1.09   |        | .15      | 1.58    | 1.10   |        |
| 8        |          | .01     | .11    | .12    | .08      |        | .11    | .19    | .08      |        |        |        |
| 9        |          | .00     | .06    | .08    | .08      |        |        |        |          |        |        |        |

1- Gender  4- TSI  7- Trainer self-efficacy
2- Age  5- Enrolment†  8- Proxy efficacy computer
3- Qualification†  6- Centre†  9- Proxy efficacy understanding

* p < .05, one-tailed  ** p < .01, one-tailed  *** p < .001.

Note. † Dummy variables.
Table 3.12.
Scheffe’s test and mean differences of centres for performance job search

<table>
<thead>
<tr>
<th>Centre 5 vs. Centre 1</th>
<th>Mean difference</th>
</tr>
</thead>
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<tr>
<td>Centre 5 vs. Centre 2</td>
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</tr>
<tr>
<td>Centre 5 vs. Centre 3</td>
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<tr>
<td>Centre 5 vs. Centre 4</td>
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* p < .05, one-tailed

3.10.4.2. **Regression of performance understanding (dependent variable) with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding.** Two demographic variables, gender and centre, are statistically significant predictors of performance understanding, accounting for 1% and 10% of the variance, respectively (see Table 3.13). Please note that statistical significance in a small number of the regression models with very small standard errors in the quantitative analyses may appear anomalous. This is explained by rounding errors. Trainer self-efficacy and proxy efficacy computer, are statistically significant predictors of performance understanding, each accounting for 3% of the variance, respectively. It is possible that, in general, the more self-efficacious the trainers were for training people with physical disabilities, the more likely they did a good job of making the course understandable, and positively affect the students’ training performances.
Table 3.13

Regression of performance understanding with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding

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</table>

1- Gender  4- TSI  7- Trainer self-efficacy
2- Age  5- Enrolment†  8- Proxy efficacy computer
3- Qualification†  6- Centre†  9- Proxy efficacy understanding

* p < .05, one-tailed  ** p < .01, one-tailed  *** p < .001.

Note: † Dummy variables.
## Table 3.13. Continued

| Variable | Model 6 | | | | Model 7 | | | | | Model 8 | | | | | Model 9 | | | |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|          | $\Delta \text{adj } R^2$ | $\beta$ | $B$ | $SE$ | $B$ | $SE$ | $B$ | $SE$ | $B$ | $SE$ | $B$ | $SE$ | $B$ | $SE$ | $B$ | $SE$ |
| 1        | .13     | .33     | .18    | .03**  | .18 | .47 | .18 | .03**  | .16 | .41 | .18 | .00*  | .16 | .41 | .18 |
| 2        | .01     | .00     | .01    | .00    | -.00 | .01 | .02 | .00    | .01 | .02 | .00    | .00   | .01 |
| 3        | -       | -       | -      | -      | -    | -   | -   | -      | -   | -   | -      | -     | -   |
| 4        | .02     | .00     | .00    | .01    | .00 | .00 | .02 | .00    | .00 | .02 | .00    | .00   | .00 |
| 5        | -       | -       | -      | -      | -    | -   | -   | -      | -   | -   | -      | -     | -   |
| 6        | .10*    | -       | -      | -      | .03* | -   | -   | .03*   | -   | -   | -      | -     | -   |
| 7        | -.03**  | .30     | 3.14   | 1.11   | .03* | .26 | 2.72 | 1.11   | .26 | 2.73 | 1.12 |
| 8        | -.03**  | .20     | .22    | .08    | .20  | .22 | .08 | .20    | .22 | .08 |
| 9        |         |         |        |        | .00  | .00 | -.00 | .09    | .00 | .00 |

1- Gender  
2- Age  
3- Qualification†  
4- TSI  
5- Enrolment†  
6- Centre†  
7- Trainer self-efficacy  
8- Proxy efficacy computer  
9- Proxy efficacy understanding  

* $p < .05$, one-tailed  
** $p < .01$, one-tailed  
*** $p < .001$.  

Note. † Dummy variables.
It is possible that the higher the proxy efficacy the students had for their trainers to train them to use a computer, the better the training, and the better the students’ performances. When the students believed that they had capable trainers, it is likely they were interested in engaging in the training activities effectively, and the better they performed.

Examination of the gender means shows that female students in general scored higher than males in performance understanding (see Appendix K). A study conducted by Almously, Salem, and Alhamdan (2013), investigated gender and the academic performance of students in the second and third years of medical school in Saudi Arabia. They found that females generally scored higher than males in their academic performances. A study of 180 university students, conducted by Shaaban and Ghaith (2000), investigated gender and learning motivation. The authors found that female students generally exerted more effort in their learning than male students. In this study, it is likely that female students were more motivated and willing to learn, and therefore, scored higher in performance understanding.

The results of the Scheffe’s test suggest that there are no statistically significant differences between centres.

3.10.4.3. Regression of performance job search (dependent variable) with trainer self-efficacy, VR self-efficacy job search and VR self-efficacy computer.

Three demographic variables, qualification, TSI and centre are statistically significant predictors of performance job search, accounting for 5%, 3% and 11% of the variance, respectively (see Table 3.14). VR self-efficacy job search is a statistically significant predictor of performance job search accounting for 7% of the variance. The more self-efficacious the students generally were for job searching, the better their performances in the training course for job searching, and vice versa. A positive
relationship between self-efficacy and performance has been found consistently in a large number of studies (Bandura, 1997).

The more self-efficacious the students were for job searching, the more likely they chose more difficult tasks, and performed more strongly.

The results of the Scheffé’s test for the qualifications suggest that there are no statistically significant differences for qualifications.

Scheffé’s test statistics and mean differences of centres for performance job search are presented earlier in Table 3.12.

3.10.4.4. Regression of performance understanding (dependent variable) with trainer self-efficacy, VR self-efficacy job search and VR self-efficacy computer. One demographic variable, centre, was a statistically significant predictor of performance understanding, accounting for 10% of the variance (see Table 3.15). Trainer self-efficacy was also a statistically significant predictor of performance understanding, accounting for 3% of the variance. In general, the more self-efficacious the trainers were for training people with physical disabilities, the more likely they did a good job of making the course understandable, and positively affected the students’ training performances.

The results of Scheffé’s test suggest that there are no statistically significant differences for centres with regards to performance understanding.
Table 3.14.

*Regression of performance job search with trainer self-efficacy, VR self-efficacy job search and VR self-efficacy computer*

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1- Gender  4- TSI  7- Trainer self-efficacy  
2- Age  5- Enrolment†  8- VR self-efficacy job search  
3- Qualification†  6- Centre†  9- VR self-efficacy computer  

* $p < .05$, one-tailed  ** $p < .01$, one-tailed  *** $p < .001$.  

Note. †Dummy variables.
Table 3.14. Continued

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1- Gender 4- TSI 7- Trainer self-efficacy
2- Age 5- Enrolment† 8- VR self-efficacy job search
3- Qualification† 6- Centre† 9- VR self-efficacy computer

*p < .05, one-tailed  **p < .01, one-tailed  ***p < .001.

Note. † Dummy variables.
Table 3.15
Regression of understanding with trainer self-efficacy, VR self-efficacy job search and VR self-efficacy computer

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1- Gender  4- TSI  7- Trainer self-efficacy  
2- Age  5- Enrolment†  8- VR self-efficacy job search  
3- Qualification†  6- Centre†  9- VR self-efficacy computer  

* $p < .05$, one-tailed  ** $p < .01$, one-tailed  *** $p < .001$.  

Note. † Dummy variables.
Table 3.15. Continued

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1- Gender  4- TSI  7- Trainer self-efficacy
2- Age  5- Enrolment†  8- VR self-efficacy job search
3- Qualification†  6- Centre†  9- VR self-efficacy computer

* p < .05, one-tailed  ** p < .01, one-tailed  *** p < .001.

Note. † Dummy variables.
3.10.4.5. Regression of proxy efficacy computer (dependent variable) with trainer self-efficacy. One demographic variable, centre, was a statistically significant predictor of proxy efficacy computer, accounting for 7% of the variance (see Table 3.16).

The results of the Scheffe’s test suggested that there are no statistically significant differences for centres, with regards to proxy efficacy computer.

Examination of the centre means shows that students who had their VR at centre 9 generally had higher levels of proxy efficacy computer (see Appendix L). Centre 4 scored the lowest for proxy efficacy computer.

3.10.4.6. Regression of proxy efficacy understanding (dependent variable) with trainer self-efficacy. Two demographic variables, age and centre, were statistically significant predictors of proxy efficacy understanding, accounting for 2% and 5% of the variance respectively (see Table 3.17).

The relationship between age and proxy efficacy understanding could be explained by the fact that the older the students the more likely they understood the course content because the trainer was able to explain it in the best way possible, and therefore, the students’ proxy efficacy understanding increases. The results of the Scheffe’s test suggested there are no statistically significant difference for centres
Table 3.16.

Regression of proxy efficacy computer with trainer self-efficacy

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</table>

1- Gender  4- TSI  7- Trainer self-efficacy  
2- Age  5- Enrolment†  
3- Qualification†  6- Centre†  

*p < .05, one-tailed  **p < .01, one-tailed  ***p < .001.

Note: † Dummy variables.
Table 3.16. Continued

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1- Gender 4- TSI 7- Trainer self-efficacy
2- Age 5- Enrolment† 8- Centre
3- Qualification† 6- Centre

*p < .05, one-tailed  **p < .01, one-tailed  ***p < .001.

Note. † Dummy variables.
Table 3.17.
Regression of proxy efficacy understanding with trainer self-efficacy

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1- Gender  4- TSI  7- Trainer self-efficacy
2- Age  5- Enrolment†
3- Qualification†  6- Centre†

* $p < .05$, one-tailed  ** $p < .01$, one-tailed  *** $p < .001$.

Note. † Dummy variables.
Table 3.17. Continued

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</table>

1- Gender  4- TSI  7- Trainer self-efficacy
2- Age  5- Enrolment†
3- Qualification†  6- Centre†

* $p < .05$, one-tailed  ** $p < .01$, one-tailed  *** $p < .001$.

Note. † Dummy variables.
3.10.4.7. **Regression of VR self-efficacy job search (dependent variable) with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding.** Two demographic variables, qualifications, and centre, are statistically significant predictors of VR self-efficacy job search, accounting for 7%, and 16% of the variance, respectively (see Table 3.18).

The results of the Scheffe’s test suggest that there are no statistically significant differences for qualifications. However, Scheffe’s test (see Table 3.19) suggests there are statistically significant differences between centres 1, 9, and 11 and the other centres. Examination of the centre means shows that in general, students who had their VR at centre 1 had higher levels of VR self-efficacy for job search than the other centres (see Appendix M).

Proxy efficacy computer is a statistically significant predictor of VR self-efficacy job search, accounting for 7% of the variance. Generally, the more self-efficacious the students were to search for a job, the higher their proxy efficacy for their trainer to train them to use the computer, and vice versa. The reader is reminded that causality may not be ascribed. Indeed the relationship between proxy efficacy and self-efficacy is likely to be dynamic, and therefore, the finding makes sense in both directions. Job search and the use of a computer are not entirely independent from each other, because nowadays computers are important tools in job searching. For example, many companies use social networks for recruitment. Therefore, it is logical that proxy efficacy computer and VR self-efficacy job search would be related. This is because the more students believed their trainers were capable in helping them to use a computer effectively, the more likely they applied themselves to the VR, had successful mastery experiences, and their VR self-efficacy job search increased.
### Table 3.18

**Regression of VR self-efficacy job search with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding**

<table>
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<td>Δ adj R²</td>
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1- Gender  
2- Age  
3- Qualification†  
4- TSI  
5- Enrolment†  
6- Centre†  
7- Trainer self-efficacy  
8- Proxy efficacy computer  
9- Proxy efficacy understanding  

* p < .05, one-tailed  
** p < .01, one-tailed  
*** p < .001.  

**Note.** † Dummy variables.
<table>
<thead>
<tr>
<th>Variable</th>
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<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
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1- Gender 4- TSI 7- Trainer self-efficacy
2- Age 5- Enrolment† 8- Proxy efficacy computer
3- Qualification† 6- Centre† 9- Proxy efficacy understanding

*p < .05, one-tailed  **p < .01, one-tailed  *** p < .001.

Note. † Dummy variables.
Table 3.19
*Scheffe’s test and mean differences of centre for VR self-efficacy job search*

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<th>Centre 1 vs. centre 2</th>
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* *p < .05, one-tailed

### 3.10.4.8. Regression of VR self-efficacy computer (dependent variable) with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding.

Four demographic variables, gender, qualifications, enrolment, and centre, are statistically significant predictors of VR self-efficacy computer, accounting for 0%, 3%, 1%, and 15% of the variance, respectively (see Table 3.20).

Examination of the gender means shows that female students in general had higher levels of VR self-efficacy computer (see Appendix N). In Saudi Arabia, several studies (Almously et al., 2013; Javid, Al-Asmari, & Farooq, 2012) found that female students in general scored higher than males in academic performances. It is possible that female students generally were more interested in learning how to use a computer, and therefore, invested more effort in the training. Thus, female students might have had more mastery experiences related to using a computer, and hence, their VR self-efficacy computer increased.

The results of the Scheffe’s test suggest that there are no statistically significant differences for qualifications. However, the Scheffe’s test (see Table 3.21) suggests that there are statistically significant differences between “return to school” and “to find a
job” and the other reasons for enrolment. Students who enrolled in the VR course for the two reasons, namely, return to school and to find a job generally scored more highly on VR self-efficacy computer. It is not surprising that students with physical disabilities who enrolled in the VR to return to school or to find a job, may be expected to exert effort in learning how to use a computer, experience mastery in using a computer, and therefore, increase their VR self-efficacy computer.

The Scheffe’s test suggests that there are no statistically significant differences for centres.

Proxy efficacy computer and proxy efficacy understanding are statistically significant predictors of VR self-efficacy computer, accounting for 6% and 5% of the variance, respectively. The more capable students believed their trainers were helping them learn how to use a computer effectively, the higher their VR self-efficacy for using computer, and vice versa. Bray and Cowan (2004) claimed that people may exert more effort to change their behaviour if they believe they have a capable third party acting on their behalf. The higher the proxy efficacy computer the more likely students would pay attention to the trainers’ instructions when training them to use a computer. Hence, this could lead students to be more effective when executing computer tasks, which in turn might provide opportunities for mastery experiences in computer tasks, leading to VR self-efficacy computer. A similar explanation can be used for the relationship between proxy efficacy understanding and VR self-efficacy computer. The more students believed their trainers to be capable in making the training understandable, the more engaged they were in VR, the more opportunities there were for mastery experiences, leading to stronger beliefs in their own capabilities to execute tasks related to using a computer, that is VR self-efficacy computer, and vice versa.
Table 3.20

*Regression of VR self-efficacy computer with trainer self-efficacy, proxy efficacy computer and proxy efficacy understanding*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<td>Δ adj R²</td>
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</tr>
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</table>

* p < .05, one-tailed ** p < .01, one-tailed *** p < .001.

Note. † Dummy variables.
Table 3.20. Continued

| Variable | Model 6 | | | Model 7 | | | | Model 8 | | | | Model 9 | | |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|          | \( \Delta \ adj \) R^2 | \( \beta \) | B | SE B | \( \Delta \ adj \) R^2 | \( \beta \) | B | SE B | \( \Delta \ adj \) R^2 | \( \beta \) | B | SE B | \( \Delta \ adj \) R^2 | \( \beta \) | B | SE B |
| 1        | .05     | .10     | .15    | .00*   | .06     | .13     | .16    | .06*   | .03     | .06     | .15    | .05*   | .01     | .02     | .15    |
| 2        | .10     | -.01    | .01    | .10    | -.01    | .01    | .07    | -.01    | .01    | .04    | -.01    | .01    | .04    | -.01    | .01    |
| 3        | .15*    | _       | _       | _       | .00*   | _       | _       | _       | .06*   | _       | _       | _       | .05*   | _       | _       |
| 4        | .00     | -8.55   | .00    | .00    | -6.39   | .00    | .01    | .00     | .00    | .01    | .00     | .00    | .01    | .00     | .00    |
| 5        | .15*    | _       | _       | _       | .00*   | _       | _       | _       | .06*   | _       | _       | _       | .05*   | _       | _       |
| 6        | .15*    | _       | _       | _       | .00*   | _       | _       | _       | .06*   | _       | _       | _       | .05*   | _       | _       |
| 7        | .00     | .06     | .54    | .94    | .01     | .06     | .91    | .04    | -.32   | .89    | .04    | -.32    | .89    | .04    | -.32    | .89    |
| 8        | .06***  | .27     | .26    | .07    | .05***  | .25     | .24    | .06    | .05***  | .25     | .25     | .07    | .05***  | .25     | .25     | .07    |

1- Gender 4- TSI 7- Trainer self-efficacy
2- Age 5- Enrolment† 8- Proxy efficacy computer
3- Qualification† 6- Centre† 9- Proxy efficacy understanding

\* \( p < .05 \), one-tailed  \*\* \( p < .01 \), one-tailed  \*\*\* \( p < .001 \).

Note. † Dummy variables.
Table 3.21
*Scheffe’s test and mean differences of enrolment reasons for VR self-efficacy computer*

<table>
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<tr>
<td>Return to school vs. to work from home</td>
<td>.54</td>
</tr>
<tr>
<td>Return to school vs. improve their vocational skills</td>
<td>.73</td>
</tr>
</tbody>
</table>

*p < .05, one-tailed

3.11. Qualitative Analyses

In the following sections, the results of the qualitative analyses including students’ thematic analysis, trainers’ thematic analysis, and telephone interview thematic analysis are reported and discussed.

3.11.1. Analysis of free responses. The final sections of the questionnaires invited participants to write comments about their VR experience and how the trainer helped them achieve their VR goals. In order to analyse the participants’ statements, the key concepts of the statements were identified, and then were grouped into categories according to their relation to each other. These are presented and discussed in the following sections.

3.11.2. Thematic analysis of students’ free responses. Despite the fact that there were only a small number of responses (12 students), it was decided that the analysis, as thematic analysis potentially could add to the quantitative results.

First, all responses, in the original language of Arabic, were extracted from completed questionnaires (see Appendix O). It is clear that some students made more than one point. For example, student 1 wrote “There are no other options” and, “The training period is short”.

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These were considered to be quite distinct concepts. Therefore, the first statement was allocated to one category and the second statement to a separate category.

Second, the responses were then translated exactly from Arabic to English to ensure the accuracy of the analysis (see Table 3.22). To ensure accuracy in the translation, the translations were sent to a second translator. The translator was certified by the National Accreditation Authority for Translators and Interpreters which is the national accreditation body in Australia. The second translator pointed out a difference in meaning between the words الخيارات (choices) and الحرية الاختيار حرة (options), which were written in statements by two different students. After discussion with the second translator it was agreed that “choices” and “options” are quite distinct from each other. There are some differences between Arabic and English languages. However, the goal was accuracy in the translation. For example, student 11 wrote “The trainer’s explanation was great”, there is no use in the Arabic language of the apostrophe to indicate possession. Having stated this, the apostrophe was used to translate the Arabic statement exactly. Student 5 wrote in his or her second statement “Was beneficial”, however, it is not clear what specifically was beneficial. Furthermore, if we consider the request, “Please write any comments you wish about your vocational training experience”, it is logical that the student meant the vocational training experience was beneficial. Then, the responses were organised into eight different categories (see Table 3.23). For example, under category 2, student 1 appears to make a single statement related to a single concept, namely “I wished there was a secretarial course”. Although it is a specific statement, it seems consistent with a view that the number of courses was limited. Although, some of the students expressed wishes for more courses, there appeared to be stronger statements from students 3 and 4 under category 1, because they indicated that there “Must be” more courses and options.
Table 3.22
Students’ free responses in English

<table>
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<th>Student</th>
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<th>Statement 2</th>
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<td>There are no other options</td>
<td>The training period is short</td>
</tr>
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<td>2</td>
<td>I wished there was a secretarial course</td>
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</tr>
<tr>
<td>3</td>
<td>We want other training choices</td>
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<tr>
<td>4</td>
<td>There must be more than one option for the vocational training</td>
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</tr>
<tr>
<td>5</td>
<td>There must be diversity in the courses</td>
<td>Training was beneficial</td>
</tr>
<tr>
<td>6</td>
<td>The course was short</td>
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</tr>
<tr>
<td>7</td>
<td>I benefited from the job searching skills</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The training was great</td>
<td>The trainer helped me to find a job</td>
</tr>
<tr>
<td>9</td>
<td>The trainer helped me to learn how to use Excel</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>The trainer helped me to understand how to use the computer</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>The trainer’s explanation was great</td>
<td>The trainer made the training process easier</td>
</tr>
<tr>
<td>12</td>
<td>I learned a lot</td>
<td></td>
</tr>
</tbody>
</table>

In the first categorisation, there are eight categories containing one or more responses. The researcher organised the responses according to their broad meanings. The first category, consisted of four responses, and is called “Shortage of vocational options” because all of the responses expressed a desire for more options in the VR training. It is possible that these students desired more training options because they wished for a variety of courses from which to choose those that suited them. On the other hand, they may have been interested in particular courses but did not specify them. Student 2 wrote, “We want other training options”. Again, this response fits category 1 because the student likely was indicating a lack of training options by saying “We want”. Student 3 wrote, “There must be more than one option for the vocational training”.

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Table 3.23

*Students’ free response categories*

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shortage of vocational options</strong></td>
<td><strong>Specific training courses</strong></td>
<td><strong>The duration of the course</strong></td>
<td><strong>The training benefits</strong></td>
</tr>
<tr>
<td>There are no other options</td>
<td>I wished there was a secretarial course</td>
<td>The course was short</td>
<td>Training was beneficial</td>
</tr>
<tr>
<td>We want other training options</td>
<td></td>
<td>The training period is short</td>
<td>I learned a lot</td>
</tr>
<tr>
<td>There must be more than option for the vocational training</td>
<td></td>
<td></td>
<td>The training was great</td>
</tr>
<tr>
<td>There must be diversity in the courses</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.23. Continued

<table>
<thead>
<tr>
<th>Category 5</th>
<th>Category 6</th>
<th>Category 7</th>
<th>Category 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How the trainer helped in learning a specific skills</strong></td>
<td><strong>How the trainer helped in learning in general</strong></td>
<td><strong>Job searching</strong></td>
<td><strong>Specific help</strong></td>
</tr>
<tr>
<td>The trainer helped me to learn how to use Excel</td>
<td>The trainer made the training process easier</td>
<td>I benefited from the job searching skills</td>
<td>The trainer helped me to find a job</td>
</tr>
<tr>
<td>The trainer helped me to understand how to use the computer</td>
<td>The trainer explanation was great</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This response also fits category 1. Student 4 wrote, “There must be diversity in the courses.”

It could be that the student wished for more training options to suit his or her capabilities and
interests. Students 3 and 4 used the word “Must”, and it is likely they were criticising the VR training options for being limited, and strongly demanding more options. Again, statement 4 and statement 5 were added to category 1. It is likely that the students whose responses fitted category 1 desired more options to be provided in the VR courses. Arguably, more options could lead to better VR outcomes because when students with physical disabilities have better qualifications, it is likely they will have better opportunities for better jobs, become active members of society, and have increased life satisfaction (Meadea et al., 2006).

The second category contains one response. The student wrote, “I wished there was a secretarial course”. This response could have been located in category 1, but was not, because it mentions a specific training course, while the responses in category 1 referred to more training options, in general. This category was called “Specific training courses”.

The third category consists of two responses that indicated the training period was short, so this category was called “The duration of the course”. One student wrote, “The course was short”, the other wrote, “The training period is short”. Clearly, both comments address the same issue. This possibly could mean that the two students believed they needed more time to learn. When organising a VR course, it is vital to consider that there are student with different capabilities and different educational backgrounds. So, the duration of the training course should reflect the students’ needs. Medically, each injury has its own limitations. A disability is a past, current or perceived physical impairment that substantially limits a major life activity. Examples of major life activities include: talking, eating, learning, standing, bending, lifting, working, communicating, and reading (Yasuda, Wehman, Targett, Cifu, & West, 2002). Yasuda et al. 2002 examined the effect of injury severity and the level of education on the performance of people with physical disabilities. They found that level of education was consistently reported to be positively correlated to time in returning to work. They also found that employed people with physical disabilities reported a lack of
accessibility and physical limitations as problems. On the other hand, those unemployed reported a lack of skills, need for training, and a desire to find a new career. It is important to mention that the most frequently reported reasons for not working were inability to perform physically the same tasks post-injury, not feeling physically capable of executing the tasks given, and inaccessibility of the workplace (Yasuda et al., 2002).

The fourth category contains the responses of three students who wrote that they benefitted from the training course in general. This category was called, “The training benefits”. For example, student 1 wrote, “Was beneficial”. This student indicated he or she benefitted from the VR training in general, without specifying exactly how she or he benefitted. Student 2 noted, “I learned a lot”. Again, there is no specification of what exactly she or he learned. Student 3 wrote, “The training was great”. It is impossible to identify what exactly the student had gained from the VR course, only that the student was satisfied with the training course. It is possible that student 3 learned a certain skill or skills from the training course, and this may be why he or she expressed their satisfaction by saying “Great”. On the other hand, it may have meant that the student had a positive impression about the VR in general.

The fifth category contains the responses of two students who described how the trainer helped them to learn a specific skill, and was called, “Trainer’s help in job related skills”. Student 9 indicated that the trainer helped him or her to learn how to use a certain program: “The trainer helped me to learn how to use Excel”. Student 10 pointed out that the trainer helped her or him to learn how to use the computer by saying, “The trainer helped me to understand how to use the computer”. Because Student 10 specified the kind of help that the trainer provided, that is, helping the student to learn how to use the computer; this statement was placed in category 5. These two responses are related to each other because both students mentioned exactly what skills they believed they had gained from VR, namely,
learning how to use a computer and learning how to use Excel. However, learning how to use the Excel program seems more specific than using a computer.

The sixth category contains responses of two students who described how the trainer did a good job. This category was called, “How the trainer helped in learning in general”. One participant pointed out that, “The trainer made the training process easier”. Possibly, this student was trying to indicate that the trainer simplified the training and perhaps made it more understandable. On the other hand, it is possible that the trainer made the process easier without any simplification of the course explanation. Another student wrote, “The trainer’s explanation was great”. Clearly, this student perceived that the trainer did an excellent job of explaining the course content. These responses appear to communicate the students’ admiration of their trainers’ work. Although distinct from proxy efficacy, it is possible to speculate that these attitudes could be related to proxy efficacy. This is because proxy efficacy is about the students’ beliefs in the capabilities of the trainer to help them to achieve certain goals (Bandura, 2000, Bray & Cowan, 2004; Dzewaltowski et al., 2007; Dzewaltowski et al., 2010; Geller & Dzewaltowski, 2010a, 2010b; McCormick et al., 2015; Priebe et al., 2012), which could be understanding the course or learning how to use a computer. If students believed the trainer was capable of simplifying the training, these judgements could contribute to some extent to shaping the students’ beliefs in their trainers’ capabilities for assisting them to achieve their goals, which could shape their proxy efficacy for the trainer.

The seventh category contains a response of one student who indicated that he or she benefited and learned from a specific skill by writing, “I benefited from the job searching skills”. This category was called, “Job searching”. As can be seen from the student’s response, the job searching skills were helpful and beneficial. Moreover, it may be that this student identified what he or she gained from the VR.
The eighth category was called, “Specific help” because it contains the response of one student who wrote, “The trainer helped me to find a job”. This response could fit category 5. However, it was categorised separately because it is not about how trainers helped students to learn certain skills, but appears to be more about how a trainer acted successfully on behalf of a student to achieve a desired outcome, i.e., finding a job.

In the second round of categorisation, the goal was to combine categories if there was an argument that a link existed between them (see Table 3.24).

The subcategory “I wished there was a secretarial course” (see Table 3.23) was added to the first category, “Shortage of vocational options” because it was considered likely to be related to wanting more options in the VR training courses. The second category “The duration of the course” includes the same responses, as it was the first attempt of categorisation. The subcategory “I benefited from the job searching skills”, which was located in the category “Specific benefits from the training” was added to the third category “The training benefits”, as this response appears to be related to training benefits. Learning job searching skills was likely considered a training benefit. The response “The trainer helped me to find a job” was added to the fourth category “Trainer’s help in job related skills”. It is likely that this student had learnt some job searching skills.

The fifth category “How the trainer helped in learning in general” was unchanged because the two statements still related strongly to each other.

It can be seen from the above that the majority of the responses were related to wanting more variety in the training options. It is likely that some students would be receptive to the training, especially if there were more options. This can also be seen in category 3 “The training benefits”, which contains the second highest number of responses.
Table 3.24  
*Response re-categorising  for students’ free responses*

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
<th>Category 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shortage of vocational options</strong></td>
<td><strong>The duration of the course</strong></td>
<td><strong>The training benefits</strong></td>
<td><strong>Trainer’s help in job related skills</strong></td>
<td><strong>How the trainer helped in learning in general</strong></td>
</tr>
<tr>
<td>1- There are no other options</td>
<td>1- The course was short</td>
<td>1- Was beneficial</td>
<td>1- The trainer helped me to understand how to use the computer</td>
<td>1- The trainer made the training process easier</td>
</tr>
<tr>
<td>2- We want other training options</td>
<td>2- The training period is short</td>
<td>2- I learned a lot</td>
<td>2- The trainer helped me to learn how to use Excel</td>
<td>2- The trainer explanation was great</td>
</tr>
<tr>
<td>3- There must be more than one option for the vocational training</td>
<td>3- The training was great</td>
<td></td>
<td>3- The trainer helped me to find a job</td>
<td></td>
</tr>
<tr>
<td>4- There must be diversity in the courses</td>
<td>4- I benefited from the job searching skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5- I wished there was a secretarial course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Providing a variety of VR training options may offer a better career option for students who believe they could perform better in their desired course or courses. It is likely that for many students, the decision to pursue VR is all about following the career path they have chosen. VR training is likely to play a role in improving the students’ skills, which may make them more employable, because of the VR resources that cater to building in-demand skills for a particular job. If students have particular career plans in their minds, VR centres should help by equipping them with the necessary skills and job-specific training.

3.11.3. Trainers’ thematic analysis. Despite the fact that there were few responses, the researcher decided to proceed with analysing the four responses, because this could lead to further findings. Additionally, thematic analysis potentially could contribute to the quantitative results.

The approach used with the students’ free responses was replicated. First, all responses, in the original language of Arabic, were extracted from completed questionnaires (see Appendix P).

Second, the responses were translated exactly from Arabic to English to ensure the accuracy of the analysis (see Appendix Q). To ensure accuracy in the translation, the translations were sent to a second translator. Then, the responses were organised into four different categories (see Table 3.25).

In the first categorisation, there are four categories containing one response each. The researcher organised the responses according to their broad meanings. The first category was called “Negative effects on employment”. It appears that trainer 1 favoured the students being made aware of the perceived negative effect of accepting pseudo jobs. Saudization is considered to be a national policy of Saudi Arabia to
encourage employers in the private sector to recruit Saudi Arabian nationals (Fakeeh, 2009). Saudization translates in Arabic as nationalisation. The government has made resources available and implemented policies to support nationalisation (Fakeeh, 2009). Private companies were required to hire a certain percentage of Saudis as part of their work force, depending on the total number of workers (Fakeeh, 2009). The policy indicated that recruiting one person with a disability was equivalent to employing four Saudi workers. The purpose was to encourage the private sector to employ people with disabilities. In order to meet the requirements of the policy, some small companies apparently have offered people with physical disabilities a job with no obligation to attend the work place. Accepting pseudo jobs could make people with disabilities more isolated and more dependent on their families and/or disability allowances from the Ministry of Social Affairs. In fact, by accepting such jobs likely would be much the same as if they were unemployed, because they would not have the opportunity to integrate into society by attending a workplace. It is important for people with physical disabilities to obtain a permanent job, not for the sake of the financial independence only, but also for a better standard of living, improving their physical and mental health. Permanent jobs also help them to adjust to their disabilities and to make a valuable contribution to society, and likely give them confidence to engage in more social activities (Australian Bureau of Statistics, 2012). Moreover, permanent jobs could help people with physical disabilities to gain confidence, increasing their socialisation and social skills. It could also provide them with opportunities to enhance their careers by gaining new work skills and knowledge (Australian Bureau of Statistics, 2012). Employment plays a vital role in integrating people with physical disabilities into society. This is achievable by including people with physical disabilities in any important activities and roles within society,
particularly with friends, colleagues and family (Thomas et al., 1991). So, accepting these pseudo jobs could have some of the same negative effects as unemployment.

In the second category the trainer wrote, “I could provide a convenient training environment and choose more suitable materials for each training course if the appropriate materials are provided”. Providing access to a variety of materials could enable trainers to provide greater variety of training options to the students. It is apparent that trainer 2 desired more accessible materials to enable her or him to provide a suitable training environment for the students. It is possible that the more materials the trainer had the more likely she or he could provide a variety of training courses. The third category is about field visits. The trainer tried to emphasise the importance of field visits. Field visits are likely to be important for both students and trainers, for the trainers to improve their knowledge and to exchange expertise, and for the students to engage actively in such places, which could increase their willingness to enrol in more VR training. In the fourth category, the trainer mentioned a lack of tools to enable him or her to train people with disabilities in an environment similar to the work place.

In the third category the trainer wrote, “Intensify field visits to a related secretarial training, and the like”. Trainer 3 believed that field visits were important. The trainer mentioned secretarial training, or other specialities that relate to administration training. Secretarial jobs or other administrative assistant training could be convenient for students with physical disabilities because given some of the students’ physical conditions, secretarial and administration jobs could be considered appropriate as they do not necessarily involve physical tasks beyond what these students could do.
Table 3.25
Trainers’ free response categories

<table>
<thead>
<tr>
<th>Trainer</th>
<th>Category 1: Negative effects on employment</th>
<th>Category 2: Shortage of materials</th>
<th>Category 3: Field visits</th>
<th>Category 4: Workplace environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I noticed that most of the companies are taking advantage of the name of a disabled versus simple salary without working because he equals in the system of Saudization four employees and the problem is that the disabled accept this offer. So, I suggest the vocational trainer to educate them about the negativity of such an action.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>I could provide a convenient training environment and choose more suitable materials for each training course if the appropriate materials are provided.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>I see the needs to intensify field visits to related secretaries training, and the like.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>The tools are not available to enable us to train people with disabilities in a similar environment to the workplace.</td>
</tr>
</tbody>
</table>
In the fourth category trainer 4 indicated that there was a lack of equipment used in the training courses, which possibly prevented her or him from training people with physical disabilities in a similar environment to the work place. It is important to train people with physical disabilities in a similar environment to the work place because it helps the students to start adjusting to the work place. It would also give students information about how the real work place looks. Training people with physical disabilities in a work environment could help trainers notice if physical work environments required any changes or modifications.

It can be seen that the trainers’ responses were organised into four categories. The first likely to be one of the most negative effects on employment because it is simply taking advantage of these students and it is likely to be a breach of their rights. The main goal of VR training is to equip people with physical disabilities with the necessary skills in order to be qualified for a job. Giving people with physical disabilities money for sitting at home likely would prevent this goal of VR training from being achieved. It is the government’s responsibility to prevent this from happening by applying a strict law prohibiting companies taking advantage of people with physical disabilities. People with physical disabilities also should be educated about negative outcomes of doing so.

In the second round of categorisation, it was attempted to recategorise responses according to their relations to each other and combine subcategories if there was an argument that a link existed between them (see Table 3.26). Category 4, “Work place environment” was merged with the second category “Shortage of materials”, as this appears to be related to shortage of materials. It is likely that this trainer perceived a lack of training materials, which possibly prevented her or him
from training people with physical disabilities in an environment similar to the workplace.

Table 3.26
Responses’ re-categorising for trainers’ free responses

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative effects on employment</td>
<td>Shortage of materials</td>
<td>Field visits</td>
</tr>
<tr>
<td>1- I noticed that most of the companies are taking advantage of the name of a disabled versus simple salary without working because he equals in the system of Saudization four employees and the problem is that the disabled accept this offer. So, I suggest the vocational trainer to educate them about the negativity of such an action.</td>
<td>1- I could provide a convenient training environment and choose more suitable materials for each training course if the appropriate materials are provided.</td>
<td>1- I see the needs to intensify field visits to related secretaries training, and the like.</td>
</tr>
<tr>
<td>2- The tools are not available to enable us to train people with disabilities in a similar environment to the work place.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It can be seen from the above that the majority of the responses were related to demanding more training tools and materials. When there is a shortage of materials in the VR, it could make it difficult for the trainers to choose the right materials for each course.

VR training typically is meant to provide students with a variety of training options in order to lead to a career, and to do so, the VR training materials should be provided in order to support the trainers to help the students build work skills for a particular job or jobs. If the students have a particular career plan in mind, VR centres should have the requisite materials and tools to train the students to equip them with the necessary skills.
In the third round of analysis, the final categories were organised into two themes, namely, “Shortage of materials” and “Negative effects” (see Table 3.27). A recurring theme that seems to exist in several categories was that most of the trainers were able to train people with physical disabilities if they were able to have access to the appropriate tools and materials, and was called, “Shortage of materials”. Training people with physical disabilities requires special equipment and curricula to enable the trainers to achieve the most successful training results. For example, training students in a similar environment to the work place likely requires tools, furniture, equipment, and a reasonable training facility space in order to assist the students’ mobility, which would likely give them the chance to produce their best efforts.

In the next category, the trainer emphasised the need for field visits. Although field visits are important, they would not be as important if the students were receiving similar training in the rehabilitation centre. As one trainer argued, if there were adequate materials to train the students in a similar environment to the workplace, field visits would not be required. Field visits may not always be practical, because of the cost, time, transportation, and the need to plan and coordinate each visit. If these were available in the training centres, it could provide an opportunity for trainers to provide extensive similar training.

<table>
<thead>
<tr>
<th>Category</th>
<th>Theme 1</th>
<th>Theme 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Negative effects</td>
<td>Shortage of materials</td>
</tr>
<tr>
<td>2</td>
<td>Field visits</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.27
Themes extracted from the categories for trainers’ free responses
The second theme, which reflected the view of one trainer who favoured the students being made aware of the perceived negative effect of accepting a pseudo job and not even attending this job on a daily basis, and also because it cannot be considered secure employment, was called “Negative effects”. It is also possible that pseudo jobs could make them more isolated and more dependent. This could also be a reason to avoid enrolling in a VR course because they might think they do not need to as long as they were receiving an income. When some people with physical disabilities get injured, they likely experience periods of social isolation because of their new physical condition (Thomas, Bax, & Smyth, 1991), and accepting pseudo jobs could accustom them to being isolated from society. Thomas et al. (1991) claimed that people with physical disabilities who spend most of their time at home appeared to experience difficulties with social skills. Integrating people with physical disabilities into society can help them become more independent and be active societal members (Thomas et al., 1991), and therefore, being employed can help them integrate in the society which in turn could enhance their quality of life.

In conclusion, it is interesting that the first theme, “Shortage of materials” could explain why there was a lack of training options. Providing more than one option in the VR training could possibly attract people with physical disabilities to enrol in the VR course, because, the more training options the more likely they will find something which could be of interest for them.

3.11.4. Telephone interviews. Telephone interviewing was used in this study as it could potentially add to the quantitative results. In the following sections, the method and results of telephone interviews are presented and discussed.
3.11.4.1. Method.

A preliminary step in the selection of the sample involved obtaining permission from the Human Research Ethics Committee at the University of Wollongong in order to approach VR centres for participation in the study (see Appendix A). The sample of participants for the telephone interviews comprised nine male students with physical disabilities selected from four VR centres from the 11 centres in the quantitative part of this study. The researcher arranged to send a brief introduction to VR centres to explain the nature of the study and what was required if the centre participated in the study. Selection of the participants for the telephone interviews was based on the quantitative and qualitative analysis results, that is, participants’ scores in the questionnaire and themes extracted from the thematic analysis of the free responses. The sample was appropriate because they were at the end of, or just finished their VR course; therefore, telephone interviews were conducted at the end of, or right after, the VR courses to assure consistency. The aim was to capture the extent of differences in students’ VR self-efficacy beliefs and their beliefs in their trainer’s capabilities to help them achieve their desired vocational goal.

The sample comprised nine students aged 39 to 42 (mean age=40). The longest TSI was since birth years and the shortest TSI was six months. Telephone interviews days and times were selected according to the convenience of the students and the researcher. All telephone interviews occurred in approx. 20 minutes after rehabilitation sessions.

The sample was selected from the population of two cities, namely, Riyadh and Dammam. At first sight, it might seem unusual that all participants were male, however, most of the injuries represented in the rehabilitation centres tended to be caused by car accidents, and it is important to mention again that females do not drive
in Saudi Arabia because of the cultural background and government regulations. SCIs in Saudi Arabia affect mainly the young male population due to Road Traffic Accidents (RTAs) (Aljadid, 2014). As stated earlier, in Saudi Arabia, RTAs are still the primary cause of SCI, with a high percentage of the total injuries experienced by young drivers. A hospital-based study in Saudi Arabia, showed that 79.2% of patients admitted for spinal injuries, had sustained their injuries in RTAs (Aljadid, 2014).

At the beginning of each telephone interview, Participants were given a brief introduction about the nature and goal of the study. The researcher asked students if they agreed to record the telephone interview, and all participants agreed. The researcher assured students that their responses would be confidential and be used for research purposes. Students were asked to share their opinions and experiences of their VR and how capable they believed they were during the course. The telephone interview questions, used to guide the interview, were designed based on the quantitative and qualitative analysis results. In the free response thematic analysis, students indicated that the training was beneficial, thus, the questions were designed to tap into students’ VR self-efficacy beliefs for performing VR activities during and at the end of the VR program, to find out if there were any changes their VR self-efficacy beliefs. Students were asked about their TSI and what kind of activities they were doing since their injury in order find out if TSI could be associated with a lack of interest in the VR or being employed. Obtaining information about TSI potentially could also provide more information about the kind of activities students were involved. Students were also asked if they had any plans for employment and future careers. Those who were not employed at the time of the interview were asked if they were planning to go back to their previous job or find a new job. The goal was to investigate if TSI was associated with not being employed. Students were also asked
about their beliefs about their trainers and whether they helped them achieve their VR goals. In the thematic analysis of the questionnaire free responses, the majority of students indicated that there was a shortage of options in the VR program, therefore, students were asked if they believed that the VR program needed more options and if they had a specific option or skill in mind. There were also follow-up questions to clarify and justify students’ responses. Some examples of questions are “what have you been doing since your injury?” and “what skill or skills do you think would be the most helpful to you for your future career or employment?”.

3.11.4.2. Telephone interviews’ thematic analysis. First, all interviews were transcribed from verbal to written words in the original language of Arabic in order to prepare them to be translated to the English language. Second, the interviews were translated from Arabic to English. Then responses were extracted, identified and organised into a Table for each question.

As mentioned before, to ensure accuracy, the translations were given to a translator certified by the National Accreditation Authority for Translators and Interpreters, which is the national accreditation body in Australia. The translator checked both the Arabic version and the translated English version. Then the translator attempted to retranslate some of the statements and made some grammatical changes where needed. The researcher made the changes before taking them back to the translator to make a final check on the modifications to ensure that they were accurate. As mentioned previously, there are differences between the Arabic and English languages. Notwithstanding, the goal was to produce an exact, clear and accurate translation. It is important to note that there are still extant grammatical
errors in the translation; however, these errors have not been changed in order for it to be an authentic translation.

Third, the researcher read and reread the translated statements. Then, the researcher attempted to highlight any possible concepts or ideas within the statements. Following that, the concepts were organised into categories for each question broadly according to the shared meaning that exists between the responses. The responses extracted from interviews in English were organised into different categories for each question.

The answers to the first question, “When were you injured?” were organised (see Table 3.28).

Of the nine students, seven had been injured relatively recently. The length of the time since injury was mostly around one to two years. In regard to student 4, who had been injured more than eight years earlier, it is possible that he had adjusted to his new condition because although he was employed and held a bachelor degree, he was undertaking further study. In Saudi Arabia the minimum requirement to teach IT (which was the student’s speciality) is to hold a bachelor degree. It is also likely that he was still receptive to VR, because he was enrolled in a VR course at the time of the interview, although he had been injured more than 8 years earlier, which could reasonably be considered a long time. These data will be investigated later to see if there is any evidence to suggest that the length of the injury may have been related to the students’ perspectives about VR.
Table 3.28

Response categories for Question 1: When were you injured?

<table>
<thead>
<tr>
<th>Student</th>
<th>Time since injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6 months</td>
</tr>
<tr>
<td>2</td>
<td>9 months</td>
</tr>
<tr>
<td>3</td>
<td>11 months</td>
</tr>
<tr>
<td>4</td>
<td>8 years and 3 months</td>
</tr>
<tr>
<td>5</td>
<td>1 year and 4 months</td>
</tr>
<tr>
<td>6</td>
<td>1 year and 5 months</td>
</tr>
<tr>
<td>7</td>
<td>2 years and 1 months</td>
</tr>
<tr>
<td>8</td>
<td>1 year and 6 months</td>
</tr>
<tr>
<td>9</td>
<td>Since birth</td>
</tr>
</tbody>
</table>

The answers to the second question, “Do you have a job already?” were organised (see Table 3.29). As can be seen, four students said “Yes”, and four students said “No”; one student owned a business.

In regard to student 1, although he said he had a job, it may be important to note that he was still contacting the company regarding wheelchair access, as there was no access, and the employer had approved the project. When student 2 answered the question “Do you have a job already?”, he indicated that although he did not have a job at the time of the interview, his situation was not straightforward because he was planning to go back to his previous job. He had worked in a private company where he could not take sick leave longer than 6 months, and the company told him that he was welcome to go back to work whenever he was ready. In regard to student 4, he was on study leave at the time of the interview.
### Table 3.29

*Responses extracted from answers to question 2: Do you have a job already?*

<table>
<thead>
<tr>
<th>Student</th>
<th>Answer</th>
<th>Further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>* The student was still contacting the company regarding the wheelchair access. The student said, “the counsellor and I are still contacting the company regarding the necessary facilities” *&lt;br&gt; * The project was approved by the company. The student said, “They already approved the project and according to them it will be done in few weeks, besides they are still paying my salary”</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td>* The student was planning to go back to his previous job by saying, “I am planning to go back to work”. The student answered the sub question, “Have you resigned?” by saying, “Yes, 6 months after the accident” and elaborated by saying, “It is a private company, and I could not take sick leave for more than 6 months”</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
<td>* The student answered the sub question, “Are you looking for a job?” by saying, “Yes”</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>* The student said, “I have a job but I am on a study leave at the moment”</td>
</tr>
<tr>
<td>Student</td>
<td>Answer</td>
<td>Further information</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>---------------------</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td>* The student answered the sub question, “Are you looking for a job?” by saying, “Yes, I have applied for Aramco 3 months ago”. Aramco is a huge oil company, which is always, have job opportunities, especially if the person has the required qualification.</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>* The student’s actual answer to question 2 was, “I used to be a private at the Ministry of Defence before the injury and I am now on sick leave”. The student answered the sub question, “Are you planning to go back to work?” by saying, “I do not think that I will go back while I am like this”. The student elaborated his answer by saying, “the vocational trainer is communicating with the human resources at the Ministry of Defence so I can go back for an office job”</td>
</tr>
<tr>
<td>7</td>
<td>No</td>
<td>* The student elaborated his answer to question 1 by saying, “I have applied for the Riyadh library a week ago and will go for the job interview after my discharge”</td>
</tr>
<tr>
<td>8</td>
<td>Owned a business</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
For the third question “What have you been doing since your injury?” there are four categories (see Table 3.30). The first category consists of twelve responses, and is called “Received treatment”, because all of the participants expressed a view that they had been receiving treatment since their injuries. For example, student 1 said, “I have been admitted to three rehabilitation programs”; student 2 said, “I have been working on my rehab treatment”. The second category, which was called “Working”, contains three responses. Student 1 said, “Back to work”. It is possible that student 1 had adjusted to some extent to his new condition because the injury had not caused him to become isolated. Student 7 indicated that he had worked in his father’s foundation, which means his father’s company. In Saudi Arabia small companies are called foundations. Although student 7 said he did not have a job at the time of the interview (see Table 3.29), he said, “I applied for the Riyadh library a week ago and will go for the job interview after my discharge”. It is important to mention that this student said he was not thinking about his employment or future career (see Table 3.31). It is likely that student 7 did not choose to isolate himself from society or lacked interest in becoming employed. When asked “Why not?” he said, “I have more important things, which is the treatment, and I want to walk again because the doctor who operated on me said there is a chance to walk using crutches if I continue my exercises”. Thus, because the student was not working at the time of the injury, this statement was organised in category 2.
Table 3.30
Response categories for Question 3: What have you been doing since your injury?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received treatment</td>
<td>Working</td>
<td>At home</td>
<td>Studying</td>
</tr>
<tr>
<td>1</td>
<td>* I have been admitted to three rehabilitation programs.</td>
<td>* Back to work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* I have been working on my rehab treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>* I have been doing my physical therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>* Two years between surgeries and physical therapy</td>
<td></td>
<td></td>
<td>* Started my study</td>
</tr>
<tr>
<td>5</td>
<td>* Admitted to the military hospital Admitted to king Fahad hospital</td>
<td></td>
<td>* Spent eight months at home</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>* Admitted to the National Guard Hospital Admitted to Fahad Hospital</td>
<td></td>
<td>* Stayed at home</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>* Was receiving treatment</td>
<td></td>
<td>* Have worked in my dad’s foundation</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>* Have been admitted to hospital</td>
<td></td>
<td>* Went back to work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Went to Germany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>* Have been admitted here for the intensive physical therapy</td>
<td></td>
<td></td>
<td>* Continuing my studies until my graduation from university</td>
</tr>
</tbody>
</table>

The third category consists of two single responses from two students, which indicate that they had spent some time at home since their injuries. Consequently, this category was called “At home”. Student 5 had applied for a job three months before the interview (see Table 3.29). Spending some time at home after the injury could have been part of the adjustment process. Student 5 was injured one year and four
months before the interview (see Table 3.28), which may be considered a short time. According to student 5, he spent eight months at home and had been admitted twice to a rehabilitation program since his injury. As student 5 had been admitted to undertake a rehabilitation program for the second time at the time of the interview, it is likely that the eight months, which he spent at home, was the gap between the two rehabilitation programs.

Student 6, who had been a private in the Ministry of Defence before the injury, and was on sick leave at the time of the interview, was injured one year and five months earlier (see Table 3.28), and had been admitted to two rehabilitation programs, (see Table 3.30). It is likely that he had spent some time at home while he was waiting to be admitted to the second program.

The fourth category contains two different responses indicating that two students had been studying since their injury. This category was called, “Studying”. For example, student 4 indicated that he had commenced his study after his injury. It is possible that his desire to go back to school was a part of his adjustment to his new condition, keeping in mind that he already had a job and was on study leave at the time of the interview and also held a bachelor degree (see Table 3.29). It is likely that he was receptive to enhancing his academic qualifications by enrolling in further study. Student 9 noted, “Continuing my studies until my graduation from university”.

For the fourth question, “Since your injury, have you been thinking about your employment or future career?” there are eight categories (Table 3.31).

The first category consists of the six responses of those who said they had been thinking about their employment or future career. It is important to mention that of the students who said they had been thinking about their employment or future career, student 4 was the only one who did not have a job at the time of the interview,
however, he indicated that he had applied for a job three months earlier (see Table 3.29).

The second category, which was called “Said no” contains three responses, because all of the respondents said they were not thinking about their employment or future career. Given that student 2 had been injured recently (see Table 3.28), it is possible he was not thinking about his employment or future career because he was focussing on his physical therapy. It is important to mention that although student 7 said that he was not thinking about his employment or future career, as mentioned before, he had already applied for a job and was going for an interview immediately after he completed his rehabilitation program. In regard to student 8, it is possible that he was not thinking about his employment or future career because he owned a business. As can be seen, there are no clear indications that the students’ injuries had a negative effect on their interest in becoming employed. Rather, each student seems to have had a valid reason not to think about his employment.

The third category consists of the responses of student 4, who indicated that he faced the reality of his injury. So, this category was called “Change”. It is possible that student 4 started to think about his new condition, which is likely to be one of the important factors which could help the newly injured to adjust to their new injury. Student 4 did not elucidate which reality he was talking about, but considering the nature of the question, it is likely that he meant the reality of being injured, and that he was thinking about his career based on his new condition. Student 4 pointed out that his life had changed by saying, “I can not walk and my life has changed”. It is possible that he is expressing the reality of his new condition, which is likely to require an adjustment to some extent in order to keep or regain his previous skills before the injury. The third statement for student 4 was “Started to use the
wheelchair”. It is possible that he was indicating the main change, with which he had to deal, was using a wheelchair.

The fourth category contains two responses of one student who described how he was concerned about society. This category was called, “Society”. In the first statement student 4 appears apprehensive about whether he would be involved again in society or not. He also said “Will society accept my condition on a wheelchair as a teacher”. Therefore, it is likely that he was wondering if he would be given equal opportunity in society as before the injury.

Table 3.31
Response categories for Question 4: Since your injury, have you been thinking about your employment or future career?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Said yes</td>
<td>Said no</td>
<td>Change</td>
<td>Society</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td></td>
<td>* Since my accident and when I faced the reality</td>
<td>* Am I going to be able to get involved in society again</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* I can not walk and my life has changed</td>
<td>* Will society accept my condition on a wheelchair as a teacher</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Started to use the wheelchair</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It is also possible that he was questioning his own capabilities for contributing to society again, to some extent. Considering the nature of the question, it is possible that student 4 was concerned about the society in term of employment. On the other hand, it also is possible that he was worried about society in general. Of course, societal attitudes will have an impact on people with physical disabilities, especially in the early years after the injury. In fact, generally, people with physical disabilities desire to be recognised in their own society for their physical abilities, so they tend to be concerned if people in their society only focus on their disabilities (Lang, 2001).
The fifth category contains four responses from student 4 (two responses) and student 9 (two responses), who appeared to be thinking about work in general. This category was called, “Work”. Student 4 in his first statement said, “Go back to work”. Given the fact that student 4 did go back to work after his injury, it is possible that his doubts about society accrued in the early stages of his injury. In the second statement student 4 said, “Am I going to do my job like before”; he appeared to be questioning his capabilities to execute tasks as he could before the injury. Student 9 said, “What job I am going to do”. It is important to mention that student 9 was already employed and he had been injured since his birth. So again he seems to have been concerned about his future employment. It is possible that he was trying to find out what kind of job would be suitable for his condition because he said, “What kind of job would suit me”.

The sixth category was called, “Confidence” because it contains one response of student 9 who said, “When I studied and graduated, I have the confidence to work”. It appears he was expressing his confidence in his own capabilities to work or to find a job. This response could be related to the fifth category, which was, “Work”. However, it was categorised separately because it is a particular concept.

The seventh category contains three responses from student 6 (two responses) and student 9 (one response). This category was called, “Apprehensions”, because the students were talking about their worries in general without specifying what they were worried about. Student 6 in his first statement said, “Was bothering me”. Given the nature of the question, it is possible that student 6 was indicating that he was worried about his employment or future career as he confirmed his worries about his career in his second statement where he said, “If I lose my job it will be a problem”. Student 9
said, “What I would become”, probably wondering what he would become in terms of employment or future career.

For the fifth question “What skill or skills do you think would be the most helpful to you for your future career or employment?”, there are five categories containing one or more responses (see Table 3.32). The researcher organised the responses according to their broad meaning.

The first category consists of statements relating specifically to IT skills. So, this category was called “IT skills”. Student 2 said, “Skills that have to do with using a computer like data entry”. This response fits category 1 because data entry may be considered an IT skill. In the second statement student 2 said, “Using certain programs, which can allow us to work in a bank”. Although he did not mention a particular program, but keeping in mind the nature of the question and his whole answer, it can be inferred that he meant bank-training programs, as he indicated these would be the most helpful to him for his future career or employment. It is likely he desired to work in a bank. Student 3 said, “IT skills”; he mentioned in his second statement specifically, “Photoshop skills”. In his third statement he said, “Advanced Word”, and in his fourth statement, “Excel”. Student 3 answered the sub-question, “Why do you think it is important?” by saying, “They are the most appropriate skills for the physically injured, because it would prepare them to be able to work using computers, which does not require a physical ability”.

The second category contains one response from student 1 who mentioned marketing as a helpful skill. This category was called, “Marketing”.

The third category contains the responses from three students and was called, “Ability to work”. In the first statement of student 4 he said, “Flexibility”. It is possible he used one word, which is flexibility to indicate both physical and cognitive
flexibility. However, it is likely he meant physical flexibility as he was wondering whether he would be able to perform his job normally in his third statement. Nevertheless, the meaning also could relate to mental flexibility, for example, the ability to explain effectively as a teacher. The same student said in his second statement, “Am I going to be able to explain effectively”. Keeping the nature of the question in mind, it is possible that he considered physical ability to be important in teaching. In his third statement he said, “Can I exercise my job normally”. Again student 4 could be emphasising the importance of his physical abilities because it could be confirmed by his fourth statement, “Am I going to use my previous skills while I am on the wheelchair or not”. Student 6 said, “Office skills”, suggesting he believed that office skills would be the most helpful for his future career or employment, although he did not mention specifically IT skills. Student 6 was asked, “Why?” and his response was, “Because it suits the people with spinal cord injuries and those who cannot walk”. Student 9 said “Work for 8 hours daily”. Being able to work for 8 or 9 hours, which is the standard working day, is important for people with physical disabilities to adjust to their workplace requirements. In his second statement he said, “Have the ability to work for long time”. In his third statement he said, “Movement”. Movement is a physical ability. In his fourth statement he said, “The energy”. It is likely that this was related to the physical ability to work, and was related to all the previous statements of the same student. In his fifth statement he said, “Have the ability to walk for long distances”. Again he is indicating the importance of the physical abilities to work.
Response categories for Question 5: What skill or skills do you think would be the most helpful to you for your future career or employment?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
<th>Category 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IT skills</td>
<td>Marketing</td>
<td>Ability to work</td>
<td>Helpful skills</td>
<td>Managing business</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* Skills that have to do with using a computer like a data entry</td>
<td>* Using certain programs, which can allow us to work in a bank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>* IT skills</td>
<td>* Photoshop skills</td>
<td>* Advanced Word</td>
<td>* Excel</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Flexibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Am I going to be able to explain effectively</td>
</tr>
<tr>
<td>Student</td>
<td>Category 1</td>
<td>Category 2</td>
<td>Category 3</td>
<td>Category 4</td>
<td>Category 5</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>IT skills</td>
<td>Marketing</td>
<td>Ability to work</td>
<td>Helpful skills</td>
<td>Managing business</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>* Can I exercise my job normally * Am I going to use my previous skills while I am on the wheelchair or not</td>
<td>* Need vocational courses to improve * Need other things, as vocational, to help me more</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>* Skills that would help the physically disabled</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>* Office skills</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Skill that would help the patient to get employed</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* The Ministry of Labour can provide courses to teach skills to the disabled, which could help them to manage a business</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>* Work for 8 hours daily * Have the ability to work for long time * Movement * The energy * Have the ability to walk long distances</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The fourth category contains responses from three students and was called, “Helpful skills”. Student 4 said, “Need vocational courses to improve”. It is likely that he was indicating that he might need to be enrolled in further VR courses in order to improve his employment prospects. In his second statement student 4 said, “Need other things, as vocational, to help me more”. Again he is likely confirming his possible needs for VR. Student 5 said, “Skills that would help the physically disabled”. Student 7 said, “Skill that would help the patient to get employed”.

The fifth category contains one response from student 8, who said, “Teach skills to the disabled, which could help them to manage a business”. It is likely that student 8 thought that it would be helpful if the decision makers could provide VR to teach people with physical disabilities skills that related to business management. It is also possible that he had experienced having a business and believed there were certain skills, which could help students with disabilities to own and run a business (see Table 3.29). When student 8 was asked, “Is there anything specific?” he replied, “The Ministry of Labour provides the small projects opportunity but they do not provide courses that help the person to learn how to manage these projects. I mean they expect the person to be ready to do business or to start a small project without experience. And there is also the Ministry of Trade, they are supposed to provide easier regulations for the disabled who want to obtain a commercial registration or start a small project”. It appears that student 8 wanted the decision makers in the Ministry of Trade to ease the regulations that apply to people who want to start a business. Moreover, student 8 wanted the Ministry of Labour to provide courses that related to businesses and train those who wish to start a small project to learn how to manage a business.

For the sixth question, “What do you think about the vocational course?” there are four categories (see Table 3.33). The first category, which was called “Helpful”, consists of
responses from four students, because all the responses express views that the students were thinking positively about the VR course. For example, student 1 indicated that the vocational course was helpful. It is possible that he found the VR training helpful because he learned something new, because he answered a sub question, “How?” by saying, “I have been introduced to the new version of Excel”. It is likely that student 1 believed he benefitted from the VR course. He also elaborated by saying; “I also learned how to use it in Mac”. Student 1 confirmed his satisfaction with the training course. It might be worthwhile mentioning that student 1 had a job already (see Table 3.29), so it is likely he thought that the course was helpful because he learned IT skills which could be useful in his work. Student 4 in his first statement said, “It is an improvement”. Student 4 in his second statement said, “If a person need a specific skill, and wants to improve himself in something and he can not improve it by himself, so in case he enrols in the VR courses it will have an effect”. It is possible that he is indicating that the course could have an effect on those who want to learn a certain skill as the VR courses are usually provided with capable trainers who could provide the required assistance to help the students achieve their goals.

Student 4 said in his third statement, “Know people who benefited from the vocational courses”. He is confirming again that the VR courses could be beneficial to some students. Student 6 said, “Good”, and, “After a week I learned things that I did not know about” in his answer to question 7 (see Table 3.34). It is possible that he expressed his satisfaction with outcomes of the VR course because he indicated that he learned things of which he was not aware. The main goal of VR is to gain knowledge and skills that could contribute at least to some extent to helping students become employed.

Student 6 answered the sub question, “Like what?” by saying, “Like the recruitment department for the physically disabled at the chamber of commerce”. Student 6 appeared to be confirming the importance of being aware of the recruitment department because he
elaborated to his statement by saying, “There were three of my friends who got employed through them”. Considering that student 6 was not sure whether he would be able to get his job back or not, he possibly considered this as an alternative option to obtain a job because when asked, “Have you applied?” he said “I want to wait until the Ministry gets back to me because there is a chance to go back there”. Student 9 said, “Very important”. This student was emphasising the importance of the VR generally because he said in his second statement, “When a person gets hand weakness caused by stroke, it is possible that he was good in using the computer, but after the injury he has to have rehabilitation to strengthen his hand and to exercise writing on the keyboard again”. Student 9 said in his third statement, “It is possible, with the exercises and the practice that he will have his life like before or even better”.

The second category, consists of the responses of three students, and was called “Not helpful”, because all the responses expressed views that the students were not satisfied with the outcomes of the VR. For example, student 3 in his first statement said, “I do not think it was beneficial for me”. Taking account of the fact that this student held a bachelor degree in IT, and some of the content of the course was about basic computer skills, it is possible that he was already capable of using basic skills; he said, “I am aware of the skills that were taught”. Student 3 was asked, “Could you suggest something specific to be included in the training courses?” and his answer was, “They do not have to limit the courses on teaching the basic skills like switching the computer on and off, they have to focus on something more specific like I mentioned before”. Student 7 said, “Did not benefit from the course”. It is possible that he believed he did not find the course beneficial because he said that the course was a little hard. Student 7 said in his third statement, “Do not like computers”, which could possibly explain why he found the course to be hard. Student 8 said, “I think it has a limited benefit if it is only confined to teaching how to use a computer or teaching the disabled on how to apply for small projects”.

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Table 3.33

Response categories for Question 6: What do you think about the vocational course?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Helpful</td>
<td>Not helpful</td>
<td>More options</td>
<td>Job searching skills</td>
</tr>
<tr>
<td>1</td>
<td>* Helpful</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>* More training options</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>* I do not think it was beneficial for me</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* I am aware of the skills that were taught</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* It was a waste of time</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>* It is an improvement</td>
<td></td>
<td>* If a person need a specific skill, and want to improve himself in something and he cannot improve it by himself, so in case he enrols in the vocational training courses it will have an effect.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Know people who benefited from the vocational courses</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>Category 1</td>
<td>Category 2</td>
<td>Category 3</td>
<td>Category 4</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Helpful</td>
<td>Not helpful</td>
<td>More options</td>
<td>Job searching skills</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>* Benefited from the job searching skills</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Did not know that I could search and apply for a job through the Internet</td>
</tr>
<tr>
<td>6</td>
<td>* Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>* Did not benefit from the course</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Was a little hard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Do not like computers</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>* I think it has a limited benefit if it is only confined to teaching how to use a computer or teaching the disabled on how to apply for small projects</td>
</tr>
<tr>
<td>9</td>
<td>* Very important</td>
<td></td>
<td></td>
<td>* When a person gets hand weakness caused by stroke, it is possible that he was good in using the computer, but after the injury he has to have rehabilitation to strengthen his hand and to exercise writing on the keyboard again</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* It is possible, with the exercises and the practice that he will have his life like before or even better</td>
</tr>
</tbody>
</table>
It is important to mention that this student owned a business (see Table 3.29), and it is possible that he was not interested because he did not enrol in the VR course to become employed.

The third category contains one response from student 2 who requested more training options. This category was called, “More options”. Student 2 did not specify what options he meant, however, he was not employed at the time of the interview but was planning to go back to work (see Table 3.29).

The fourth category consists of two responses from student 5, which was called “Job searching skills”. For example, student 5 said, “Benefited from the job searching skills”. It is important to note that this student was not employed at the time of the interview, however, he had applied for a job (see Table 3.29). In his second statement he said, “Did not know that I could search and apply for a job through the Internet”. This response could be related to the first category, which was, “Helpful”. However, it was categorised separately because it is a particular concept.

For the seventh question, “How capable do you believe you were to do the tasks in the course, at the beginning; at the end?” there are three categories (see Table 3.34). The first category, consisting of responses from six students, was called “Beginning”, because all of the responses expressed the students’ beliefs about their capabilities at the beginning of the course. Student 1 said, “Nervous a little at the beginning”, and, “I have not used Mac before”. Student 2 said, “Was not that confident at the beginning”. Student 3 said, “I was confident about my capability since the start”. Keeping in mind that the course was meant to train the students on how to use a computer and some of its basic skills, it is possible that student 3 was confident at the beginning because he had a bachelor degree in IT. Student 5 said, “At the beginning I did not know the Ministry of Labour website”. The Ministry of
Labour website provides most of the services to people with disabilities, including job opportunities. The same student in his second statement said, “Did not know how to apply and what their conditions were”. It is likely that student 5 was indicating the importance of knowing such employment related information, remembering that student 5 did not have a job at the time of the interview (see Table 3.29); being aware of employment sources and how to apply for a job likely was considered important. When student 5 was asked, “Why do you think the change occurred?” he replied, “Because I became aware of how to do it without the trainer”, once again he appears to be indicating that he learned how to manage the Ministry of Labour website. Student 5 was asked, “Did the course cause you to change your goals” and he said, “No” and when the researcher followed up by asking, “Why no” student 5 said, “Because I do not have specific goals, but now I have one, which is to apply for the Ministry of Labour and to attend the VR course, which is about how to apply for the small project funding”. It is possible that student 5 became receptive to the VR because he was planning to enrol in further VR. Student 6 said, “At the beginning I was afraid”, and, “Was not aware of the content of the course”. It is likely that student 6 was justifying why he was afraid at the beginning of the course. Student 9 said, “Did not have any background on how to write letters using Word”.

The second category, consists of responses from five students, and was called “During”, because all the responses expressed the students’ beliefs about their capabilities during the course. For example, student 1 said, “After three or four days I felt confident to use it”. “It” probably was a Mac computer. When student 1 was asked, “Did the course cause you to change your goals?” he replied by saying, “Yes” then the researcher asked, “How?” and he answered, “I have to enrol in more IT programming courses, which are related to advertising”. It is likely that student 1 became receptive to taking a further VR course because he successfully learned a skill during the VR course.
### Table 3.34

**Response categories for Question 7: How capable do you believe you were to do the tasks in the course, at the beginning: at the end?**

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Beginning</strong></td>
<td><strong>During</strong></td>
<td><strong>Not satisfactory</strong></td>
</tr>
</tbody>
</table>
| 1       | * Nervous a little at the beginning  
          * I have not used Mac before | * After three or four days I felt confident to use it |   |
| 2       | * Was not that confident at the beginning | * Learnt how to use the program |   |
| 3       | * I was confident about my capability since the start | | * It did not change |
| 4       | | | * Could not find anything beneficial |
| 5       | * At the beginning I did not know the Ministry of Labour website  
          * Did not know how to apply and what their conditions were | |   |
| 6       | * At the beginning I was afraid  
          * Was not aware of the content of the course | * After a week I learned things that I did not know about |   |
<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Beginning</strong></td>
<td><strong>During</strong></td>
<td><strong>Not satisfactory</strong></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>* The tasks were a little hard</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>* Did not help me</td>
</tr>
<tr>
<td>9</td>
<td>* Did not have any background on how to write letters using ‘Word’</td>
<td>* After I enrolled in the vocational courses, it gave me the confidence to write letters.</td>
<td>* Functions in ‘Word’ I was not aware of</td>
</tr>
</tbody>
</table>
Student 2 said, “Learnt how to use the program”. It is likely that student 2 was expressing his confidence in using a certain program, which he learned during the VR course. When student 2 was asked, “how capable do you believe you were to do the tasks at the end of the course?” he answered, “I believe I was capable”, then the researcher followed up by asking, “Why do you think the change occurred?” and student 2 said, “Because I learnt how to use the program”. It is possible that student 2 developed confidence to some extent in his own capabilities. Student 6 stated, “After a week I learned things that I did not know about”. When student 6 was asked “Like what?” as a sub question he replied by saying, “Like the recruitment department for the physically disabled at the chamber of commerce”, and he elaborated by saying, “There were three of my friends who got employed through them”. It is possible that student 6 was emphasising the importance of being equipped with this skill. Again, student 6 was on sick leave and used to be a private at the Ministry of Defence, and usually these soldiers get early retirement unless they hold a high degree, which could allow them to do office work. Student 9 stated, “after I enrolled in the vocational courses, it gave me the confidence to write letters”, and answered the sub question, “So, there was a difference in the end from the beginning?” by saying, “Yes sure, and I was afraid from writing and designing letters before, but when I enrolled in this program I become confident about writing and designing letters, now I even help the other people who do not know how to use it, I can write a letter or teach them”. This could be related to some extent to his self-efficacy for using such a program. He answered the sub question, “Why do you think the change occurred?” by saying, “Because I like this thing [writing letters] and the availability of this program made me discover myself more”. A successful VR program could to some extent change the goal or goals of a receptive student. In fact, student 9 answered the sub question, “Did the course cause you to change your goals?” by saying, “Sure, it changed a lot
of things, now I have the confidence, for example, I can help anyone, before I would avoid helping”.

The third category, consists of responses from four students, and was called “Not satisfactory”, because all responses were indicating that they were not satisfied with the outcome of the training. For example, student 3 mentioned, “It did not change”. Remember, this student held a bachelor degree in IT and it is possible that he could not meet any challenge to learn something of which he was not aware. Student 4 said, “Could not find anything beneficial”. This student was an IT teacher, thus, it is likely he did not find the tasks challenging. Student 7 stated, “The tasks were a little hard”. It is important to note that student 7 mentioned that he did not like to deal with computers in his answer to question 6, which could explain why he found the tasks challenging. Student 8 said, “The course was about how to prepare and apply for the small projects, and this did not help me because it is not important for me as I have a business already”. As student 8 owned a business (see Table 3.29), he may therefore not have been interested in the small projects provided by the government.

In the eighth question, “How do you see your future in terms of employment?” there are seven categories containing one or more responses (see Table 3.35). The researcher organised the responses according to their broad meaning. The first category mainly comprises responses that mention how they saw their future in terms of employment, and was called “Job”. For example, student 1 said, “Go back to my previous job or get a new one” (see Table 3.35). Student 2 said, “Going back to my previous job” (see Table 3.35). Student 5 who had applied for a job before the interview said, “To be employed”. Student 6 who was on sick leave at the time of the interview said, “Job is important”. He was not guaranteed to go back to his previous job unless he held an appropriate qualification to allow him to do office work. Student 6 answered the sub-question, “Are you planning to go back to work?”
by saying, “the vocational trainer is communicating with the human resources at the Ministry of Defence so I can go back for an office job” (see Table 3.29). The same student said, “Have to find a decent job” and, “I am young and I can work”, and, “It is my main living source”. It is likely that student 6 was receptive to work.

The second category contains responses from two students, which was called “Improvement”. Student 1 said, “I can improve my skills”. And student 9 said, “There will be more success and improvement”. It might be worthwhile mentioning that student 9 had been injured since birth (Table 3.28) and therefore, likely had adjusted to some extent to his physical disability and was looking to improve his skills.

The third category consists of responses of student 3 and was called, “Programming”; he said, “Thinking of becoming a programmer”. It is important to mention that he was not employed at the time of the interview; however, the student indicated that he was looking for a job. Keeping in mind that this student was injured 11 months prior to the interview, therefore, he may still have been focusing his attention on his physical therapy (see Table 3.28). In his second statement he indicated that he wished to work from home as he said, “I think it is more convenient than traveling every day to work”.

The fourth category consists of responses from student 8 and was called, “Business”. In his first statement, student 8 said, “Buy a bigger factory” and, “Will expand”.

The fifth category contains a single response from student 1, who was planning to go back to his previous job (see Table 3.29). Keeping in mind that this student was injured 6 months prior to the interview, it is possible he was not sure about his future in terms of employment as a result of his new condition.

The sixth category contains responses from student 5 and was called, “Allowance”. In the statement student 5 said, “Ministry’s allowance is nothing”.

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Table 3.35

Response categories for Question 8: How do you see your future in terms of employment?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1 Job</th>
<th>Category 2 Improvement</th>
<th>Category 3 Programming</th>
<th>Category 4 Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>* Go back to my previous job or get a new one</td>
<td>* I can improve my skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* Going back to my previous job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>* Thinking of becoming a programmer</td>
<td>* Work as a programmer from home</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>* To be employed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>* Job is important</td>
<td>* Have to find a decent job</td>
<td>* I am young and I can work</td>
<td>* It is my main living source</td>
</tr>
<tr>
<td>7</td>
<td>* Find an appropriate job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>* Buy a bigger factory</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>* There will be more success and improvement</td>
<td>* Will expand</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>Category 5</td>
<td>Category 6</td>
<td>Category 7</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
<td>Allowance</td>
<td>New experience</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>* I am not sure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>* Ministry’s allowance is nothing</td>
<td>* My father is supporting me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>* There might be something new to try</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It might be important to remind the reader that student 5 was not employed at the time of the interview (see Table 3.28) and thus, was depending on the monthly allowance provided by the Ministry of Social Affairs. Student 5 said in his second statement, “My father is supporting me”. It is likely that he wished to become independent.

The seventh category contains one response from student 9 and was called, “New experience”. He said, “There might be something new to try”. This student appeared to indicate he was open to try something new in the future. Since he was taking further study, it is likely that he was receptive to explore new things in his career or his current employment. It is also possible that because he was injured much earlier, he might have adjusted to some extent to his physical disability.

In the ninth question, “How capable do you believe your trainer was in training you?” there are three categories (see Table 3.36). The first category consists of responses of students with views about the extent of the trainer’s capabilities, which was called “Trainer was capable”. For example, student 1 said, “Good”. He answered the sub question, “What about his capabilities in training you” by saying, “I think he was capable as he was knowledgeable in how to use Excel on a Mac”. Keeping in mind that student 1 had never used a Mac computer before he enrolled in the VR course (see Table 3.34), it is possible that he had observed to some extent his trainer’s capabilities of simplifying and explaining the materials in a way that students could understand. Student 1 elaborated his answer by saying, “He answered all my questions and simplified the course. I have enrolled in an IT course three years before and it was not as clear as this one”. He confirmed that the trainer helped him to learn how to use Excel in Mac. Keeping in mind that there are differences when using Microsoft Excel for Mac or Windows. Student 2 said, “He was capable because I learnt”. It is likely that he linked his gained knowledge to his trainer’s capabilities. Student 3
said, “They were good”. Student 4 said, “Good”, however, it is important to mention that in his answer to question 6, “What do you think about the vocational course?” (see Table 3.33) and question 7, “How capable do you believe you were to do the tasks in the course, at the beginning; at the end?” (see Table 3.34), he indicated that he thought the courses were only beneficial for other people but not for him because he was already an IT specialist. It is also possible he was aware of the given tasks during the course because he was an IT specialist and observed to some extent the trainer’s capabilities in training other students how to use the basic functions of a computer, and therefore, it is likely he was confirming the trainer’s quality of teaching when he said “Good”. Student 5 said, “Explanation was great and clear”. It is important to note that this student indicated in his answer to question 6 that he learnt from the VR course, particularly job searching skills (see Table 3.33). Student 6 said, “Good and cooperative”. Student 8 said, “OK”. This student indicated in other statements that the course was not of much help for him and the course could help others. Remember, this student owned a business and the course was about how to apply for a small project, and therefore, he likely observed the trainer’s capabilities to train others and believed that the trainer could help other students but not him.

Student 9 said, “Knowledgeable”. He indicated in another statement that he benefitted a lot from the trainer, in particularly how to write and organise using Microsoft Word.

The second category contains responses from students 5 and student 9 who indicated that they benefitted from the trainer.

The third category consists of responses from two students and was called, “No benefits”. Student 7 said, “I did not understand him”. Keeping in mind the answer of student 7 to question 7, which was, “The tasks were a little hard” (see Table 3.34) and that he did not like to deal with computers in his response to question 6 (see Table 3.33) it is possible that student 7 could not understand the tasks during the course.
Table 3.36

*Response categories for Question 9: How capable do you believe your trainer were in training you?*

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Trainer was capable</strong></td>
<td><strong>Benefits</strong></td>
<td><strong>No benefits</strong></td>
</tr>
<tr>
<td>1</td>
<td>* Good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* He was capable because I learnt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>* They were good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>* Good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>* Explanation was great and clear</td>
<td>* I benefitted a lot</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>* Good and cooperative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>* I did not understand him</td>
</tr>
<tr>
<td>8</td>
<td>* Ok</td>
<td></td>
<td>* Not of much help for me</td>
</tr>
<tr>
<td>9</td>
<td>* Knowledgeable</td>
<td>* I benefitted a lot from him in things that I was not aware of.</td>
<td>* It could help others</td>
</tr>
</tbody>
</table>
Student 8 said, “Not of much help for me”. Keeping in mind that this student was aware of the content of the course, it is possible that he could not find anything of interest in the VR course. In his second statement student 8 indicated that he did not find anything beneficial for him in the VR course, but he indicated that the trainer could help others who were not familiar with the content of the course. This may be because he observed the trainer’s capabilities and believed that the trainer was capable of training others.

In the tenth question, “Is there anything else you would like to tell me about your disability, the training course, and your current and future employment?” there are seven categories (see Table 3.37).

The first category consists of responses from two students who said ‘No’. The second category contains responses from two students, and is called “More courses”. In his first statement student 3 said, “Should do more vocational courses”. In his second statement student 3 said, “Should not be limited to teaching computer”. Remember, this student held a bachelor degree in IT and it is possible that he desired to learn new skills other than computer skills. In the third statement the same student said, “It could be speech training courses”. It is likely that he was suggesting what kind of VR courses he wished to be provided. The same student answered the sub question, “What do you mean by speech courses” by saying, “It could provide the person with skills that could enable the person to do an advertisement job at a mall through the Microphone or in an airport or to host or present kids’ programs or media skills”. It is possible that student 3 was suggesting that the ability to interact verbally in public places is an important skill, and it likely does not require a person to do physical tasks. Student 7 said, “Provide training that suits the person’s condition and interests”. It is likely that student 7 wanted more training options because he had an interest, which was not provided for in the VR course.
Table 3.37
Response categories for Question 10: Is there anything else you would like to tell me about your disability, the training course, and your current and future employment?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Said no</td>
<td>More courses</td>
<td>Government support</td>
<td>Small project</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>* Should do more vocational courses</td>
<td>* There is supposed to be a government department to coordinate between the patient and his previous job</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Should not be limited to teaching computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* It could be speech training courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>* Provide training that suits the person’s condition and interests</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>* Disabled could benefit from the projects</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* It is not all about getting a job</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* There are people who could do great in business more than getting employed</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>* Could be more appropriate</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>Category 5: Effects of negative thoughts</td>
<td>Category 6: Does not need vocational services</td>
<td>Category 7: Advertising courses</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>* Provide courses in advertising</td>
<td>* The most convenient jobs to people with spinal cord injuries</td>
<td>* Could do the work sitting at a desk using a computer only</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* As an IT teacher, there is no need for me to enrol in a vocational course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>* My injury could become an obstacle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>* After I improved myself vocationally and physically, the kind of thoughts I was having in the past should not have been had by me, they could have had adverse effects on me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The third category consists of responses from one student, and was called “Government support”. Student 6 said, “There is supposed to be a government department to coordinate between the patient and his previous job”. He was asked, “What do you mean?” and he replied, “There has to be a government department to evaluate the patients’ capabilities for work and try to coordinate with their previous job so they can go back to a job that is appropriate for them”. Remember, student 6 was on sick leave and used to be a private at the Ministry of Defence, and usually it is hard for those who become physically injured to go back to the field, unless they hold a degree, which could allow them to do office work. Thus, it is possible that student 6 was wishing for more assistance from the government to coordinate with his previous job so he can go back to a job that suits him especially if his competence to work is evaluated by therapists or VR.

The fourth category contains four responses from student 8 and was called, “Small project”. In the first statement student 8 said, “Disabled could benefit from the projects”. It is likely that he indicated that people with physical disabilities could benefit from the small projects to start a business. Remember, student 8 owned a business and it is possible that because he was successful in starting a business he believed that anyone who has the same capabilities would be able to start a successful business. In his second statement student 8 said, “It is not all about getting a job”. It is possible that he believed that people with physical disabilities could be successful in business. In his third statement student 8 said, “There are people who could do great in business more than getting employed”. In his fourth statement student 8 indicated that business “Could be more appropriate because of their physical condition”. Student 8 was possibly indicating that having a business could be appropriate because generally it does not require physical work, and it could be administrative only.

The fifth category consists of responses from student 9 and was called, “Effects of negative thoughts”. In his first statement student 9 said, “My injury could become an
obstacle”. Student 9 was likely indicating that he did not let his negative thoughts influence his improvements whether physically or academically because he elaborated by saying, “After I improved myself vocationally and physically, the kind of thoughts I was having in the past should not have been had by me”. In his third statement student 9 said, “They could have had adverse effects on me”.

The sixth category contains one response from student 4 and was called, “Does not need vocational services”. Student 4 said, “As an IT teacher, there is no need for me to enrol in a vocational course”.

The seventh category contains three responses from student 1. This category was called, “Advertising courses”. In his first statement student 1 said, “Provide courses in advertising”. Student 1 held a bachelor in marketing; thus, it is possible that he was more interested in skills that related to marketing, such as advertising. Student 1 said, “Could do the work sitting at a desk using a computer only”.

In the second round of categorisation, it was attempted to recategorise responses according to their relations to each other and combine subcategories if there was an argument that a link existed between them. In the third question, there are three categories (see Table 3.38). A recurring theme from the interviews was that the participants reported that they had been injured relatively recently that they were receiving treatment since their injury. Some students who had been recently injured said they went back to work or to school. Only two students spent some time at home and the possible reasons were discussed earlier. The second category “Working” was combined with the fourth category, “Studying” and was called “Back to normal life” because it is likely the two categories are related to each other. If we consider the nature of question 3, it is possible that the answers could be classified to three main concepts: received treatment, stayed at home, and back to normal life.
Table 3.38

Responses’ re-categorisation for Question 3: What have you been doing since your injury?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1 Receiving Treatment</th>
<th>Category 2 Back to normal life</th>
<th>Category 3 At home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>* I have been admitted to three rehabilitation programs.</td>
<td>* Back to work</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* I have been working on my rehab treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>* I have been doing my physical therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>* Two years between surgeries and physical therapy</td>
<td>* Went back to work</td>
<td>* Started my study</td>
</tr>
</tbody>
</table>
| 5       | * Admitted to the military hospital  
* Admitted to king Fahad hospital | * Spent 8 months at home | |
| 6       | * Admitted to the National Guard Hospital  
* Admitted to Fahad Hospital | * Stayed at home | |
| 7       | * Was receiving treatment | * Have worked in my dad’s foundation | |
| 8       | * Have been admitted to hospital  
* Went to Germany  
* Have been admitted here for the intensive physical therapy | * Went back to work | |
| 9       | | | * Continuing my studies until my graduation from university |

This is because whether the students went back to work or commenced their study after injury, it is likely they started to live life normally. So, it was decided to merge these two categories together.

In the fourth question, there are five categories (see Table 3.39). The statement of student 9, “What I would become” was added to category three, “New adjustments”. The fifth category, “Apprehensions” includes the same responses. It is interesting that three students had not been thinking about their employment or future career, which could be
explained by the amount of time since the injury, as was discussed earlier. However, some students who had recently been injured said they had been thinking about their employment or future career. Others were more concerned about their adjustment to their new condition, and usually in terms of work. Some students had apprehensions about their future employment. From this perspective, it was arguably sound practice to focus the students’ rehabilitation on VR because the idea of going back to work is important.

Table 3.39
Responses’ re-categorisation for Question 4: Since your injury, have you been thinking about your employment or future career?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
<th>Category 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Said yes</td>
<td>Said no</td>
<td>New adjustments</td>
<td>Work</td>
<td>Apprehensions</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td></td>
<td>* Since my accident and when I faced the reality</td>
<td>* The first thing that I thought about was to go back to work</td>
<td>* Am I going to do my job like before</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* I cannot walk and my life has changed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Started to use the wheelchair</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Am I going to be able to get involved in society again</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Will society accept my condition on a wheelchair as a teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>* Was bothering me</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* If I lose my job it will be a problem</td>
</tr>
<tr>
<td>7</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td></td>
<td>* When I studied and graduated, I have the confidence to work</td>
<td>* What job I am going to do</td>
<td>* What I would become</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* What kind of job would suit me</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the fifth question, there are three categories (see Table 3.40). The first category “IT skills” was changed to “Specified skills”, because it represents those who have mentioned a specific skill or skills. For example, the second category “Marketing” was merged with the first category, “Specified skills”, because student 1 suggested that marketing skills could be helpful for his future career. The third category, “Physical abilities” which included the subcategories, “Flexibility” and, “Movement” was merged to the fifth category “Ability to work”, because it is likely that flexibility and movement are related to the physical abilities. The fourth category, “Office skills” was merged with the first category, “Specified skills”.

Table 3.40

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specified skills</td>
<td>Ability to work</td>
<td>Helpful skills</td>
</tr>
<tr>
<td>1</td>
<td>* Marketing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* Skills that have to do with using a computer like a data entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Using certain programs, which can allow us to work in a bank</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>* IT skills</td>
<td></td>
<td>* Can I exercise my job normally</td>
</tr>
<tr>
<td></td>
<td>* Photoshop skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Advanced Word</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Excel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>* Flexibility</td>
<td>* Need vocational courses to improve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Am I going to be able to explain effectively</td>
<td>* Need other things, as vocational, to help me more</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Can I exercise my job normally</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Am I going to use my pervious skills while I am on the wheelchair or not</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>* Skills that would help the physically disabled</td>
</tr>
</tbody>
</table>
The sixth category, “Bank skills” which includes the subcategory, “Using certain programs, which can allow us to work in a bank” was merged with the first category, “Specified skills”, because student 2 mentioned a specific skill which could be accounting, related to banking.

The eighth category, “Managing business” which includes the subcategory, “The Ministry of Labour can provide courses to teach skills to the disabled, which could help them to manage a business”, was merged with the first category, “Specified skills”. This is because student 8 mentioned a specific skill and that is managing a business. A recurring theme from the interviews was that the participants identified specific skills they believed important for them. Some students raised some issues about their ability to work. Others said that they needed other VR courses but did not specify their needs.

In the sixth question, there are three categories (see Table 3.41).

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specified skills</td>
<td>Ability to work</td>
<td>Helpful skills</td>
</tr>
<tr>
<td>6</td>
<td>* Office skills</td>
<td></td>
<td>* Skill that would help the patient to get employed</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>* The Ministry of Labour can provide courses to teach skills to the disabled, which could help them to manage a business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>* Work for 8 hours daily</td>
<td>* Have the ability to work for long time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Movement</td>
<td>* The energy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Have the ability to walk for long distances</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.41
Responses’ re-categorisation for Question 6: What do you think about the vocational course?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Helpful</td>
<td>Not helpful</td>
<td>More options</td>
</tr>
<tr>
<td>1</td>
<td>* Helpful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>* More training options</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>* I do not think it was beneficial for me</td>
<td>* I am aware of the skills that were taught</td>
</tr>
<tr>
<td>4</td>
<td>* It is an improvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* If a person need a specific skill, and want to improve himself in something and he cannot improve it by himself, so in case he enrols in the vocational training courses it will have an effect.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Know people who benefited from the vocational courses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.41. Continued

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Helpful</td>
<td>Not helpful</td>
<td>More options</td>
</tr>
<tr>
<td>5</td>
<td>* Benefited from the job searching skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Did not know that I could search and apply for a job through the Internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>* Did not benefit from the course</td>
<td>* Was a little hard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Do not like computers</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>* I think it has a limited benefit if it is only confined to teaching how to use a computer or teaching the disabled on how to apply for small projects</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>* Very important</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* When a person gets hand weakness caused by stroke, it is possible that he was good in using the computer, but after the injury he has to have rehabilitation to strengthen his hand and to exercise writing on the keyboard again</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* It is possible, with the exercises and the practise that he will have his life like before or even better</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The fourth category, “Job searching skills” was merged with the first category “Helpful”, because the student indicated that he benefitted from a certain skill which he learnt from the training course, and therefore, the fourth category is likely to be related to category “Helpful”. It is interesting that five participants indicated that the VR course was helpful and important. However, others were not satisfied with the VR course. One participant requested that more training options need to be included, but did not specify his needs or what they should be.

In the seventh question, there are three categories (see Table 3.42). All categories are still without modifications. Most of the participants talked about their beliefs in their capabilities to do the tasks at the beginning of the course.

Table 3.42

Responses’ re-categorisation for Question 7: How capable do you believe you were to do the tasks in the course, at the beginning; at the end?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1 Beginning</th>
<th>Category 2 During</th>
<th>Category 3 Not satisfactory</th>
</tr>
</thead>
</table>
| 1       | * Nervous a little at the beginning  
          * I have not used Mac before | * After three or four days I felt confident to use it | |
| 2       | * Was not that confident at the beginning | * Learnt how to use the program | |
| 3       | * I was confident about my capability since the start | | * It did not change |
| 4       | | | * Could not find anything beneficial |
| 5       | * At the beginning I did not know the Ministry of Labour website  
          * Did not know how to apply and what their conditions were | | |
| 6       | * At the beginning I was afraid  
          * Was not aware of the content of the course | * After a week I learned things that I did not know about | |
| 7       | | | * The tasks were a little hard |
Table 3.42. Continued

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1 Beginning</th>
<th>Category 2 During</th>
<th>Category 3 Not satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>Did not help me</td>
</tr>
<tr>
<td>9</td>
<td>* Did not have any background on how to write letters using 'Word' * Functions in 'Word' I was not aware of</td>
<td>* After I enrolled in the vocational courses, it gave me the confidence to write letters.</td>
<td></td>
</tr>
</tbody>
</table>

Others expressed their beliefs in their capabilities to do the tasks during the course. However, others were not satisfied with the outcome of the VR course.

In the eighth question, there are five categories (see Table 3.43). It is interesting that five students had been thinking about employment. Two students were concerned about improving themselves. Two participants had specific career goals. Two participants were not sure about their future in terms of employment. The second category “Benefits” (see Table 3.36) which includes the following responses, “I benefitted a lot” and “I benefitted a lot from him in things that I was not aware of” was merged with the first category, “Trainer was capable” which are likely to be related to the trainer’s capabilities category because the students’ statements were about positive beliefs in the trainer’s capabilities as they indicated that the trainer was helpful and they learnt from him or her. The sixth category “Allowance” which includes the statements, “Ministry’s allowance is nothing” and “My father is supporting me” were placed in category one, “Job” because it is likely that the student’s responses are related to category one “Job” because student 5 was expressing his apprehensions about the job. The third category, “programming” was merged with category 4, “Business” and was called “Specific goals” because it is likely that the students were expressing their own goals in term of employment or future career. The seventh category,
“New experience” was merged with category 5, “Not sure” because student 9 indicated that there might be something new to try but did not specify what was it.

Table 3.43

Responses’ re-categorisation for Question 8: How do you see your future in terms of employment?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1 Job</th>
<th>Category 2 Improvement</th>
<th>Category 3 Specific goals</th>
<th>Category 4 Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>* Go back to my previous job or get a new one</td>
<td>* I can improve my skills</td>
<td></td>
<td>I am not sure</td>
</tr>
<tr>
<td>2</td>
<td>* Going back to my previous job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>* Thinking of becoming a programmer</td>
<td>* Work as a programmer from home</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>* To be employed</td>
<td>* Ministry’s allowance is nothing</td>
<td>* My father is supporting me</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.43. Continued

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1 Job</th>
<th>Category 2 Improvement</th>
<th>Category 3 Specific goals</th>
<th>Category 4 Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>* Job is important</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Have to find a decent job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* I am young and I can work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* It is my main living source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>* Find an appropriate job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>* Buy a bigger factory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Will expand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>* There will be more success and improvement</td>
<td>* There might be something new to try</td>
<td></td>
</tr>
</tbody>
</table>

In the ninth question, there are two categories (see Table 3.44). Most participants indicated that the trainer was capable in training them. However, two participants believed that they had not benefitted from the trainer.
Table 3.44
Responses’ re-categorisation for Question 9: How capable do you believe your trainers were in training you?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trainer was capable</td>
<td>No benefits</td>
</tr>
<tr>
<td>1</td>
<td>* Good</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* He was capable because I learnt</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>* They were good</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>* Good</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>* Explanation was great and clear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* I benefited a lot</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>* Good and cooperative</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>* I did not understand him</td>
</tr>
<tr>
<td>8</td>
<td>* Ok</td>
<td>* Not of much help for me</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* It could help others</td>
</tr>
<tr>
<td>9</td>
<td>* Knowledgeable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* I benefited a lot from him in things that I was not aware of.</td>
<td></td>
</tr>
</tbody>
</table>

In the tenth question, there are five categories (see Table 3.45). It is interesting that most participants indicated that they required more variety of VR courses. One participant believed that the government should be involved in the coordination between the students and the workplace. Another participant mentioned the effects of negative thoughts related to his new condition. One participant believed that he did not need to be enrolled in a VR course because he was an IT expert. The seventh category “Advertising courses” which includes statements for student 1 (see Table 3.37), and the fourth category “Small project” which includes statements from student 8 was merged with category two, “More courses”. This is because the statements seem to reflect the students’ beliefs in regards to what could be appropriate professions for people with physical disabilities. It is possible that the students were wishing for more variety of training options and not to be limited to a certain option or options.
Table 3.45
Responses’ re-categorisation for Question 10: Is there anything else you would like to tell me about your disability, the training course, and your current and future employment?

<table>
<thead>
<tr>
<th>Student</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
<th>Category 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Said no</td>
<td>More courses</td>
<td>Government support</td>
<td>Effects of negative thoughts</td>
<td>Does not need vocational services</td>
</tr>
</tbody>
</table>
| 1       |            | * Provide courses in advertising  
* The most convenient jobs to people with spinal cord injuries  
* Could do the work sitting at a desk using a computer only |          |          |          |
| 2       | No         |            |          |          |          |
| 3       |            | * Should do more vocational courses  
* Should not be limited to teaching computer  
* It could be speech training courses |          |          |          |
| 4       |            |            |          | * There is no need for me to enrol in a vocational course |          |
| 5       | No         |            |          |          |          |
| 6       |            |            |          | * There is supposed to be a government department to coordinate between the patient and his previous job |          |
| 7       |            | * Provide training that suits the person’s condition and interests |          |          |          |
| 8       |            | * Disabled could benefit from the projects  
* It is not all about getting a job  
* There are people who could do great in business more than getting employed  
* Could be more appropriate |          |          |          |
| 9       |            |            |          | * My injury could become an obstacle  
* After I improved myself vocationally and physically, the kind of thoughts I was having in the past should not have been had by me  
* They could have had adverse effects on me |          |
In the third round of analysis, the final categories were organised into four themes. In the following sections, the final four themes are presented.

3.11.4.2.1. Adjusting to the condition. The first theme, “Adjusting to the condition” includes 14 categories. Most participants were in the process of adjusting to their new condition. For these participants, adjusting involved thinking about how their life had changed and was changing, and how they were likely to manage in the future with their physical disabilities. For example, some students were learning how to use certain devices (such as wheelchairs) to assist mobility. Adjustment also could involve treatment that empowered them physically to improve their physical capabilities (such as physical or occupational therapy) which is about adjusting to their physical conditions. In the next category, Adjustment could also be about living life normally. Staying at home could be considered an adjustment because it could be a break in which to make some important decisions. Participants also could be considered to be adjusting when thinking about their employment or future career. Being apprehensive could be part of adjusting to a new condition. When people have injuries that could limit their physical abilities, it is likely they will start to feel apprehensive about how they will adjust to that new condition. In the next category, “Helpful” the students believed that the VR course was beneficial, which could mean that they had been active learners, and that is another kind of adjustment. Students may be considered to have adjusted to some extent to their new conditions by pursuing their goals in terms of employment. In the next category, “Trainer was capable”, it may be considered an adjustment because the participants benefitted from the trainer and were learning, which could possibly support the findings in the correlational analysis which are, “trainer self-efficacy and proxy efficacy computer, are statistically significant predictors of performance understanding”, “proxy efficacy computer predictor of VR self-efficacy job search”, and,
“proxy efficacy computer and proxy efficacy understanding predictors of VR self-efficacy computer”. In the next category, “Not sure”, although it seems to be distinguished from this theme, but keeping in mind that being unsure about a future career is natural because the person is in the process of determining what job will suit him best, which can be considered an adjustment. In the next two categories, “Beginning and During” the students experienced some changes about their own beliefs in their own capabilities, which is likely to be an adjustment to their condition, which could possibly increase their VR self-efficacy which could contribute to some extent to shaping judgment of their trainer’s capabilities and capabilities to act as a proxy on their behalf. This could support the findings in the correlational analysis, which was, “The higher the VR self-efficacy, the higher the proxy efficacy”, and also the findings in the regression analyses, which were, “VR self-efficacy job search was predictor of performance job search”, and “VR self-efficacy computer was predictor of proxy efficacy understanding”. The next category, “Effects of negative thoughts”, could again be a part of the adjustment because the student did survive these thoughts and it did not have an impact on him. The category, “Improvement”, is clearly classified as an adjustment. The last category, “No (answer to question 4)” seem to be related to the fourth theme, but was categorised under the first theme because it is possible that the students were not thinking about their careers because they were busy doing their rehabilitation program, which is an adjustment to the new condition. For others, it might be because they were employed already and did not need to think further about their own career.

3.11.4.2.2. Employment. A recurring theme that seems to exist in several categories was that the participants who had been injured relatively recently were thinking about their current or future employment, and was called, “Employment”. Keep in mind that students had enrolled in the VR voluntarily, and therefore, it is possible that they were interested in
becoming employed. Lidal et al. (2007) claimed that people with physical disabilities show interest in receiving VR services to gain a new job skill or to find a job.

3.11.4.2.3. Variety of courses. The third recurring theme that seems to exist in several categories was that the participants wanted more variety in the training options, and was called, “Variety of courses”. It is likely that some students were receptive to training, especially if there were more options. Providing a variety of VR options may offer better career options for students who believed they could perform better in their desired course or courses. It is likely that for many students, the decision to pursue VR is all about following the career path they have chosen. VR is likely to play a role in improving students’ skills, which may make them more employable, because of the VR resources that cater to building in-demand skills for a particular job. If the students have particular career plans in their minds, VR centres should help by equipping them with the necessary skills and job-specific training.

3.11.4.2.4. Was not beneficial. The fourth and final theme was called, “Was not beneficial”. This category is possibly linked to some extent to the third category because it is possible that the student did not find the course to be beneficial because of the lack of options. The students enrolled in the VR course by their own choice, and therefore, it is possible that they had certain interests in mind and could not find it in the training options. It is also possible that they were aware of the course content.
CHAPTER FOUR
SUMMERY AND DISCUSSION OF THE STUDY FINDINGS

4.1. Summary of the Results

Because of the multidimensionality of domains, the a priori hypotheses were modified accordingly. Hypotheses that were posited and used to guide the conduct of the research are presented and discussed below.

4.1.1. Hypothesis 1. trainer self-efficacy will be related positively to VR self-efficacy. This hypothesis can be restated as:

H1A. Trainer self-efficacy will be related positively to VR self-efficacy computer

H1B. Trainer self-efficacy will be related positively to VR self-efficacy job search.

RQ1. Is trainer self-efficacy related to VR self-efficacy?

4.1.1.1. H1A. Trainer self-efficacy will be related positively to VR self-efficacy computer

Hypothesis 1A was based on the argument that the more self-efficacious trainers were in training people with physical disabilities to use a computer, the more likely they applied themselves to training the students how to use a computer. Thus, the students had opportunities for successful mastery experiences when using a computer, and therefore, their VR self-efficacy computer increased.
The quantitative result demonstrated that trainer self-efficacy was a statistically significant predictor of VR self-efficacy computer. This means, in general, the more self-efficacious the trainers were in training people with physical disabilities to use a computer, the higher the VR self-efficacy computer, and vice versa. Thus, Hypothesis 1A is supported.

4.1.1.2. H1B. Trainer self-efficacy will be related positively to VR self-efficacy job search. Hypothesis 1B is not supported.

4.1.2. Hypothesis 2. Trainer self-efficacy will be related positively to proxy efficacy for the trainer. This hypothesis can now be restated as:

H2A. Trainer self-efficacy will be related positively to proxy efficacy understanding

H2B. Trainer self-efficacy will be related positively to proxy efficacy computer.

RQ 2. Is trainer self-efficacy related to proxy efficacy for the trainer?

4.1.2.1. H2A. Trainer self-efficacy will be related positively to proxy efficacy understanding. Hypothesis 2A was based on the argument that the more self-efficacious trainers were in explaining the course requirements and content, the more likely they applied themselves to making the course content and tasks understandable. And therefore, they had more mastery experiences in delivering the course content. The better the trainers’ performances, the more likely the students understood the course content and observed the trainers’ high performance, and therefore, their proxy efficacy understanding increased.

The quantitative result demonstrated that trainer self-efficacy was a statistically significant predictor of proxy efficacy understanding. This means, in general, the more self-
efficacious the trainers were in making the VR course content and tasks understandable, the higher the proxy efficacy understanding, and vice versa. Thus, Hypothesis 2A is supported.

4.1.2.2. **H2B. Trainer self-efficacy will be related positively to proxy efficacy computer.** Hypothesis 2B is not supported.

4.1.3. **Hypothesis 3. Proxy efficacy for the trainer will be related positively to VR self-efficacy.** This hypothesis can now be restated as:

H3A. Proxy efficacy computer will be related positively to VR self-efficacy job search

H3B. Proxy efficacy computer will be related positively to VR self-efficacy computer

H3C. Proxy efficacy understanding will be related positively to VR self-efficacy computer

H3D. Proxy efficacy understanding will be related positively to VR self-efficacy job search.

**RQ 3. Is proxy efficacy for the trainer related to VR self-efficacy?**

4.1.3.1. **H3A. Proxy efficacy computer will be related positively to VR self-efficacy job search.** Hypothesis 3A was based on the argument that the higher the students’ proxy efficacy computer, the more likely they applied themselves to learning how to master the tasks related to searching for a job. Thus, the students had opportunities for successful mastery experiences when searching for a job, and therefore, their VR self-efficacy job search increased.

The quantitative results show that proxy efficacy computer is a statistically significant predictor of VR self-efficacy job search. Keeping in mind that job searching skills depend mainly on using a computer, this positive relationship makes sense because both skills (using
a computer and job searching skills) support each other. This means, in general, the higher the students’ proxy efficacy computer, the higher the VR self-efficacy job search, and vice versa. Thus, Hypothesis 3A is supported.

4.1.3.2. H3B. Proxy efficacy computer will be related positively to VR self-efficacy computer. Hypothesis 3B was based on the argument that the higher the students’ proxy efficacy computer, the more likely they applied themselves to learning how to master the tasks related to using a computer. Thus, the students had opportunities for successful mastery experiences when using a computer, and therefore, their VR self-efficacy computer increased.

The quantitative results show that proxy efficacy computer is a statistically significant predictor of VR self-efficacy computer. This means, in general, the higher the students’ proxy efficacy computer, the higher the VR self-efficacy computer, and vice versa. It is not unexpected that VR self-efficacy in a particular domain would predict the same proxy efficacy in the same domain; self-efficacy beliefs are domain specific. Thus, Hypothesis 3B is supported.

4.1.3.3. H3C. Proxy efficacy understanding will be related positively to VR self-efficacy computer. Hypothesis 3C was based on the argument that the higher the students’ proxy efficacy understanding, the more likely they applied themselves to learning how to master the given tasks related to using a computer. Thus, the students had opportunities for successful mastery experiences when using a computer, and therefore, their VR self-efficacy computer increased.
Proxy efficacy understanding is a statistically significant predictor of VR self-efficacy computer. This means, in general, the higher the students’ proxy efficacy understanding, the higher the VR self-efficacy computer, and vice versa. Thus, Hypothesis 3C was supported.

4.1.3.4. **H3D. Proxy efficacy understanding will be related positively to VR self-efficacy job search.** Hypothesis 3D was based on the argument that the higher the students’ proxy efficacy understanding, the more likely they engaged actively in the course and focused their attention on how to search for a job. Thus, the students had opportunities for successful mastery experiences when searching for a job, and therefore, their VR self-efficacy job search increased.

The quantitative results show that proxy efficacy understanding is a statistically significant predictor of VR self-efficacy job search. This means, in general, the higher the students’ proxy efficacy understanding, the higher the VR self-efficacy job search, and vice versa. Thus, Hypothesis 3D is supported.

4.1.4. **Hypothesis 4. VR self-efficacy will be related positively to training performance.** This hypothesis can now be restated as:

H4A. VR self-efficacy job search will be related positively to performance job search

H4B. VR self-efficacy job search will be related positively to performance understanding

H4C. VR self-efficacy computer will be related positively to performance job search

H4D. VR self-efficacy computer will be related positively to performance understanding.

**RQ 4. Is VR self-efficacy related to VR training performance?**
4.1.4.1. **H4A. VR self-efficacy job search will be related positively to performance job search.** Hypothesis 4A was based on the argument that the more self-efficacious students generally were for job searching, the more likely they applied themselves to learning the skills necessary to search for a job. Thus, the students had opportunities for successful mastery experiences when searching for a job, and therefore, their performance job search increased.

Self-efficacy job search is a statistically significant predictor of performance job search. This means, in general, the more self-efficacious students generally were for job searching, the higher the performance job search, and vice versa. As mentioned before, it is not unexpected that a particular domain of VR self-efficacy would predict training performance in the same domain, because self-efficacy beliefs are domain specific. Thus, Hypothesis 4A is supported.

4.1.4.2. **H4B. VR self-efficacy job search will be related positively to performance understanding.** Hypothesis 4B is not supported.

4.1.4.3. **H4C. VR self-efficacy computer will be related positively to performance job search.** Hypothesis 4C is not supported.

4.1.4.4. **H4D. VR self-efficacy computer will be related positively to performance understanding.** Hypothesis 4D is not supported.

4.1.5. **Hypothesis 5. Proxy efficacy for the trainer will be related positively to training performance.**

This hypothesis can now be restated as:

H5A. Proxy efficacy computer will be related positively to performance understanding
H5B. Proxy efficacy computer will be related positively to performance job search

H5C. Proxy efficacy understanding will be related positively to performance understanding

H5D. Proxy efficacy understanding will be related positively to performance job search.

RQ 5. Is proxy efficacy for the trainer related to VR training performance?

4.1.5.1. H5A. Proxy efficacy computer will be related positively to performance understanding. Hypothesis 5A was based on the argument that the higher the students’ proxy efficacy computer, the more worthwhile they thought it would be that they applied themselves to learning how to master the given tasks that related to using a computer. Consequently, the students engaged actively in the course’s activities and they likely had more mastery experiences, and therefore, their performance understanding increased.

Proxy efficacy computer was a statistically significant predictor of performance understanding. This means, in general, the higher the students’ proxy efficacy computer, the higher the performance understanding, and vice versa. Thus, Hypothesis 5A is supported.

4.1.5.2. H5B. Proxy efficacy computer will be related positively to performance job search. Hypothesis 5B is not supported.

4.1.5.3. H5C. Proxy efficacy understanding will be related positively to performance understanding. Hypothesis 5C is not supported.

4.1.5.4. H5D. Proxy efficacy understanding will be related positively to performance job search. Hypothesis 5D is not supported.
5.1. Overview of the Study

As stated in Chapter 2, the purpose of this study was to investigate VR training performance of students with physical disabilities using an SCT framework. Furthermore, this study was designed to examine relationships between trainer self-efficacy, VR self-efficacy, proxy efficacy for the trainer, and VR training performance of students with physical disabilities. The theoretical framework and literature review were presented in Chapter 2. The results of data analyses were presented in Chapter 4.

5.2. Limitations

Although several implications for the generalisability of the results of this study were drawn, conclusions are limited by the following considerations. First, this study is limited to the context of three major cities in Saudi Arabia, namely, Riyadh, Jeddah, and Dammam. Although this study investigated the relationships between certain variables, the results cannot lead to causal conclusions. It might also be worthwhile mentioning that the findings were obtained from self-reported scales, and therefore, may be subject to response biases.

One limitation is that in the telephone interviews, all participants were males. It is important to mention that the telephone interviews were conducted by the researcher. One of the limitations is that participation in the qualitative components of the research (free responses for students and trainers on the questionnaires, and the telephone interviews for students) was limited. This study did not investigate the extent to which the four sources of self-efficacy may have influenced the students’ VR self-efficacy.
5.3. Summary of the Findings

In the following sections, the results of the study are presented with respect to the study’s framework and research hypotheses.

5.3.1. Factor analysis results

Exploratory factor analysis was applied to items representing three constructs in this study, namely, VR self-efficacy, proxy efficacy for the trainer, and training performance. The factor analytic results found that each construct was two-dimensional.

Two forms of VR self-efficacy were identified, namely, VR self-efficacy job search and VR computer. VR self-efficacy job search comprises items that appear to be related to searching for a job, and reflect students’ capabilities for searching for a job. VR self-efficacy computer was given this name because it contains items that relate to the students’ capabilities in using a computer and reflect students’ capabilities for using a computer during the VR course.

Two forms of proxy efficacy for the trainer were identified, namely, proxy efficacy computer and proxy efficacy understanding. The factor proxy efficacy computer contains items that relate to students’ beliefs in their trainer’s capabilities to train them to use a computer successfully. The second domain, proxy efficacy understanding contains items that relate to students’ beliefs of the extent of their trainers’ capabilities to help them understand the course requirements and contents.

Training performance also was found to be two-dimensional, namely, performance job search and performance understanding. The first domain, performance job search
contains items that relate to students’ performance in tasks related to searching for a job during their VR training. The second domain, performance understanding contains items related to how well students demonstrated understanding of the training content.

5.4. Discussion of the Study Findings

5.4.1. Trainer self-efficacy related to proxy efficacy understanding. The results demonstrated that trainer self-efficacy was a statistically significant predictor of proxy efficacy understanding. This means, in general, the more self-efficacious the trainers were in making the VR course content and tasks understandable, the higher the proxy efficacy understanding, and vice versa. In other words, the more self-efficacious the trainer was for training people with physical disability to understand the course requirement and content, generally the more effort they would produce to make the course as easy as possible for the students. Thus, the more receptive the students are to the training and more likely they intended to shape to some extent a confident in their trainer to make the course content understandable and simple, and vice versa. Observing these efforts by the students would likely made them form reasonable judgments of how self-efficacious their trainer are and these judgments are likely to contribute to the formation of students’ proxy efficacy for the trainer.

Students do not have direct control over the VR training course tasks and content that provides the context for their activity choices. In these conditions, students tend to seek VR trainer who have expertise, influence and who have access to resources to act at their behest to help them achieve their desired VR goals and outcomes (Bandura, 2000, 2001; Bray & Cowan, 2004; Bray, Gyurcsik, Culos-Reed, Dawson, & Martin, 2001; Priebe et al., 2012). In
in the context of VR training, students’ successful performance usually depends to some extent on their beliefs in their trainer’s capabilities to provide free time and effort to manage directly other aspects of the VR training. This means, in general, that in the field of VR for people with physical disabilities, a proxy agent is the vocational trainer. Bandura (2001b) stated “people do not live their lives in isolation. Many of the things they seek are achievable only through socially interdependent effort” (page. 13). Thus, the students cooperated with the VR trainer to achieve their VR desired goals, which they cannot achieve on their own.

Keeping in mind that self-efficacy is developed through four source of self-efficacy and mastery experiences are the most influential source (Bandura, 1986, 1997, 2001), when people with physical disabilities are enrolled in a VR training course and they have confidence in their vocational trainer’s capabilities (high proxy efficacy), their own self-efficacy for completing vocational training tasks will likely be high, and vice versa.

5.4.2. Trainer self-efficacy related to VR self-efficacy computer. The results demonstrated that trainer self-efficacy was a statistically significant predictor of VR self-efficacy computer. This means, in general, the more self-efficacious the trainers were in training people with physical disabilities to use a computer, the higher the VR self-efficacy computer, and vice versa. In other words, the more self-efficacious the trainer was for training students with physical disabilities for using a computer, the more beliefs the students were likely to have in their trainer to train them how to use a computer, and vice versa. When a trainer have high self-efficacy in training people with physical disabilities to use a computer effectively, the more likely they would invest more effort to make the computer training tasks appropriate for students’ level of knowledge and educational background. This is in turn,
would provide opportunities for students to mastery experience the given tasks, and therefore, increasing their self-efficacy beliefs for using a computer.

5.4.3. Proxy efficacy computer related to VR self-efficacy job search. The results show that proxy efficacy computer is a statistically significant predictor of VR self-efficacy job search. This means, in general, the higher the students’ beliefs in their trainer’s capabilities to train them how to use a computer, the higher their VR self-efficacy for searching for a job, and vice versa.

It is more likely that the higher the proxy efficacy the students with physical disabilities have had for their trainer to train her or him to use a computer, the more likely he or she will exert more effort in their vocational training for job searching and vice versa, because they may be expected to believe that they have a required component (capable trainer) to achieve desired results in their vocational training. It is possible that, job searching and using a computer both are important in finding a job, which is the main goal of the vocational course. It is also possible that the more self-efficacious the students were for job searching, the more likely they were to integrate their job searching skills with their skill in using a computer, hence, increasing their proxy efficacy for using a computer. SCT proposed that proxy efficacy and self-efficacy beliefs were likely to predict behavioural adaptation, which is relevant to VET-oriented training programs.

5.4.4. Proxy efficacy computer related to VR self-efficacy computer. The results show that proxy efficacy computer is a statistically significant predictor of VR self-efficacy computer. This means, in general, the higher the students’ proxy efficacy computer, the higher the VR self-efficacy computer, and vice versa. As mentioned before, it is not
unexpected that VR self-efficacy in a particular domain would predict the same proxy efficacy in the same domain; self-efficacy beliefs are domain specific.

It is likely that, the higher the proxy efficacy the students with physical disabilities have had for their trainer to train her or him how to use a computer effectively the more likely he or she will exert more effort in their vocational training for using a computer and vice versa. It makes sense that the higher students vocational self-efficacy for using a computer, in general the more likely they were to develop beliefs in their trainer to provide appropriate training and related materials to help him or her to use the computer, that is, their proxy efficacy for using a computer. It is also possible that the higher the beliefs students had in their trainer’s capabilities to train them how to use a computer effectively, the more likely students would pay attention to the trainers’ instructions when training them to use a computer. Hence, this could lead students to be more effective when executing computer tasks, which in turn might provide opportunities for mastery experiences in computer tasks, leading to VR self-efficacy computer. This means that proxy efficacy beliefs could predict self-efficacy beliefs, and vice versa.

5.4.5. Proxy efficacy understanding related to VR self-efficacy computer. Proxy efficacy understanding is a statistically significant predictor of VR self-efficacy computer. This means, in general, the higher the students’ proxy efficacy understanding, the higher the VR self-efficacy computer, and vice versa.

It is likely that, the higher the proxy efficacy the students with physical disabilities have had for their trainer to simplify the course content for him or her, the more likely he or she will exert more effort in their vocational training for using a computer and vice versa. Possibly, the higher their self-efficacy for using a computer, the more likely the students
would exert more efforts which would result to some extent in believing in their trainer capabilities to make the course content understandable.

Bray and Cowan (2004) claimed that people may exert more effort to change their behaviour if they believe they have a capable third party acting on their behalf. This means that the more students believed their trainers to be capable in making the training understandable, the more engaged they were in VR, the more opportunities there were for mastery experiences, leading to stronger beliefs in their own capabilities to execute tasks related to using a computer, that is VR self-efficacy computer, and vice versa.

5.4.6. VR self-efficacy job search related to performance job search. Self-efficacy job search is a statistically significant predictor of performance job search. This means, in general, the more self-efficacious students generally were for job searching, the higher the performance job search, and vice versa. As mentioned earlier, before, it is not unexpected that a particular domain of VR self-efficacy would predict training performance in the same domain, because self-efficacy beliefs are domain specific. However, this finding makes sense as the more self-efficacious the students were for job searching the better performance they will show in the training course for job searching skill, and vice versa. The justification may be the higher the students scored on vocational self-efficacy for job searching, the better performance in job searching they would exert in their training course because of their high vocational self-efficacy. It is more likely that, the more self-efficacious the students were for job searching the more likely they believed that they had high ability in engaging in the vocational training, chose more difficult tasks, and performed more strongly, and vice versa. Among students with physical disabilities, increased levels of vocational self-efficacy have been associated with higher attendance at VET (Barlow et al., 2002; Hergenrather et al.,
This means that self-efficacy belief is an important element, which could contribute positively in enhancing the VR training performance of people with physical disabilities.

5.4.7. **Proxy efficacy computer related to performance understanding.** Proxy efficacy computer was a statistically significant predictor of performance understanding. This means, in general, the higher the students’ proxy efficacy computer, the higher the performance understanding, and vice versa. In other words, the higher the beliefs the students have had in their trainer’s capabilities to train them use a computer, the more responsive the students are to the training, and therefore, they would likely form reasonable judgments of how self-efficacious their trainer are and these judgments are likely to contribute to understanding the course by the students, that is, training performance for understanding of the training, and vice versa. It is also possible that the higher the beliefs the students have had in their trainers’ capabilities to train them to use a computer, the better the training, and the better the students’ performances. When the students believed that they had capable trainers, it is likely they were interested in engaging in the training activities effectively, and the better they performed.

5.5. Other Findings

The quantitative results demonstrated that there were relationships between demographic variables and dependent variables.

5.5.1. **TSI and trainer self-efficacy.** A negative relationship between TSI and trainer self-efficacy was found. This means that the longer the TSI generally the lower the trainer self-efficacy. This could be because the longer the TSI the more likely students had a large amount of time in which to return to work (Hirsh, Molton, Johnson, Bombardier, & Jensen, 2009; Krause, Sternberg, Maides, & Lottes, 1998; Ottomanelli & Lind, 2009; Valtonen,
Karlsson, Alaranta, & Viikari-Juntura, 2006). Therefore, students may not have applied themselves to the VR training as readily and the trainers had fewer opportunities for mastery experiences in training students with physical disabilities, and hence, in general the trainers had lower self-efficacy for training students with physical disabilities. This may also be explained by some students being isolated from society, spending most of the time in their homes, becoming habituated to living with their injuries without establishing real goals for employment. It is also possible that by accepting pseudo jobs, that is getting a monthly payment without attending the workplace, some students may have started believing that they did not need to enrol in the VR course. For those whose injuries had occurred a considerable time before the survey, possibly the longer they had lived with SCI the more their ability to maintain their daily activities had waned because of escalation of the ill-effects of their physical disabilities (Castle, 1994; Franceschini et al., 2012; Hirsh, et al., 2009; Lidal et al., 2009; Ottomanelli & Lind, 2009). In addition, Hirsh, et al., (2009) stated “because individuals with SCI experience age-related functional declines at an increased rate, their ability to maintain gainful employment over time and as they age may be compromised” (p. 2). Trainers may have experienced a lack of successful mastery experiences training people with physical disabilities who were injured relatively a long time earlier, which influenced their self-efficacy beliefs in training these students, and hence, their self-efficacy decreased. On the other hand, the more recent the TSI, generally the higher the trainer self-efficacy. This could be because the more recent the TSI the more likely students needed VR to return to work or to school. Therefore, students may have applied themselves to VR and the trainers had opportunities for mastery experiences in training students with physical disabilities, and hence, in general the trainers had higher self-efficacy for training students with physical disabilities.
5.5.2. TSI and proxy efficacy computer. There was a negative relationship between TSI and proxy efficacy computer. This means, the shorter the TSI, the higher the proxy efficacy computer, and vice versa. This may have been because the shorter the TSI the more likely the students were unemployed and wanted to learn how to use a computer to search for a job. Thus, students may have applied themselves to VR and had opportunities to observe their trainer’s capabilities in training them how to use a computer, and hence, in general the students had higher proxy efficacy for the trainer. It is also possible that the longer the TSI the more likely students adjusted to their physical condition, and therefore, they were employed and did not need the trainer’s help. Hirsh, et al., (2009) stated, “The longer an individual has lived with an SCI (i.e., duration of injury), the more likely that person is to be employed” (p. 2). According to the thematic analysis, two students indicated that they were already knowledgeable about the training content which was related to using a computer because they were IT experts. Others were not thinking about their careers or employment because they were already employed, had a private business, or wanted to focus on their physical rehabilitation, and therefore, were not interested in learning computer skills. On the other hand, the longer the TSI the more likely they became adjusted to their physical condition, the less dependent they were on the trainers and the lower their proxy efficacy.

5.5.3. TSI and performance job search. There was a statistically significant positive relationship between TSI and performance job search. This means that in general the more recent the injury the lower the performance in job searching, and vice versa. This makes sense because the more recent the injury the less time students may have had to adjust to their disabilities, were impaired by the disabilities, and therefore, performed more poorly because they had been focusing their attention on their physical therapy, rather than searching for a job. Some may not have been interested in searching for a job because they already owned a
business or had a job. On the other hand, the longer the time since their injuries, the more adjusted they may have become to their disabilities and the more receptive they generally were to the training.

Krause & Clark, (2014) indicated that vocational interests are at the centre of vocational choice for people with physical disabilities. Rohe & Krause (1998) investigated the stability of vocational interests, development of interests, and the relationship between abilities and interests of males with physical disabilities, and found vocational interests were stable over 11 years. In this study, a sample of 117 males with physical disabilities had completed the Interest Inventory assessment 11 years earlier. The longer the TSI of people with physical disabilities the more likely there are positive employment outcomes (Ottomanelli & Lind, 2009). This is probably because the longer the TSI the more likely the students have had sufficient time to become psychologically and physically adjusted, which in turn has a positive influence on employment (Hess et al., 2000; Kent & Dorstyn, 2014; Ottomanelli & Lind, 2009). When persons with physical disabilities become employed, their adjustment is likely to improve, and vice versa (Kent & Dorstyn, 2014; Ottomanelli & Lind, 2009).

5.5.4. Gender and performance understanding. Female students generally scored higher than males on performance understanding.

Examination of the gender means shows that female students in general scored higher than males in performance understanding (see Appendix R). A study conducted by Almously et al. (2013), investigated gender and the academic performance of students in the second and third years of medical school in Saudi Arabia. They found that females generally scored higher than males in their academic performances. A study of 180 university students,
conducted by Shaaban and Ghaith (2000), investigated gender and learning motivation. The authors found that female students generally exerted more effort in their learning than male students. In this study, it is likely that female students were more motivated and willing to learn, and therefore, scored higher in performance understanding.

5.5.5. Gender and self-efficacy computer. Gender, was a statistically positive predictor of VR self-efficacy computer. Examination of the gender mean scores shows that female students generally had higher levels of VR self-efficacy computer. This is contrary to many other studies (AlJabri, 1996; Comber et al., 2006; Oshan & Khudair, 2008; Shashaani, 1993; Whitley, 1997). In Saudi Arabia females are constrained in the kind of activities in which they can engage; education is one of the activities in which they can engage without it being problematic for them.

In Saudi Arabia females are limited to certain jobs, which are mainly teaching and in the health sector, both of which require using a computer. Females who live in rural areas do not usually have a female trainer, and therefore, when they start a rehabilitation program, which usually includes VR, they benefit from learning how to improve their computer skills. Females in the study were trained by female trainers.

In Saudi Arabia, several studies (Almously et al., 2013; Javid et al., 2012) found that female students in general scored higher than males in academic performances. It is possible that female students generally were more interested in learning how to use a computer, and therefore, invested more effort in the training. Thus, female students might have had more mastery experiences related to using a computer, and hence, their VR self-efficacy computer increased.
5.5.6. Centre and performance job search. The quantitative analysis demonstrated that the variable, centre was a statistically significant predictor of performance job search. Examination of the centre means shows that students who had their VR program in some centres generally had higher performances when searching for a job. This may be because these centres provided professional VR courses and possessed expert trainers who were able to train people with physical disabilities to search for a job. It could also be because these centres were well equipped and had appropriate materials for training people with physical disabilities. It is also possible that these centres had clearer policies and procedures for training people with physical disabilities.

5.5.7. Age and proxy efficacy understanding. Age was a statistically significant positive predictor of proxy efficacy understanding. For individuals with physical disabilities, age-related negative functional changes in their physical conditions have been found to occur 15 years after the physical injury (Krause & Coker, 2006). This is because medical complications are more likely to be associated with older age and TSI (Krause & Coker, 2006; Vogel, Krajei, & Anderson, 2002). Several studies have examined functional changes for people with physical disabilities for 20 or more years after injury, and found that people with physical disabilities generally need greater physical assistance because of reduction in their abilities to perform their daily activities as they age (Krause & Coker, 2006; McColl, Charlifue, Glass, Lawson, & Savic, 2004). Another study found that physical independence, employment, and physical mobility declined with age (Weitzenkamp, Jones, Whiteneck, & Young, 2001). In a study of 403 SCI patients in Italy, Franceschini et al. (2012) found that age at the time of the injury affected negatively the physical productivity of people with physical disabilities and was consistently negatively correlated with post injury employment. Although several studies found that employment rates declined dramatically with increasing
age, (Franceschini et al., 2012; Krause et al., 1998), employment rates also varied after SCI, depending on the characteristics of the individual, particularly educational level and age (Krause et al., 1998). Krause and colleagues (1998) found that only 25% of those older than 45 years ever returned to work after SCI; when an older individual with SCI returned to work, she or he was unlikely to remain until the usual retirement age. Moreover, several studies have reported a negative association between age at injury and employment after injury (Franceschini et al., 2012; Krause et al., 1998; Weitzenkamp et al., 2001). The primary results of a study conducted by Hirsh et al., (2009), which employed a large sample of people with SCI, found that current age and age at the time of injury, were significant and unique predictors of employment. Those who were relatively old at the time of the injury were associated with lower likelihood of being employed (Hirsh et al., 2009). Many researchers have found that age at the time of the injury was significantly related to return to work after SCI (El Ghatit & Hanson, 1978; Devivo, Kartus, Rutt, Stover, & Fine, 1990; Ottomanelli & Lind, 2009). The younger the person at the time of injury the better the employment outcomes, and the older the person at the time of the injury, the poorer the employment outcomes (Krause, 1992). People who suffered their physical disabilities at an older age were less likely to return to work than those who had been injured at a younger age (Ottomanelli & Lind, 2009). Ottomanelli and Lind (2009) stated “In fact, the hope of returning to work declines with each decade lived after SCI” (p. 523). It has been found that generally when people with physical disabilities remain unemployed after injury for more than 10 years, the possibilities of returning to work decline (Krause, Kewman, Vivo, Maynard, Coker, Roach, & Ducharme, 1999; Ottomanelli & Lind, 2009). Research has found that individuals with physical disabilities experience a sharper decline in employment in their later years than able-bodied peers (Mitchell, Adkins, & Kemp, 2006). However, the higher employment rate was associated with those who were injured at a younger age (Lidal et al., 2007).
The relationship between age and proxy efficacy understanding could be explained by the fact that the older the students the more likely they understood the course content because the trainer was able to explain it in the best way possible, and therefore, the students’ proxy efficacy understanding increased.

5.5.8. Enrolment reasons and VR self-efficacy for using a computer. Two of the enrolment reasons were significant positive predictors of VR self-efficacy for using a computer. Students who were enrolled in the VR “to find a job” or “return to school”, generally had higher self-efficacy for using a computer. Students with physical disabilities who were keen to find a job or return to school were more likely to have higher VR self-efficacy for using a computer. As discussed earlier in the main findings, searching for a job depends in most cases on using a computer. Returning to school also requires the use of computers because nowadays most schools use computers as learning tools. The students who enrolled to find a job or to return to school may be expected to have invested effort in executing tasks related to using a computer, and therefore, they had opportunities for mastery experiences, thus, generally their VR self-efficacy for using a computer increased.

The main goal of VR for people with physical disabilities is to provide transitional employment experiences, in which individuals with physical disabilities are given tasks to perform while supervised by vocational counsellors (Lidal et al., 2009; Meadea et al., 2006; Ottomanelli & Lind, 2009). In other words, VR prepares individuals with physical disabilities to obtain a job in a field of their interest in order to support increase in their independence and to help them become active members in society (Meadea et al., 2006).

The services of VR include training to help people with physical disabilities to learn job skills, employment counselling, education counselling, placement in a new job, providing
support by a vocational counsellor to help them maintain employment, reducing barriers, and job search (Gobelet et al., 2007; Lidal et al., 2009; Meadea et al., 2006; Ottomanelli & Lind, 2009).

VR interests are the basis of the vocational choice for people with physical disabilities (Krause & Clark, 2014; Rohe & Athelstan, 1982). VR outcomes after SCI are related to vocational choice and to the factors that affect the decision to search for a job or go back to education/training after an injury (Krause & Clark, 2014).

5.5.9. Trainer self-efficacy and performance understanding. Trainer self-efficacy was a statistically significant positive predictor of performance understanding. Trainer self-efficacy likely predicted the training performance because, in general, the more self-efficacious the trainers were for training people with physical disabilities, the more likely they did a good job of making the course understandable, and had opportunities for mastery experiences, and thus, positively affect the students’ training performances. The trainers training and executing given tasks successfully likely increased the students’ beliefs in their own capabilities, and thus, improved performances in terms of better understanding course content. Arguably, trainer self-efficacy would likely predict the quality of the training achievements.

5.6. Implications of this Study

Four types of implication arise from the findings of this study and are discussed in the following sections, namely, implications for practice, implications for policy, implications for theory, and finally implications for future research.
5.6.1. Implications for practice. The time when people with physical disabilities are in the process of adjusting to their condition after an injury is a vital transforming period. Therefore, it is important that trainers are fully equipped with the knowledge, which enables them to be aware of the variety of modifications that can be made to the VR courses, in line with each student’s physical condition, in order to implement appropriate VR training.

The development of policies of comprehensive rehabilitation programs should focus on the VR services as an important element in helping people with physical disabilities to become independent. In order to provide effective and successful VR programs, policies and procedures have to be developed and improved. This is because, in any comprehensive rehabilitation program, VR services (such as, assessment of the pre-injury work experience and qualifications, assessment of the physical capabilities for work and/or study, VR training, job counselling, job placement, on-job follow up) are very vital elements, which could contribute to enhancing the outcome of the rehabilitation programs in general and the VR outcomes in particular.

5.6.1.1. Trainer self-efficacy and VR self-efficacy computer. Ability to use a computer effectively can be an important indicator of employability (Pell, Gillies, & Carss, 1997). Of course, computer skills alone are not a guarantee of employment for people with physical disabilities; they are necessary in most jobs. A study conducted by Pell et al. (1997) examined how computer skills influenced employment for people with physical disabilities, and found that three-quarters of the participants used computers in their jobs. People with physical disabilities can improve their own skills in using computers after their injury (Pell et al., 1997), and therefore, VR trainers should consider enhancing students’ VR self-efficacy for using a computer as a major goal, because the higher the VR self-efficacy for using a computer the more effort students likely will invest in the VR training. Hence, acquiring
relevant skills may contribute to students being employed. Trainers should consider providing opportunities for people with physical disabilities to have mastery experiences when performing tasks related to using a computer. This could be achieved by providing the most suitable training courses for their physical conditions and taking account of students’ pre-existing knowledge of how to use a computer. Training tasks should be appropriate to the students’ capabilities to help them execute these tasks successfully, which is expected to increase their VR self-efficacy for using a computer. Trainers should take into consideration students’ backgrounds in using computers, and plan the VR training accordingly. More importantly, the more the VR trainers are skilled and knowledgeable about training students with physical disabilities, the more likely they will provide clear training instructions.

VR trainers should consider their students’ qualifications and pre-injury job skills. This would allow the trainer to make appropriate modifications to the VR course in order to provide comprehensible and clear training instructions to train students how to use a computer effectively. Different qualifications mean different skills and different competencies, therefore, knowing each student’s strengths could help VR trainers to decide which approach they should use to make the VR program beneficial for each student. The better the structure of the VR program, the more likely students will have opportunities for mastery experiences related to using a computer. Trainers should be qualified, knowledgeable and skilled in training students with physical disabilities how to use a computer, which would contribute to increasing the students’ beliefs in their VR trainer to train them how to use a computer. An IT expert could attend the VR training courses and assist the VR trainers by giving them suggestions and instructions on how to make the training easier to understand.

Trainers should accommodate more than one training technique in order to master the training and have a variety of methods to deliver the computer knowledge to people with
physical disabilities. Again, IT experts could provide consultations and recommendations on how to use different techniques in order to explain the course content effectively. These techniques should be planned according to the students’ demographic information, students’ physical conditions, qualifications, and their past experience in using a computer. Planning an appropriate VR program according to the students’ capabilities will more likely provide opportunities for students to have mastery experiences.

Trainers could also invite people with physical disabilities who are skilled in using computers to attend some of the VR training sessions because they will add another source of VR self-efficacy by being models. This could also encourage students to interact more effectively in the training because they will more likely start believing that they have the same capabilities. It is important that social models are skilled and knowledgeable in using a computer, because observing someone with similar capabilities and in similar circumstances failing to perform a computer task could lead to the students having lower VR self-efficacy for using a computer.

Nowadays, computers are widely used in most occupations. It is important to train trainers to master the use of a computer. They also need to be trained on how to deliver this knowledge to students with physical disabilities by vocationally training them in order for students to gain the necessary computer skills. Ongoing IT training for trainers needs to take place as a matter of policy in VR.

When students successfully perform a task related to using a computer, trainers should assign a similar task for students to perform so they can have the opportunity to have another mastery experience. This would increase the students’ beliefs in their own capabilities in using a computer. Trainers should assign a manageable computer task for students with physical disabilities to perform at the start of the course to help the students
build VR self-efficacy for using a computer. This would prepare students to perform harder tasks rather than avoid difficult tasks.

Trainers should always verbally encourage students with physical disabilities when executing given task. When verbally encouraging students, they should keep in mind students’ capabilities and assure them they are able to execute the task successfully.

VR trainer self-efficacy for training people with physical disabilities was found to be an important element in enhancing students’ VR self-efficacy computer. Therefore, VR trainer self-efficacy for training people with physical disabilities should be enhanced when possible, mainly in the major skills aimed at in the VR course (e.g., computer training, job search training). When training trainers to use a computer, IT specialists should provide opportunities for the VR trainers to have mastery experiences related to training people with physical disabilities on how to use a computer. Trainers should repeat any task, which they successfully accomplish in order to repeat mastery experiences, which would likely increase their self-efficacy for training people with physical disabilities.

5.6.1.2. Trainer self-efficacy and proxy efficacy understanding. The more students with physical disabilities believe their trainers are capable of making the VR training understandable, the more likely the students would perform better in executing the given task. The higher the trainers’ self-efficacy for training people with physical disabilities, generally the greater the effort they will invest in the training. When trainers successfully explain the given task for students with physical disabilities, their self-efficacy for explaining the course content will likely increase. Trainers should interview students who are interested in the VR course to evaluate their physical capabilities, qualifications, skills, and experiences in order to organise the most appropriate VR programs.
Students should observe the trainer’s capabilities before the beginning of the VR program to help students build confidence in their trainer’s capabilities to make the course content understandable. Trainers could make a presentation about the content of the VR course, which would give students opportunities to observe the trainers’ capabilities. VR trainers should inform the students about their qualifications which could strengthen beliefs about the trainers’ capabilities.

**5.6.1.3. Proxy efficacy computer and VR self-efficacy job search.** Making the job search tasks understandable will likely help to provide opportunities for students to experience mastery related to searching for a job, and thus, their VR self-efficacy job search will likely increase. The better the students master the training materials the better their training performances will be, and thus, more opportunities for mastery experiences.

The results of this study emphasise the importance of VR self-efficacy for people with physical disabilities. When working with people with physical disabilities, VR trainers should make enhancement of self-efficacy beliefs a major goal of their work (Strauser, 1995). The goal of enhancing VR self-efficacy for job search can be accomplished through the experience of performance accomplishments, vicarious experiences (modelling), verbal persuasion, and physiological and affective states (Bandura, 1997; Strauser, 1995). Keeping in mind that higher VR self-efficacy likely will result in better training performance, trainers should use sources of self-efficacy in order to improve students’ VR self-efficacy.

Trainers should provide opportunities for students to observe the trainers’ capabilities in using a computer. Trainers should openly explain their own capabilities in using a computer to the students before and/or at the beginning of the VR program to help students to have confidence in their trainers’ capabilities to learn how to use a computer. Trainers could
also visit students interested in the VR program individually and perform the computer functions in a simple way for the students to observe the trainer’s capabilities.

Keeping in mind students’ capabilities when assigning the training task could provide opportunities for students to execute the task successfully, which in turn would help them to master the given task because students will judge their own capabilities based on their previous performances. As performance accomplishment is a very strong resource for the formation of VR self-efficacy beliefs, trainers should concentrate on providing opportunities for students to experience mastery related to job searching. When students perform a job searching task successfully, trainers should assign the same task for students to perform, because it will contribute to enhancing their VR self-efficacy for job search.

When students observe a variety of models achieving success in searching for a job, their VR self-efficacy for searching for a job will likely increase, because they will believe that it was not just one model who was skilled in using a computer, instead there are many people with similar capabilities able to achieved the task successfully. Trainers could utilise students who successfully accomplish job searching task by drawing other students’ attention to those successful students. By watching models executing certain tasks successfully, students tend to learn and decide what strategies could be employed or should be avoided. VR trainers could invite a model with physical disabilities who had been successful in searching for a job to talk with students and show them that it is possible for them to be successful. When using the modelling technique, it is important that people with physical disabilities observe models of the same gender (Scott & Ciani, 2008) because it might have no effect on the observer if she or he does not perceive similarity in relevant personal attributes.
In the absence of experience, verbal persuasion can be important (McCormick et al., 2006). Trainers should use verbal persuasion as a source of VR self-efficacy for searching for a job. Students’ beliefs about their own capabilities in searching for a job may be influenced by the messages delivered by the VR trainers. Students with physical disabilities who are encouraged verbally by their trainers that they have the required capabilities to master tasks related to searching for a job are more likely to produce greater effort, and therefore, they may experience mastery of job searching skills. Moreover, verbal persuasion might lead students with physical disabilities to show an initial increase in their VR self-efficacy for searching for a job, however, VR self-efficacy for searching for a job will likely decrease if failure is experienced. Thus, trainers have to be careful about the nature of the given tasks and make sure that the level of difficulty suits the student’s capabilities. On the other hand, a student with physical disabilities whose trainer says that job searching is beyond the student is likely to develop lower VR self-efficacy for searching for a job than if the message was “you can perform job searching task well”.

In general, stress and anxiety have negative effects on VR self-efficacy for job search (Strauser, 1995). Stressful and difficult situations generally affect students’ physiological status and it could have informative value relating to their personal capabilities in searching for a job (Bandura, 1977). Students with low VR self-efficacy for searching for a job may avoid difficult tasks if they believe they do not have the required capability to search for a job. Trainers should avoid assigning difficult tasks in order to avoid failure, and should assign job searching tasks systematically according to levels of difficulty. It could be very useful to start assigning easy and manageable tasks and increase the level of difficulty gradually. Verbal encouragement and guidance need to be employed in order to develop the vocational skills of people with physical disabilities to increase their VR self-efficacy. The VR trainers may consider conducting subjective appraisal from people with physical
disabilities about their VR self-efficacy at the beginning and at the end of the VR training in order to determine the effectiveness of the verbal persuasion or the verbal counselling provided to them in their VR training.

VR, physical and occupational assessments should be conducted to help people with physical disabilities to identify their own strengths. VR trainers could also plan and implement certain tasks in the VR training to enhance their job related skills, such as rehearsal of job interviews. In the rehabilitation program, VR trainers may consider working with people with physical disabilities and provide opportunities for them to experience some work related tasks. For example, the trainers could arrange volunteer jobs.

5.6.1.4. Proxy efficacy computer and VR self-efficacy computer. Trainers should visit each student who is interested in learning how to use a computer and introduce the computer skills to be taught in the VR program, which in turn will give students opportunities to observe the trainer’s capabilities in using a computer, and thus, their beliefs in their trainer’s capabilities to train them how to use a computer will increase.

When trainers plan the computer tasks, they should keep in mind students’ capabilities and their backgrounds in terms of computers in order to assign suitable tasks for students’ capabilities. This would allow students to perform the tasks successfully, which in turn would help them to master the given tasks successfully. Keeping in mind that performance accomplishment is a very strong resource for the formation of VR self-efficacy for using a computer, trainers should concentrate on providing opportunities for mastery experiences related to using a computer. When students perform a computer task successfully, trainers should assign similar tasks for students to perform, because it will give them opportunities for mastery experiences and contribute to enhancing their VR self-
efficacy for a using a computer. This is because, in general, the more mastery experiences the higher the VR self-efficacy for using a computer (Bandura, 1997).

5.6.2. Implications for policy. A formal university qualification is considered important evidence of competency as a VR trainer, and an important contributor to student achievements (Gauld & Miller, 2004; Palardy & Rumberger, 2008). In addition, generally, the more experience (as a trainer) qualified trainers have, the more effective they become, compared to those who do not have a university qualification (Gauld & Miller, 2004). A psychology component should be included in the VR degree for VR trainers to enhance understanding of the psychological status of those injured a long time ago. This would give trainers a wider scope for dealing with students with a long TSI. Thus, VR providers should develop a policy, which aims at ensuring that VR trainers are well-qualified. VR providers should direct their policy attention toward improving VR trainers by providing appropriate workshops. Moreover, VR providers should assess and evaluate VR trainers regularly and plan to diminish their weaknesses.

Universities in Saudi Arabia do not offer undergraduate degrees in VR. The Ministry of Social Affairs should provide training courses for trainers to teach them the skills required to train students with physical disabilities. The extensive training of VR trainers could be provided in an in-service mode, or during on the job training for those who have just begun the job. Extensive training of VR trainers should be introduced to meet the needs of people with physical disabilities, VR service providers, and employers. Such training should utilise the knowledge of previous studies and current policies in the domain of VR for people with physical disabilities, in order to create a policy that aims for greater evaluating, updating, revising, and developing of the training for VR trainers. The Ministry of Education should create a policy that aims at a better use of the knowledge of recent research in the field of VR.
for people with disabilities in order to develop VR curricula to be included in rehabilitation degree programs in universities in Saudi Arabia. Of course, this would take time to be implemented, however, a curriculum that teaches the main aspects of VR could be provided relatively quickly.

The Ministry of Social Affairs or the Ministry of Labor should create a policy, which aims for greater integration of people with physical disabilities in the Saudi Arabian workforce. The Ministry of Social Affairs or the Ministry of Labor should also create a policy, which aims for a better work preparation programs for people with physical disabilities in order to encourage them to become employed, and therefore, integrate them into society and provide opportunities for them to become active community members.

As discussed in Chapter 2, transportation is one of the barriers to independence in mobility that likely influences the employment of people with physical disabilities. Helping people with physical disabilities to overcome this barrier will support their employment. Thus, the Ministry of Social Affairs or the Ministry of Transportation in Saudi Arabia should create policies that aim for a greater improvement of the transportation systems for people with physical disabilities. Moreover, The Ministry of Social Affairs should create a policy that aims at more equal access to all public facilities, and a policy which aims at obliging employers to modify workplaces and equipment for people with physical disabilities.

VR could be successful and offset barriers to employment. However, in order to plan and implement successful VR courses, multidisciplinary teams should work together effectively to ensure the best VR results. The multidisciplinary team should include specialised physicians, physical therapists, occupational therapists, psychologists, VR trainers, and case managers. In addition, the Ministry of Social Affairs and all the concerned
governmental organisations in Saudi Arabia have to collaborate actively with the VR centres to ensure successful VR training for people with physical disabilities.

Not all participants in this study were interested in the content of the VR options. In Saudi Arabia, VR courses usually contain fixed curriculums or subjects, which could differ in different courses. Therefore, there should be a policy, which aims at a greater range of VR training options.

When developing a VR policy, it is important to consider recommendations and input from people with physical disabilities who have lived with their physical disabilities for a long time. In this study, students strongly indicated the need for more VR options.

Improving VR trainers’ competence and training them should be on the VR providers’ policy agenda. VR trainers contribute greatly to developing skills and competences of people with physical disabilities in order to find more suitable jobs. VR trainers may be considered important proxy agents in training people with physical disabilities. It is important that VR providers should create a policy that aims at better training for VR trainers and better qualifications to train people with physical disabilities. VR providers should create a policy of training VR trainers to strengthen their skills in training people with physical disabilities. Moreover, training VR trainers should be included in all development programs to assure the high quality of VR.

A policy should aim at organising ongoing work-based training for VR trainers by skilled trainers who are specialised in certain skills (e.g., computer skills, job search and physical abilities assessment) to help equip VR trainers with the necessary skills required to train people with physical disabilities. VR providers should create a policy, which aims at developing and encouraging VR trainers’ positive attitudes toward work based training. Ongoing training for VR trainers should become part of the VR providers’ main policy.
Proper ongoing training for VR trainers provides them with vital VR skills and updates them on the latest knowledge needed, best practices, and techniques in VR training delivery for people with physical disabilities. Moreover, proper training for VR trainers should be provided in order to train them how to plan for productive VR. VR trainers should be trained on how to define the purpose of a VR program according to the students’ choices and capabilities. They should be trained on how to assess students’ physical capabilities, the needed demographic information, education and past experience in order for them to plan, prepare and facilitate the best VR program. Trainers should also be trained on how to ensure the link between students’ capabilities, interests and qualifications and the nature of the potential job. This is because the stronger the link, the more likely it would help increase the chance for students with physical disabilities to become employed. This kind of ongoing training for VR trainers will help them to gain important training skills for delivering powerful VR training, work related skills and knowledge for people with physical disabilities. It is also important to train VR trainers to design and develop VR materials. Trainers should be skilled in implementing the most appropriate VR program which could include time management, how to distribute the content of the course for students with physical disabilities, creating a productive training environment, observing and understanding students’ needs, and choosing the most appropriate techniques for students’ capabilities and needs.

VR providers should consider enhancing trainers’ self-efficacy as an explicit goal. VR providers should make a policy, which aims at utilising self-efficacy sources when training the VR trainers, particularly in terms of using a computer. Capable trainers could contribute greatly to training people with physical disabilities on how to use a computer.
5.6.3. Implications for future research. Longitudinal research is needed to further investigate how VR self-efficacy relates to VR training performance. It is recommended that future research follows students with physical disabilities from the beginning of the VR course until the end of it, as it could provide a clearer understanding of the relationship between high VR self-efficacy and VR training performance. This study examined a limited number of variables to investigate VR self-efficacy in the context of VR training for people with physical disabilities. Future research is needed to investigate in depth the relationship between TSI and students’ training performance to better understand the role of VR self-efficacy in enhancing students’ training performances.

There might be a need for future research to identify the best time to provide people with physical disabilities with VR services during the rehabilitation program, since the efficacy of VR programs could be influenced by the timing of the injury and negative psychological emotional reactions such as anxiety.

It should be worthwhile investigating the influence of TSI on VR self-efficacy for people with physical disabilities, and on VR trainer self-efficacy. The exact nature of the relationship between TSI and VR trainer self-efficacy needs to be investigated further to find out whether it is a case of adjustment or a matter of losing interest in becoming employed.

VR self-efficacy is a relevant component to keep in mind when addressing VR development needs for people with physical disabilities. Very few studies have addressed the role of SCT in predicting performance of physical activities for people with physical disabilities (Motl et al., 2007; Motl & Snook, 2008; Peterson, Lowe, Andrew Peterson, Nothwehr, Janz, & Lobas, 2008); this study appears to be the first to investigate VR self-efficacy in the context of the performance of students with physical disabilities in their VR
activities. There is a need for further research to expand knowledge of interventions that enhance VR self-efficacy.

To our knowledge, this is the only study that has investigated VR self-efficacy, proxy efficacy for the VR trainer, VR trainer self-efficacy, and their contribution in the VR training performance of people with physical disabilities, however, there have been a few studies limited to cardiac rehabilitation settings (Priebe et al., 2012). It also appears to be the first study in Saudi Arabia that incorporated the theory of self-efficacy in the context of VR of people with physical disabilities. The nature of VR self-efficacy needs to be a focus of future research, in order to investigate, understand, and implement effective policies to improve VR outcomes among people with physical disabilities. Future research of VR self-efficacy and VR training performance for people with physical disabilities can replicate this study in another context to help understand the strengths of VR self-efficacy and its influence on the VR training performance.

Further research might be needed to investigate the part played by family expectations and their relationships with VR self-efficacy and VR training performance.

The results of this study suggest that Bandura’s SCT was valid to some extent in terms of the predictive effect of the VR self-efficacy variable in the domain of VR for people with physical disabilities. In order to develop effective VR intervention strategies of any VR provider, more investigations are required to understand the relationship between VR self-efficacy and VR performance for people with physical disabilities.

5.6.4. Implications for theory.

The results of this study suggest that Bandura’s SCT was valid to some extent in terms of the predictive effect of the VR self-efficacy variable in the domain of VR for people
with physical disabilities. VR self-efficacy could be developed to serve as a sub theory in the context of VR for people with physical disabilities, in order to enhance training performance outcome for people with physical disabilities.

This study has shown that there was evidence that proxy efficacy plays an important role in the development of self-efficacy. Thus, future and existing theories that relate to the rehabilitation of people with physical disabilities should consider incorporating proxy efficacy in order to gain a better understanding of people with physical disabilities. This study incorporated proxy efficacy into the theoretical framework, and considered VR training performance likely to be influenced by the other independent variables, namely, VR trainer self-efficacy, proxy efficacy for the trainer, and VR self-efficacy. The results of this study provided evidence that students’ beliefs in their trainers’ capabilities could predict their own beliefs in their own capabilities.

Although some studies investigated the relationship between self-efficacy and proxy efficacy (Bray et al., 2006; Bray & Cowan, 2004; Bray et al. 2001), no previous study has used this theoretical framework to conceptualise VR trainer self-efficacy, proxy efficacy, self-efficacy and their relation to the training performance in the context of people with physical disabilities.

In the context of VR for people with physical disabilities, proxy efficacy for the trainer seems to be an important phenomenon because it could contribute to increasing VR self-efficacy and in enhancing the VR performance of people with physical disabilities. VR trainer self-efficacy seems to be an important element in the training performance of people with physical disabilities.

VR trainer self-efficacy, proxy efficacy, and VR self-efficacy appear to be important elements in VR training performances of people with physical disabilities. The results and
implications of this study may add to the knowledge of rehabilitation for people with physical disabilities in general, and applying SCT in the context of VR in particular. This study may also encourage other researchers to conduct longitudinal research to study VR self-efficacy in more depth. Future research might be needed to identify other determinants of VR self-efficacy and its relation to the VR training performance of people with physical disabilities.
References


Brown, B. L. (1999). *Self-efficacy beliefs and career development. ERIC Digest No. 205.*


Measurement of self-efficacy and proxy efficacy for middle school youth physical activity. 

*Journal of Sport and Exercise Psychology, 29*, 310–332.


Fabian, E. S., & Pebdani, R. (2013). The career development of youth and young adults with disabilities. 357-386


Hen, M., & Goroshit, M. (2012). Academic procrastination, emotional intelligence, academic self-
efficacy, and GPA: A comparison between students with and without learning disabilities. 


http://www2.uwstout.edu/content/lib/thesis/2003/2003steinkopfk.pdf


Medicine (Taylor & Francis Ltd), 38, 192-200.


Appendix A

UOW Ethics Committee approvals

25 May 2012

Dr John McCormick
Faculty of Education
University of Wollongong NSW 2522

Dear Dr McCormick

I am pleased to advise that the Human Research Ethics application referred to below has been approved subject to the following conditions:

1. Regarding Question 34(b) after the research the data should be stored in the supervisor’s office.

2. Please provide an email contact for the UOW Ethics office – rso-ethics@uow.edu.au

Please forward copies of any documents requiring revision within 10 working days.

Ethics Number: HE12/215

Project Title: A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia

Researchers: Dr John McCormick, Dr Stuart Woodcock, Mr Majid Alsayyari

Reviewed Date: 24 May 2012

Approval Date: 24 May 2012

Expiry Date: 23 May 2013

The University of Wollongong/SLHD Social Sciences HREC is constituted and functions in accordance with the NHMRC National Statement on Ethical Conduct in Human Research. The HREC has reviewed the research proposal for compliance with the National Statement and approval of this project is conditional upon your continuing compliance with this document.

A condition of approval by the HREC is the submission of a progress report annually and a final report on completion of your project. The progress report template is available at http://www.uow.edu.au/research/rso/ethics/UOW009385.html. This report must be

Ethics Unit, Research Services Office
University of Wollongong NSW 2522 Australia
Telephone (02) 4221 3386 Facsimile (02) 4221 4338
Email: rso-ethics@uow.edu.au Web: www.uow.edu.au
In reply please quote: HE12/215

27 February 2014

Dr John McCormick
Faculty of Education
University of Wollongong NS 2522

Dear Dr McCormick

I am pleased to advise that the amendments submitted 4 February 2014, to the following Human Research Ethics application have been approved. The University of Wollongong/ Illawarra and Shoalhaven Local Health Network District (ISLHD) Social Science HREC is constituted and functions in accordance with the NHMRC National Statement on Ethical Conduct in Human Research.

**Ethics Number:** HE12/215

**Project Title:** A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia

**Name of Researchers:** Dr John McCormick, Dr Stuart Woodcock, Mr Majid Alsayyari

**Amendments:**
1. Additional phone interviews
2. Participant Information Sheet for Students – Version 21/2/14
3. Interview questions – Version 3/1/14
4. Poster – Version 3/1/14

**Amendment Approval Date:** 27 February 2014

**Expiry Date:** 23 May 2014

Please remember that in addition to reporting proposed changes to your research protocol the HREC requires that researchers immediately report:
- serious or unexpected adverse effects on participants
- unforeseen events that might affect continued ethical acceptability of the project.

The University of Wollongong/ ISLHD Social Sciences HREC is constituted and functions in accordance with the NHMRC National Statement on Ethical Conduct in Human Research. A condition of approval by the HREC is the submission of a progress report annually and a final report on completion of your project. The progress report template is available at [http://www.uow.edu.au/research/iso/ethics/UOW009385.html](http://www.uow.edu.au/research/iso/ethics/UOW009385.html). This report must be completed, signed by the appropriate Head of School and returned to the Research Services Office prior to the expiry date.
RENEWAL APPROVAL

In reply please quote: HE12/215
Further Enquiries Phone: 4221 3386

22 May 2013

Dr John McCormick
Faculty of Education
University of Wollongong NSW 2522

Dear Dr McCormick

I am pleased to advise that renewal of the following Human Research Ethics application has been approved. This certificate relates to the research protocol submitted in your original application and all approved amendments to date.

Ethics Number: HE12/215
Project Title: A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia
Name of Researchers: Dr John McCormick, Dr Stuart Woodcock, Mr Majid Alsayyari
Renewed From: 24 May 2013
Expiry Date: 23 May 2014

Please note that approvals are granted for a twelve month period. Further extension will be considered on receipt of a progress report prior to expiry date.

This certificate relates to the research protocol submitted in your original application and all approved amendments to date. Please remember that in addition to completing an annual report the Human Research Ethics Committee also requires that researchers immediately report:
• proposed changes to the protocol including changes to investigators involved
• serious or unexpected adverse effects on participants
• unforeseen events that might affect continued ethical acceptability of the project.

Yours sincerely

A/Professor Garry Hoban
Chair, Social Sciences
Human Research Ethics Committee

Ethics Unit, Research Services Office
University of Wollongong NSW 2522 Australia
Telephone (02) 4221 3386 Facsimile (02) 4221 4338
Email: rso-ethics@uow.edu.au Web: www.uow.edu.au
Appendix B

Consent forms of the study

CONSENT FORM FOR STUDENTS

A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia

Researcher: Majid Alsayyari

I have been given information about “A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia”. I have discussed the research project with Majid Alsayyari who is conducting this research as part of a PhD supervised by Dr. John McCormick and Dr. Stuart Woodcock in the department of Education at the University of Wollongong.

I understand that if I consent to participate in this project I will be asked to spend 10-15 minutes to complete a questionnaire that will be conducted by a third party (such as, physical therapist, psychologist or occupational therapist) during my vocational training course. I understand that my contribution will be confidential and that there will be no personal identification in the data that I agree to allow to be used in the study. I understand that there are no potential risks or burdens associated with this study.

I have agreed to participate in completing the questionnaire for the purposes of the study, which will be stripped of personal identifiers and coded by the researcher prior to any analysis. I have had an opportunity to ask Majid Alsayyari any questions I may have about the research and my participation. I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my treatment in any way and my relationship with the Department of Rehabilitation.

If I have any enquiries about the research, I can contact Majid Alsayyari (+61421727026 and Dr. John McCormick or Dr. Stuart Woodcock on +6142215038) If I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong on 4221 4457.

By signing below I am indicating my consent to participate in the research. I understand that the data collected from my participation will be used primarily for a PhD thesis, and will also be used in summary form for journal publication, and I consent for it to be used in that manner.
Signed

.................................................................

Name (please print)

.................................................................

Date

....../....../......

.................................................................
CONSENT FORM FOR TRAINERS

A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia

Researcher: Majid Alsayyari

I have been given information about “A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia”. I have discussed the research project with Majid Alsayyari who is conducting this research as part of a PhD supervised by Dr. John McCormick and Dr. Stuart Woodcock in the department of Education at the University of Wollongong.

I understand that if I consent to participate in this project I will be asked to spend 10-15 minutes to complete a questionnaire that will be conducted by a third party (such as, physical therapist, psychologist or occupational therapist) during the vocational training activities. I understand that my contribution will be confidential and that there will be no personal identification in the data that I agree to allow to be used in the study. I understand that there are no potential risks or burdens associated with this study.

I have agreed to participate in completing the questionnaire for the purposes of the study, which will be stripped of personal identifiers and coded by the researcher prior to any analysis. I have had an opportunity to ask Majid Alsayyari any questions I may have about the research and my participation. I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with the Department of Rehabilitation.

If I have any enquiries about the research, I can contact Majid Alsayyari (+61421727026 and Dr. John McCormick or Dr. Stuart Woodcock on +6142215038) If I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong on 4221 4457.

By signing below I am indicating my consent to participate in the research. I understand that the data collected from my participation will be used primarily for a PhD thesis, and will also be used in summary form for journal publication, and I consent for it to be used in that manner.

Signed

Date

.......................................................... ...............................................

......................../....../......
Name (please print)

.............................................................
PARTICIPATION INFORMATION SHEET FOR STUDENTS

TITLE: A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia

PURPOSE OF THE RESEARCH
This is an invitation to participate in a study conducted by researchers at the University of Wollongong. The purpose of the research is to investigate self-efficacy in the context of the performance of students with physical disabilities in their vocational training activities; the relationships between trainer self-efficacy, vocational self-efficacy, proxy efficacy for the trainer, and training performance of students with physical disabilities and whether levels of vocational self-efficacy and trainer self-efficacy will positively predict the vocational training performance of students with physical disabilities in the Saudi Arabian sample.

INVESTIGATORS
A/Prof John McCormick (Team Leader)  Dr Stuart Woodcock  Mr Majid Alsayyari
Faculty of Education  Faculty of Education  Faculty of Education
+6142215689  +6142215038  +61421727026
johnmcc@uow.edu.au  stuartw@uow.edu.au  maha453@uow.edu.au

METHOD AND DEMANDS ON PARTICIPANTS
If you choose to be included, you will be asked to participate in a one-day training workplace visit by Majid Alsayyari. On this visit a 15 minutes questionnaire will be conducted by a third party (such as, physical therapist, psychologist or occupational therapist) during your vocational training course. Typical items in the questionnaire include: your vocational training experience and how your trainer helps you to achieve your training goals.

POSSIBLE RISKS, INCONVENiences AND DISCOMFORTS
Apart from the 15 minutes of your time to complete the questionnaire, we can foresee no risks for you. Your involvement in the study is voluntary and you may withdraw your participation from the study at any time and withdraw any data that you have provided to that point. Refusal to participate in the study will not affect your relationship with the training workplace.

FUNDING AND BENEFITS OF THE RESEARCH
This study is funded by the Ministry of Higher Education in Saudi Arabia. This research will investigate whether levels of vocational self-efficacy and trainer self-efficacy will positively predict the vocational training performance of students with physical disabilities in the Saudi Arabian sample. Findings from the study will be used primarily for a PhD thesis, and will also be used in summary form for journal publication and a conference presentation. Confidentiality is assured, and the facility and the students will not be identified in any part of the research.
ETHICS REVIEW AND COMPLAINTS

This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UOW Ethics Officer on (02) 4221 4457.

Thank you for your interest in this study.
TITLE: A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia

PURPOSE OF THE RESEARCH
This is an invitation to participate in a study conducted by researchers at the University of Wollongong. The purpose of the research is to investigate self-efficacy in the context of the performance of students with physical disabilities in their vocational training activities; the relationships between trainer self-efficacy, vocational self-efficacy, proxy efficacy for the trainer, and training performance of students with physical disabilities and whether levels of vocational self-efficacy and trainer self-efficacy will positively predict the vocational training performance of students with physical disabilities in the Saudi Arabian sample.

INVESTIGATORS
A/Prof John McCormick (Team Leader) Dr Stuart Woodcock Mr Majid Alsayyari
Faculty of Education Faculty of Education Faculty of Education
+6142215689 +6142215038 +61421727026
johnmcc@uow.edu.au stuartw@uow.edu.au maha453@uow.edu.au

METHOD AND DEMANDS ON PARTICIPANTS
If you choose to be included, you will be asked to participate in a one-day training workplace visit by Majid Alsayyari. On this visit a 15 minutes questionnaire will be conducted by a third party (such as, physical therapist, psychologist or occupational therapist) during your vocational training course. Typical items in the questionnaire include: your experiences in the vocational training that you provide for students with physical disabilities.

POSSIBLE RISKS, INCONVENIENCES AND DISCOMFORTS
Apart from the 15 minutes of your time to complete the questionnaire, we can foresee no risks for you. Your involvement in the study is voluntary and you may withdraw your participation from the study at any time and withdraw any data that you have provided to that point. Refusal to participate in the study will not affect your relationship with the students.

FUNDING AND BENEFITS OF THE RESEARCH
This study is funded by the Ministry of Higher Education in Saudi Arabia. This research will investigate whether levels of vocational self-efficacy and trainer self-efficacy will positively predict the vocational training performance of students with physical disabilities in the Saudi Arabian sample. Findings from the study will be used primarily for a PhD thesis, and will also be used in summary form for journal publication. Confidentiality is assured, and the facility and the students will not be identified in any part of the research.

ETHICS REVIEW AND COMPLAINTS

This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UOW Ethics Officer on (02) 4221 4457.

Thank you for your interest in this study.
LETTER TO the head of the vocational training facility

Dear Principal

A number of trainers and students at your facility have been invited to participate in a research project conducted by the University of Wollongong on behalf of the Faculty of Education. The project is entitled *A Social Cognitive Investigation of Training Students with physical disabilities in Saudi Arabia.* We write to seek your approval and assistance to conduct research.

The purpose of the research is to investigate the:

- self-efficacy in the context of the performance of students with physical disabilities in their vocational training activities;
- the relationships between trainer self-efficacy, vocational self-efficacy, proxy efficacy for the trainer, and training performance of students with physical disabilities; and
- whether levels of vocational self-efficacy and trainer self-efficacy will positively predict the vocational training performance of students with physical disabilities in the Saudi Arabian sample.

Approval is sought to visit training workplace for several days. At these visits, I would like to ask the students for 5-10 minutes to complete a questionnaire, which is designed to assess the students’ beliefs in their ability to carry out vocational training activities in the future. In addition, a questionnaire will be given to the trainers, which is designed to assess their beliefs in their ability to organise an appropriate vocational training courses for students with physical disabilities.

The research is being funded by the Ministry of Higher Education in Saudi Arabia and ethics has been approved by the University of Wollongong’s Human Research Ethics Committee. Please find attached to this letter the Participant Information Sheets for the trainers and students.

The findings of this research will provide a basis for future understanding on whether levels of vocational self-efficacy and trainer self-efficacy will positively predict the vocational training performance of students with physical disabilities in the Saudi Arabian sample.

This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UOW Ethics Officer on (02) 4221 4457.
Should you require any further information please do not hesitate to contact members of the research team.

Yours sincerely

A/Prof John McCormick (Team Leader)  Dr Stuart Woodcock  Majid Alsayyari
Faculty of Education  Faculty of Education  Faculty of Education
+6142215689  +6142215038  +61421727026
johnmcc@uow.edu.au  stuartw@uow.edu.au  maha453@uow.edu.au
Appendix C

Students’ questionnaire

Information Sheet

Medical Record Number: (                      )

Age: _________

Gender:  Male □  Female □

Qualifications: ______________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Time since the injury occurred:  years (     ) months (     )

Please state your reason for enrolling in this vocational course:

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
SECTION A

The items listed below are designed to assess YOUR beliefs in YOUR CAPABILITY to carry out the vocational training activities listed below.

For example, if you have complete confidence that you can carry out the task successfully, circle 100%. If you have no confidence that you can carry out the task successfully, circle 0%. If your confidence lies somewhere in between, please circle the percentage that most closely matches your confidence.

Please answer honestly and accurately. There are no right or wrong answers.

I am confident that...

1. … I can create my own CVs.

2. … I can use the Internet as a job-searching tool.

3. … I can complete a job application online.
4. … I can fully participate in my vocational training activities/sessions.

5. … I can write in Arabic using a keyboard.

6. … I can use the basic functions of a computer.

7. … I can carry out all the activities required in the training sessions.

8. … I know the organisations that provide vocational services.

9. … I know how to apply for a private project funding.
SECTION B

Please note: The items listed below refer to \textit{YOUR TRAINER}!

For example, if you have complete confidence that \textit{YOUR TRAINER} can help you to achieve your training goals, circle 100%. If you have no confidence that \textit{YOUR TRAINER} can help you to achieve your training goals, circle 0%. If your confidence lies somewhere in between, please circle the percentage that most closely matches your confidence.

Please answer honestly and accurately. There are no right or wrong answers.

I am confident the trainer can …

10. … assist me to understand how to complete the training tasks.

\begin{tabular}{ccccccccccc}
0 & 10 & 20 & 30 & 40 & 50 & 60 & 70 & 80 & 90 & 100
\end{tabular}

11. … assist me to decide which course suits me.

\begin{tabular}{ccccccccccc}
0 & 10 & 20 & 30 & 40 & 50 & 60 & 70 & 80 & 90 & 100
\end{tabular}

12. … train me to use the Internet effectively as a job-searching tool.

\begin{tabular}{ccccccccccc}
0 & 10 & 20 & 30 & 40 & 50 & 60 & 70 & 80 & 90 & 100
\end{tabular}

13. … train me to request a job application form.

\begin{tabular}{ccccccccccc}
0 & 10 & 20 & 30 & 40 & 50 & 60 & 70 & 80 & 90 & 100
\end{tabular}

14. … train me to complete a job application online.

\begin{tabular}{ccccccccccc}
0 & 10 & 20 & 30 & 40 & 50 & 60 & 70 & 80 & 90 & 100
\end{tabular}
15. ... train me to write in Arabic using a keyboard.

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

16. ... train me to use the basic functions of a computer.

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

17. … train me to use computer programs (such as Microsoft Excel, Microsoft Word).

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

18. … train me to create my own CVs.

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

19. ... train me to prepare for a job interview.

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

20. … assist me to understand the course content.

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

Please write any comments you wish about your vocational training experience and how your trainer helps you to achieve your training goals.

__________________________________________________________________
__________________________________________________________________
Appendix D

Trainers’ questionnaire

Information Sheet

Badge Number: (    )

Email: ________________________________

Age: ________

Gender: Male ☐ Female ☐

Qualifications:

- Vocational Training Diploma: ☐
- Bachelor of Special Education: ☐
- Master: ☐
- PhD: ☐

Other (Please specify): ____________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
The items listed below are designed to assess YOUR beliefs in YOUR CAPABILITY to carry out the vocational activities listed below in training students with physical disabilities.

For example, if you have complete confidence that you can carry out a training task successfully, circle 100%. If you have no confidence that you can carry out a training task successfully, circle 0%. If your confidence lies somewhere in between, please circle the percentage that most closely matches your confidence.

Please answer honestly and accurately. There are no right or wrong answers.

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I am confident that…

1. … I can successfully train students with physical disabilities.

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2. … I can accurately evaluate the capacity of my students with regards to their employability skills.

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3. … I can accurately evaluate the capacity of my students with regards to their vocational training.

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</table>
4. … I can train my students to search for jobs using the Internet.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

5. … I can train my students to create their own CVs.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

6 … I can train my students to use the basic functions of a computer.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

7. … I can organise appropriate training courses for my students.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

8. … I can train my students to return to their previous jobs.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

9. … I can train my students to obtain new jobs with modified duties.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

10. … I can provide my students with variety of options in their vocational training courses.
11. … I can schedule vocational training sessions.

12. … I can match training courses to the needs of my students.

13. … I can assess my students’ workplaces to identify needed modifications to suit their mobility.

14. … I can provide a suitable training environment.

15. … I can choose the most appropriate materials for each training course.

16. … I can master the materials I use in training sessions.

17. … I can write my own notes in the students’ medical records and/or files.
18. … I know relevant vocational training related organisations.

19. … I can train my students how to apply for a small project funding.

20. … I can train my students in contexts similar to real work setting.

• Please write any comments you wish about your experiences in the vocational training that you provide for students with physical disabilities.
Appendix E

Students’ VR performance evaluation

Information Sheet

Date: __________________________

Student’s Medical Number: ( )

Vocational course:

____________________________________________________________________

Course commencement date: ______________________________

Course completion date: ______________________________

Evaluation date occurred: _____________________________

Evaluator’s position:

Physical therapist □

Occupational therapist □

Psychologist □

Case manager □

Other (Please specify): ____________________________________________
The items listed below are designed to measure the student's performance during his or her vocational training.

Please circle the percentage score that most closely describes how well the student performs the following vocational tasks.

**Training Performance:**

1. Create her/his own CV.

   | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

2. Use the Internet as a job-searching tool.

   | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

3. Know how to apply for a job.

   | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

4. Complete a job application online without assistance.

   | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
5. Write in Arabic using a keyboard.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

6. Use the basic functions of a computer.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

7. Contact the organisations that advertise employment opportunities for further information.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

8. Know the organisations that provide vocational services.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

9. Demonstrate his/her understanding of the training tasks.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

10. Demonstrate her/his ability to use the training equipment in this training course.
• Please circle a percentage score below that most closely describes the student’s overall performance in his/her vocational training.

Please write any comments or feedback regarding this student or how she/he performs generally in this training program.
Appendix H

Final Cronbach Alpha for trainer self-efficacy scale

**Final Cronbach Alpha**

**Appendix H. Final Cronbach Alpha for Trainer Self-Efficacy Items**

### Reliability Statistics

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
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<tbody>
<tr>
<td>.915</td>
<td>14</td>
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</table>

### Item—Total Statistics

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item—Total Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSE1</td>
<td>9.6540</td>
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<td>TSE2</td>
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<td>1.440</td>
<td>.708</td>
<td>.907</td>
</tr>
<tr>
<td>TSE3</td>
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<td>1.399</td>
<td>.677</td>
<td>.907</td>
</tr>
<tr>
<td>TSE4</td>
<td>9.6295</td>
<td>1.353</td>
<td>.686</td>
<td>.908</td>
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<tr>
<td>TSE5</td>
<td>9.5692</td>
<td>1.420</td>
<td>.692</td>
<td>.907</td>
</tr>
<tr>
<td>TSE6</td>
<td>9.5826</td>
<td>1.520</td>
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<td>.918</td>
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<tr>
<td>TSE7</td>
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<td>1.392</td>
<td>.612</td>
<td>.903</td>
</tr>
<tr>
<td>TSE8</td>
<td>9.7286</td>
<td>1.429</td>
<td>.707</td>
<td>.907</td>
</tr>
<tr>
<td>TSE9</td>
<td>9.7433</td>
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<td>.485</td>
<td>.914</td>
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<tr>
<td>TSE10</td>
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<td>TSE11</td>
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<td>.915</td>
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<td>TSE12</td>
<td>9.7165</td>
<td>1.485</td>
<td>.575</td>
<td>.911</td>
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<td>TSE15</td>
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<td>.916</td>
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<td>TSE17</td>
<td>9.5522</td>
<td>1.449</td>
<td>.718</td>
<td>.907</td>
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</table>
Appendix I

Means of training performance job search by qualifications
Appendix J

Means of VR performance job search by centres
Appendix K

Means of VR performance understanding by gender
Appendix L

Means of proxy efficacy for using a computer by centre

[Bar chart showing mean PE factor 1 for using a computer by centre]
Appendix M

Means of VR self-efficacy job search by centre
Appendix N

Means of VR self-efficacy computer by gender
### Appendix O

Students’ free responses in Arabic

<table>
<thead>
<tr>
<th>Statement 1</th>
<th>Statement 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>مدة التدريب قصيرة</td>
<td>لا يوجد خيارات أخرى</td>
</tr>
<tr>
<td>دورة سكرتارية كنت أتمنى وجودها</td>
<td>أتمنى أن يكون هناك أكثر من خيار للتدريب المهني</td>
</tr>
<tr>
<td>نريد خيارات تدريبية أخرى</td>
<td>يجب أن يكون هناك أن يعتمد احترام في الدورات</td>
</tr>
<tr>
<td>يجب أن يكون هناك أن يوجد في الدورات قصيرة الدورة</td>
<td>تنويع الدورات التي أتمنى</td>
</tr>
<tr>
<td>لقد استنفدت من مهارات البحث عن وظيفة</td>
<td>التدريب كان ممتازاً الحصول على وظيفة</td>
</tr>
<tr>
<td>المدرب ساعدني على تعلم المهارات</td>
<td>المدرب ساعدني على تعلم كيفية استخدام الأكسل</td>
</tr>
<tr>
<td>المدرب ساعدني على فهم استخدام الكمبيوتر</td>
<td>كان شرح المدرب ممتاز التدريب</td>
</tr>
<tr>
<td>لقد تعلمت الكثير</td>
<td></td>
</tr>
<tr>
<td>المدرب</td>
<td>Statement</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
</tr>
<tr>
<td>١</td>
<td>لاحظت أن معظم الشركات يستغلون اسم المعاق مقابل راتب بسيط دون عمل لأنه يساوي في نظام السعودية أربع موظفين والخطأ أن المعاق يقبل بهذا العرض لذلك اقترح على الاخصائي المهني تثقيفهم بسؤال هذا العمل</td>
</tr>
<tr>
<td>٢</td>
<td>يمكنني توفير بيئة تدريبية مناسبة واختيار مواد أكثر ملائمة لكل دورة تدريبية إذا توفرت المواد المناسبة</td>
</tr>
<tr>
<td>٣</td>
<td>أرى ضروره تكثيف الزيارات الميدانية للجهات ذات العلاقة بهبهان السكرتارية ومشاربها</td>
</tr>
<tr>
<td>٤</td>
<td>لاتتوفر الأدوات لتمكيننا من تدريب المعاقين في بيئة مشابهة لمكان العمل</td>
</tr>
</tbody>
</table>
## Appendix Q

Trainers’ Free responses in English

<table>
<thead>
<tr>
<th>Trainer</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I noticed that most of the companies are taking advantage of the name of a disabled versus simple salary without working because he equals in the system of Saudization four employees and the problem is that the disabled accept this offer. So, I suggest the vocational trainer to educate them about the negativity of such an action.</td>
</tr>
<tr>
<td>2</td>
<td>I could provide a convenient training environment and choose more suitable materials for each training course if the appropriate materials are provided.</td>
</tr>
<tr>
<td>3</td>
<td>I see the needs to intensify field visits to related secretaries training, and the like.</td>
</tr>
<tr>
<td>4</td>
<td>The tools are not available to enable us to train people with disabilities in a similar environment to the work place.</td>
</tr>
</tbody>
</table>
Appendix R

Means of VR performance understanding by gender
Appendix S

Telephone interview questions

Q1- When were you injured?

Q2- Do you have a job already?

Q3- What have you been doing since your injury?

Q4- Since your injury, have you been thinking about your employment or future career?

Q5- What skill or skills do you think would be the most helpful to you for your future career or employment?

Q6- What do you think about the vocational course?

Q7- How capable do you believe you were to do the tasks in the course, at the beginning; at the end?

Q8- How do you see your future in terms of employment?

Q9- How capable do you believe your trainer was in training you?

Q10- Is there anything else you would like to tell me about your disability, the training course, and your current and future employment?