

LEBANESE AMERICAN UNIVERSITY

Improving Students' Emotional Intelligence and Academic Achievement: The Self-Science Program

By
Zeina Salman-Nasser

A thesis
Submitted in partial fulfillment of the requirements
for the degree of Master of Arts in Education

School of Arts and Sciences
December 2013

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Thesis Approval Form

Student Name: Zeina Salman I.D. #: 200502541

Thesis Title : Improving Students' Emotional Intelligence and Academic Achievement

Program / Department: Education

School: Arts & Sciences

Approved by:

Thesis Advisor: Ketty Saroufim

Committee Member Rima Bahous

Committee Member Maria-Jose Sanchez Ruiz

Date December 18, 2013

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To the person who I am waiting to fill the earth with justice and equity as it is filled with tyranny and oppression, to my beloved Imam Mahdi...

ACKNOWLEDGMENT

I wish to express my gratitude and profound appreciation to my thesis advisor, Dr. Ketty Sarouphim for her permanent guidance and encouragement throughout the course of this thesis. Your revisions, comments, knowledge, and dedication provided my research deep insights and higher levels of proficiencies. I am fortunate to have worked with you.

I extend my gratitude to my committee members, Dr. Maria-Jose Sanchez-Ruiz and Dr. Rima Bahous for their valuable feedback and monitoring on the completion of this work. Special thanks to Dr. Maria-Jose Sanchez-Ruiz for her expertise in the field of emotional intelligence has improved the quality of my work.

I also thank Fahed Hassan for helping me in the statistical part of my thesis and Anisa Bazy for her valuable support and inspiration.

And finally to the best family in the world, no words can express the love I have for you and the love that you have engraved in me. Your affection and motivation makes the impossible possible. Thank you mummy, daddy, my husband, and siblings; without you, this work would not be possible.

Improving Students' Emotional Intelligence and Academic Achievement: The Self-Science Program

Zeina Salman-Nasser

Abstract

The purpose of this study was to examine the efficacy of the Self-Science program in improving the emotional intelligence and academic achievement of upper elementary students. The study was implemented in grades 4, 5, and 6 in one private school with a sample size of 39 elementary students. The students' age ranged between 8 -12 years. Self-Science was the program adopted to determine whether emotional intelligence and academic achievement could be improved. The participants' emotional intelligence was assessed using the Six Seconds Emotional Intelligence Assessment Youth Version (SEI-YV), and the students' school grades served as achievement data. An exploratory pretest/posttest design was adopted to evaluate the effectiveness of the Self-Science program in improving the students' emotional intelligence and their academic achievement. Results showed that the Self-Science program did not lead to significant changes in the students' emotional intelligence ($F=1.38$, $p=.24$) or in their academic achievement ($t=.72$, $p=.48$). Moreover, no significant correlation was found between emotional intelligence and academic achievement. Further research on whether emotional intelligence could be enhanced should be conducted on larger samples and for a longer duration.

Keywords: Emotional Intelligence, Academic Achievement, Self-Science, Six
Seconds Emotional Intelligence Assessment Youth Version (SEI-YV), Elementary
Students.

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Chapter One

Introduction

1.1 Context of the problem

Emotional intelligence is a topic that was given much attention in the last two decades. Goleman (1995) defined emotional intelligence as the ability to express and manage feelings efficiently, therefore allowing individuals to combine efforts to achieve their mutual objectives. Emotional intelligence is essential for understanding oneself, attaining self awareness and self motivation and for understanding the emotions of others and showing empathy; thus improving one's ability to handle relationships (Goleman, 1995).

The issue of whether emotional intelligence could be improved has been debated. According to the existing body of research, implementing programs can enhance emotional intelligence. On the other hand, many researchers criticized the theory of emotional intelligence and the likelihood of its development (Matthews, Roberts, and Zeidner, 2004). One program developed to improve emotional intelligence is the Self-Science program. This program is composed of 18 lessons that incorporate emotional intelligence within the school curriculum. The core objective of the Self- Science program is to allow children to enhance their thinking processes, improve the way they express their feelings, and promote their decision making processes (Freedman, 2003). In this study, the emphasis is on exploring whether the Self-Science program could improve the emotional intelligence and academic achievement of elementary students at a private school in Lebanon.

1.2 Sample

The study was implemented in grades 4, 5, and 6 in one private elementary school located in Beirut. The total number of students in the sample was 39 boys and girls divided according to the following grades: 15 students in Grade 4, 10 students in Grade 5, and 14 students in Grade 6.

1.3 Instrument

The instrument used to assess the participants' emotional intelligence was the Six Seconds Emotional Intelligence Assessment Youth Version (SEI-YV). It is a self-report measure used with individuals whose ages range between 7 and 18 years and is composed of 99 items (See Appendix A). The SEI-YV was used in this study as a pre/post test to determine change in the emotional intelligence scores of students

1.4 Design

To evaluate the effectiveness of the Self-Science program in improving emotional intelligence and academic achievement, an exploratory pretest/posttest design was employed. The Self-Science program was implemented for a period of 6 months. Students' emotional intelligence scores as well as their school grades from before and after the implementation of the program were collected and analyzed to determine differences. Moreover, interviews were conducted with teachers and the school principal, and assessment for students' perceptions of the effectiveness of the Self-Science program was also inspected.

1.5 Purpose of the study

The purpose of this study is to examine the efficacy of the Self-Science program in improving the emotional intelligence and academic achievement of upper elementary students. The questions addressed are: Does the application of the Self-Science program increase the emotional intelligence of upper elementary students? Does the development of emotional intelligence affect the academic achievement of the students?

1.6 Rationale and Significance

According to Vandervoort (2006), integrating emotional intelligence programs within high school education results in social, individual, and societal gains. An increase in emotional intelligence and a decrease in emotional and behavioral problems were detected in primary and secondary school that incorporated emotional intelligence programs in their curriculum. Moreover, research has shown that the integration of those programs in the curriculum raised students' scores on standardized achievement tests (Vandervoort, 2006).

Bahman and Maffini (2008) stipulated that children's emotional skills are interconnected with their academic achievement. In early childhood, students' academic development seems to be linked to their social skills. Thus, teachers and counselors have the task of recognizing the power of emotions and their effect on students' lives. Moreover, it is vital to understand that children's emotional development is enhanced when they show interest in making friends and engaging in social events (Bahman & Maffini, 2008). Similarly, Goleman (1995) argued that emotional learning is enhanced when children are exposed to recurring experiences

because repetition allows the brain to analyze the situation and use emotional intelligence at times of distress.

Along the same lines, Bar-On (2006) suggested that the importance of emotional intelligence is manifested in people's ability to manage stress, resolve individual and social difficulties, preserve optimism, and keep healthy. Moreover, emotional intelligence has positive effects on the performance of individuals at school and in the workplace. Bar-on (2006) argued that applying the Emotional-Social Intelligence (ESI) model that has for aim to encourage self-understanding and coping with others has helped university students to increase their GPA and school students to improve their performance. Also, the application of ESI in business companies has served as a significant predictor of professional performance as well.

Self-Science is another model that has for aim to improve emotional intelligence. In his book *"Emotional Intelligence: Why it can matter more than IQ?"*, Goleman (1995) described Self-Science as a pioneer curriculum that has widely spread across schools. Goleman agreed with Karen Stone McCown, the developer of the Self- Science curriculum, that "learning doesn't take place in isolation from kids' feelings; being emotionally literate is as important for learning as instruction in math and reading" (p. 301). Furthermore, Goleman (1995) stipulated that the content of the Self-Science program hits the core of the recommended elements that should be available in any emotional intelligence program. Self-Science helps students to resolve disagreements, express feelings, and empathize with others rather than avoid a conflict or respond aggressively (Goleman, 1995).

In the *Oxford Handbook of Positive Psychology* (2009), Salovey, Mayer, Caruso, and HeeYoo described the Self-Science program as a well-known program that focuses on teaching emotions within the school curriculum. It is a program that aims to help students express their feelings and ideas, identify their priorities, and think in a way that benefits the community.

The current study has for aim to investigate the effectiveness of the Self-Science curriculum in developing the emotional intelligence of elementary students in Lebanon. Another purpose is to examine the effects of this curriculum on students' academic achievement. The study is unique in that it is the first of its kind in the country. The results will shed light on an important topic that affects children's emotional development and their academic achievement. If found effective, Self-Science could be a promising tool to be used in schools across Lebanon.

1.7 Operational Definitions of Variables

1.7.1 Academic achievement:

In this study, academic achievement is defined as students' total average in all subject matters. Students' current average for the academic year 2012-2013, the year the Self-Science program was implemented was compared to their average of last year, before students' exposure to the Self-Science program. To corroborate the achievement data, the teachers of participants were interviewed using open-ended questions.

1.7.2 Emotional intelligence:

The definition adopted in this study follows Salovey and Mayer's (1990) definition of emotional intelligence. Emotional intelligence was measured by the Six

Seconds Emotional Intelligence Assessment Youth version (SEI-YV). The instrument developed by McCown (1967) is part of the Self-Science kit and was administered to all students before and after implementation of the program.

1.8 Ethical Considerations

Throughout this study, rigorous ethical standards were followed. At first, the school principal received a copy of the procedures to be implemented during the school year. Students signed consent forms to ensure their approval to participate in the study. The school informed parents and secured their permission for their children's participation. Confidentiality was assured, thus the names of the school and students was not mentioned or published.

1.9 Limitation of the study

Three main limitations characterize this study. The first limitation was that the data collection was limited to one school with a small number of students. Therefore, the results of this study cannot be generalized to the population of elementary school students in Lebanon.

The second limitation is that the topic of emotional intelligence is relatively new, thus the literature on studies similar to the current one is scarce especially studies conducted in Lebanon. In fact, research on emotional intelligence was mostly conducted in the work place with an adult population and studies carried out at schools were mostly conducted using samples of high school students. Moreover, the research found on the self-science program was limited.

The third limitation is that the emotional intelligence assessment tool (SEI-YV) is a self-report instrument that was completed by elementary students. Students

at this age might not be fully aware of their emotional experiences or may not be honest in answering the questions. Thus, in future research, other designs should be used with children, such as naturalistic observations for more solid conclusions.

CHAPTER TWO

Literature Review

2.1 Introduction

In this chapter, a comprehensive review of literature is presented. A brief description on the development of the theory of emotional intelligence is provided. In addition, the two constructs of emotional intelligence are discussed. The review also provides information on the research conducted on emotional intelligence, its measuring tools, and the effect of emotional intelligence on academic achievement. Moreover, the Self-Science program is thoroughly explained to provide a clear understanding of the program adopted. Finally, a critique of the Self-Science program and the emotional intelligence theory is presented.

2.2 Theories of Emotional Intelligence

In order to understand the term “emotional intelligence”, it is vital to comprehend the underlying meanings of emotions and intelligence. Emotions could be explained as feelings that are automatically produced when emotional–cognitive processes intermingle with the recognition or perception of a stimulus to trigger adapted mental procedures (Izard, 2007). On the other hand, intelligence is defined as the individual’s ability to use his/her own experiences to solve current problems and foresee the future ones (Goddard, 1945). Intelligence in this context is related to mental activities that a person processes and uses to prosper in everyday life. The concept of intelligence has expanded to include new concepts, such as general

intelligence, social intelligence, multiple intelligences, emotional intelligence, and others. In this study, the focus is on emotional intelligence.

Throughout history, philosophers have debated the power that logic and emotions have on people's life. Ancient Greeks considered logic superior to emotions since individuals could agree more on reasonable arguments than on expressing feelings (Mayer, Roberts, & Barsade, 2008). On the other hand, the European sentimentalists of the eighteenth-century believed that emotions could be more factual and genuine than reason (as cited in Reddy, 2001). With the progress of education and psychology, and the emergence of new theories in these fields, more emphasis was placed on the study of intelligence.

The first kind of intelligence investigated was by Spearman (1904) who coined the term academic intelligence (Behesthtifar & Roasaei, 2012). In 1920, Thorndike proposed the study of social intelligence that he defined as the aptitude to recognize and manage males and females to act cleverly in human relationships (Behesthtifar & Roasaei, 2012). In 1983, Gardner developed the theory of multiple intelligences, in which he identified seven abilities: linguistic, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal intelligences (Gardner, 1983).

Emotional intelligence could be traced back to the early 1990's when it was defined as a form of intelligence that required the individual to recognize emotions and interpret them to direct one's actions (Salovey & Mayer, 1990). However, Ahammed, Abdullah, and Hassane (2011) argued that the term emotional intelligence was not widely spread until Daniel Goleman published his best-seller book "Emotional Intelligence: Why it can matter more than IQ?" in 1995. In the section below, various definitions of emotional intelligence are presented.

Salovey and Mayer (1990) defined emotional intelligence “as the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and action” (p. 189). The aim of developing emotional intelligence is to permit the individual to use the emotions of oneself and others to resolve problems and adjust behavior. To meet the above goal, three mental processes are involved: the ability to evaluate and express emotions in oneself and others, the ability to adjust emotions in oneself and others, and the ability to use the emotions in a flexible way (Salovey & Mayer, 1990). In the first mental process, emotionally intelligent people are described as those who can identify, express, and respond to their own emotions, as well as recognize and emphasize the emotions of others. In the second mental process, emotionally intelligent individuals are those who are able to regulate their mood states to meet their personal goals and enhance the living of others. The last ability involves the usage of flexible planning, creative thinking, directing attention to the issues that matter most, and mobilizing positive emotions.

In 1997, Mayer and Salovey proposed the four branch model in which emotional intelligence is divided into four major abilities: perceiving, utilizing, understanding, and managing emotions. Perceiving emotions is the starting point in understanding emotions and is described as the capability to precisely identify emotions of others through their faces or voices. An example would be a person who can identify the emotional state of the other through examining his/her facial expressions. The second branch is about utilizing emotions, which is the ability to use emotions to facilitate the thinking processes. For instance, cognitive scientists have pinpointed that emotions prioritize thinking. As a result, the more proficient a person is in using his/her emotions, the better he/she can direct thinking toward

things that matters the most. Understanding emotions involves comprehending the information that comes along with the emotional messages. A person who possesses this trait will understand, for example, that an angry individual might send harmful messages; thus he/she will know in advance the action that will be associated with that particular feeling. Finally, managing emotions is about regulating and directing one's and others' emotions according to his/her comfort zone to endorse personal and societal growth.

Daniel Goleman (1995) adapted the definition of Salovey and Mayer and generated a new explanation of emotional intelligence. In his book "Working with Emotional Intelligence", Daniel Goleman (1998) identified the five competencies of emotional Intelligence divided into personal and social competencies. For Goleman, the personal competencies help the individual to manage himself/herself and the social competencies aid one to manage relationships. The personal competencies are self-awareness, self-regulation, and motivation. The social competencies involve empathy and social skills.

Personal competencies that include self-awareness, self-regulation, and motivation are explained as follows. Self-awareness involves the ability to recognize the internal state of oneself, thereby identifying its strength and bounds, and achieving a sense of self-confidence. Self-regulation comprises the skill of controlling the upsetting emotions of oneself, preserving the values of honesty, taking responsibility of one's actions, adapting to new changes, and feeling comfortable with new innovations. Motivation is expressed in terms of struggling to achieve one's goal, committing to the goals addressed, willingness to take chances and persisting to overcome hindrances. As for the social competencies, they focus on understanding others, the way they feel, and on showing care and tolerance. It

includes empathy and social skills. Empathy is exhibited through understanding the feelings and opinions of others, recognizing their needs and reinforcing their abilities, as well as anticipating and making use of opportunities to help others in meeting their goals. Finally, social skills refer to the individual's ability to correctly read social cues, interact smoothly with others, and use his/her skills to resolve arguments and cherish relationships.

Furthermore, Goleman (1995) argued that the need for emotional intelligence is derived from the fact that human emotions are extremely critical in reaching decisions and determining actions. In fact, emotions are impulses to act. Goleman (1995) explained that the origin of the word emotion in Latin is *motere*, which means "to move"; thus emphasizing that the propensity to act is inherent in every emotion. He added that each emotion has a different effect on the body. For instance, when someone is angry, blood drifts to the hands, thereby stimulating him\her to hold a weapon or any other tool; the heart rate rises and adrenaline boosts action to occur. On the other hand, when a person is in love or is sexually satisfied, the body will be in a state of calmness and relaxation.

Goleman (1995) believed that the human mind is divided into two components, the rational mind responsible for thinking, and the emotional mind responsible for feelings. What individuals do in life is arbitrated by both minds; the brain as well as emotions matter equally. In addition, Goleman (1995) discussed that integrating the study of emotional intelligence as part of the school curriculum might prevent many future academic, behavioral, and emotional problems in students.

In 1997, Bar-On elaborated on the preceding research and defined emotional intelligence as the display of non-cognitive abilities, proficiencies, and skills that impact one's aptitude to flourish in managing environmental strains and pressures.

This definition tackles interpersonal and intrapersonal skills, such as empathy, individuality, responsibility toward society, and self-awareness. In addition, it focuses on the importance of gaining adaptability skills that include problem solving as well as stress management skills, such as enduring stress to achieve happiness. Bar-on (2006) believed that acquisition of the following 5 domains is what makes an emotionally intelligent person: the ability to understand oneself, the ability to express the feelings and thoughts of oneself, understanding others, relating and communicating with others, and managing everyday problems and pressures that the individual usually encounters.

In sum, emotional intelligence can be understood as the ability to identify, understand, and assess the emotions of oneself and others to achieve one's objectives and promote societal growth.

2.3 Constructs of Emotional Intelligence

Research on emotional intelligence (commonly known as EI) has distinguished between two major constructs: ability EI and trait EI. Both constructs imply that cognitive abilities are not the only interpreter of a prosperous adaptation and that emotional dispositions must be taken in consideration. However, researchers vary distinctly in their opinion on the conceptualization of emotional dispositions and their measuring tool (Mikolajczak, Luminet, Leroy & Roy, 2007).

2.3.1 Trait Emotional Intelligence

Trait models focus on the emotion-related dispositions and self-knowledge, measured by self-reports (Petrides, Furnham, & Mavroveli, 2007). Nelis, Quiodbach, Mikolajczak, and Hansenne (2009) explained emotion-related dispositions as the individual's tendency to behave in a particular way at certain

emotional circumstances. Trait EI focuses on the understanding of people's self-perceptions of their own emotional abilities, thus trait EI fits within the realm of personality (Sanchez-Ruiz, Hernandez-Torrano, Perez-Gonzalez, Batey & Petrides, 2011). Another appellation for trait model is emotional self-efficacy. The notion of self-efficacy was first discussed by Bandura (1982) who defined it as one's self-judgment ability to execute a task in a particular field. Bandura (1982) stipulated that having high self-efficacy in one field does not necessarily entail having high efficacy in another. Trait models emphasize overt action rather than internal states. An example is a person who can distract himself/herself from a situation that makes him/her angry, but chooses not to do so except if asked by someone (Nelis et al., 2009). Moreover, trait EI is concerned with the individual's ability to know, understand, and use emotional information (Petrides, Frederickson, & Furnham, 2004)

Trait EI grants a comprehensive operationalization that identifies the intrinsic bias of emotional experience (Petrides, 2011). Sanchez-Ruiz et al. (2011) explained how trait EI covers the affective features of the personality, such as well-being, self-control, emotionality and sociability, components not related to human cognitive ability. In fact, Petrides, Pita, and Kokkinaki (2007) conducted a study to investigate how trait EI is related to Eysenckian and the Big Five factor space theory. The results showed that trait EI is located at the lower levels of personality hierarchies, thus trait EI factor is oblique, but not isolated from the Giant Three and the Big Five.

Finally, in examining the measuring tool that is used to measure trait EI, Emotional Intelligence Questionnaire known as TEIQue is commonly used by researchers and is composed of 153 items that cover 15 emotion-related facets and 4 factors (Petrides, 2009).

2.3.2 Ability Emotional Intelligence

Ability EI was first introduced by Mayer and Salovey in 1990 who defined the term as the ability to monitor and differentiate emotions to direct one's thoughts and action. In 1997, an elaboration of the term occurred in the four branch model theory where trait EI was defined as the ability to perceive, utilize, understand, and manage emotions. Each of these abilities progress from childhood onward and the development of one ability leads to the development of the other (Mayer et al., 2008).

Ability EI is understood as the person's capability to reason about emotions and to develop emotional data in favor of improving cognitive practices (Brackett & Salovey, 2006). Ability EI is also known as cognitive – emotional ability and mainly focuses on studying emotion - related cognitive abilities. Nelis et al. (2009) suggested that ability models emphasize the skill to apply emotional information in emotional conditions and implement the correct approach. The emphasis here is on internal states rather than on overt action. An example is a person who is angry and knows that distracting himself/herself will help in lessening anger but that person is unable to act. Moreover, ability EI is concerned with the individual's actual ability to know, understand, and use the emotional information (Petrides et al., 2004).

Ability EI fits within the realm of cognitive ability and is measured through maximum-performance tests; that is, the test responses are either correct or incorrect (Petrides, 2011). The most used ability EI measuring tool is MSCEIT (Mayer, Salovey, & Caruso, & Sitarenios, 2003). It is intended to compute the four branches of the EI model and consists of 141 items that measure emotion-related cognitive ability. The Table below, which is a reproduction of Mayer, Salovey, & Caruso, and Sitarenios (2003), clarifies the differences between the two constructs.

2.4 Research on Emotional intelligence

Can emotional intelligence be developed in individuals? The research on emotional intelligence shows that adopting a program that aims to increase emotional intelligence can result in boosting it. In the section below, research on enhancing emotional intelligence is presented.

A study conducted by Nelis et al. (2009) used a controlled design to investigate the effects of teaching emotional intelligence to young adults. The results revealed that students who received the emotional intelligence training scored significantly higher on trait emotional intelligence than those who did not follow the training. Those who did were able to improve their skills in emotional identification and management. An interesting finding is that the benefits extended over six months. That is, the effects of the program were not only manifested on the short term, but continued to be revealed on the long term.

Another study conducted by Joyner and Mann (2011) aimed to develop emotional intelligence skills among MBA students. The purpose of the study was to investigate whether adopting a specific program could lead to significant changes in the students' emotional intelligence. The program integrated the content related to the topic of emotional intelligence to all courses in the MBA program. The aim was integrating emotional intelligence in the three years of the MBA program rather than teaching it in one single course. The study revealed major enhancement in the emotional and social functioning of the participants. Fifteen characteristics were studied to determine the effectiveness of the program on emotional intelligence, such as assertiveness, emotional self-awareness, empathy, social responsibility, stress tolerance, flexibility, problem-solving, happiness and others. The results were a significant development in all competencies except for three that didn't change.

These were self-regard, self-actualization and independence. The researchers concluded that the improvement of the EI skills has positively affected academic success.

| Construct | Definition | Measurement | Area of focus | Major measuring tool |
|------------|---|---------------------|-------------------|----------------------|
| Trait EI | Emotion-related dispositions and self-perceptions | Self-reports | Personality | TEIQue |
| Ability EI | Emotion-related cognitive abilities | Maximum performance | Cognitive ability | MSCEIT |

Figure 1: EI major constructs

In another study with a similar purpose, Zijlmans, Embregts, Gerits, Bosman, & Derksen (2011) explored whether adopting an EQ training program can develop the emotional intelligence of the staff who work with individuals with intellectual disabilities (ID) and challenging behavior. The problem addressed was that people with ID and challenging behavior typically exhibit emotional responses, such as fear, rage, anxiety and irritation which lead to a situation where the staff themselves feel threatened, thus unable to respond effectively. Two groups were involved in this study: the control group and the experimental group. The intervention program that was implemented on the experimental group was based on the Bar-On model. Each of the staff selected one individual who responded in an aggressive manner to him/her. Next the staff members received training to understand the Bar-On model, Bar-On EQ-i (the measuring tool is used to measure emotional intelligence in Bar-On theory), and the significance of the scores. Assignments were given where the

staff members were asked to solve fabricated problems to elucidate the role of emotional intelligence in teams' communication; feedback on staff's EQ-i profile was also provided. Finally, each staff member was asked to generate two precise goals that aim to enhance personal growth and the needs of the client they had chosen. Video feedback was given to the members by the professionals during the course of the intervention that lasted for a period of 4 months. The results showed that the changes in emotional intelligence in the experimental group were significantly higher in comparison with those in the control group, supporting the belief that training could enhance the EQ of staff members who work with difficult clients. The training program increased awareness of the role of emotional intelligence in affecting one's behavior and actions toward self and others.

Along the same lines, in an attempt to improve young children social and emotional competence, Domitrovich, Cortes, and Greenberg (2007) adopted the PATHS curriculum in twenty classrooms where they trained teachers to apply PATHS lessons and activities over a period of 9 month. PATHS stands for Promoting Alternative Thinking Strategies curriculum. The goal of the program is to enhance students' ability in four areas: emotional awareness, inhibitory control, concentration, and problem solving. Pretest and posttest were administered before and after the program implementation to assess children's social and emotional competence. A multi-method assessment approach was used that included home visit, questionnaires, and family demographics. The results showed that the implementation of the PATHS curriculum resulted in a progress in children's emotional awareness, self regulation, and social communication. In comparison to the control group, intervention children improved in the emotional knowledge or emotional awareness domains and their receptive emotion vocabularies increased as

well. Furthermore, they were significantly less likely to misrecognize emotional expressions in comparison to the control group who received no teaching. No significant changes were found in the following domains: inhibitory control, concentration, and problem solving.

Adult emotional intelligence has also been the focus of research. Nelis et al. (2011) examined the possibility of enhancing adults' emotional competencies (EC) throughout the implementation of a short training program. A controlled design was executed to determine whether an 18 hour coaching program could lead to long term progress in emotional competencies. The intervention program involved 3 groups of participants. Two groups received the intervention on the course of 3 sessions (6 hours each) and one group received the intervention on the course of 6 sessions (3 hours each). Each session aimed to improve a precise emotional competency such as recognizing and comprehending the emotion of oneself and that of others or encouraging oneself to be optimistic. Instruction, role playing, group arguments and conversations were employed in the content; in addition each participant was given a diary to note an emotional experience he/she has had encountered throughout the day during the training program. The sessions were followed by emails to remind participants how to integrate the emotional knowledge and competencies in their daily lives. Results revealed that the experiential group displayed significant progress in comprehending emotions, adjusting emotions, and in the general emotional skills. The positive outcome remained constant over a period of 6-month.

Another study on adult emotional intelligence examined the effects of a program designed to enhance emotional intelligence in a short period of time (Reuben, Sapienza, & Zingales, 2009). The program was given as a university course and focused on teaching Mayer and Salovey four-branch model of emotional

intelligence. The sample consisted of 321 MBA students. Students' emotional intelligence was measured before and after the course using the MSCEIT (measuring tool from Mayer and Salovey model). The results showed that emotional intelligence increased after the implementation of the program. Further research by Schutte and Malouff (2002) examined the effectiveness of integrating a content that focuses on emotional skills in a university transition course on students' retention. Students received information about the topic of emotional intelligence and were trained to use the skills associated with the topic. The results showed that students who followed the intervention program scored significantly higher on trait emotional intelligence compared to those who received no intervention. Moreover, the retention rate for the group who received the emotional intelligence training was 98%, whereas that of the control group was 87%.

In conclusion, research on emotional intelligence seems to indicate that emotional intelligence can be modified through implementing programs that have for aim to develop students' self-awareness and wellbeing. Through the development of oneself, individuals learn to understand their inner selves and to respond to others in a positive manner. If the application of programs that enhance the development of emotional intelligence could yield positive consequences on the personal and social levels, it would be beneficial to start adopting these programs at schools in Lebanon where a great need exists for developing well-adjusted individuals who will lead the country to peace and stability.

2.5 Emotional intelligence Measuring Tools

Measuring emotional intelligence depends on the definition adopted by the researcher. Conte (2005) reviewed the four main measures used to assess emotional

intelligence. The first is Emotional Competence Inventory (ECI) used to assess the emotional skills and positive social behaviors (Boyatzis, Goleman, & Rhee, 2000). The inventory includes 110 items and measures 20 skills divided into four categories: self-awareness, social awareness, managing oneself, and social skills.

The second measuring tool is the Bar-On Emotional Quotient Inventory (EQ-i). This instrument consists of 133 self-test items used with people 17 years and older (Bar-On, 2006). It covers five major scales: intrapersonal, interpersonal, managing stress, adaptability, and general mood. The intrapersonal scale assesses self-regard, awareness of the emotions of oneself, confidence, independence, and fulfilling the needs of the individual. The Interpersonal scale comprises empathy, societal accountability, and personal relationships. The managing stress scale includes stress acceptance and impulse control. Adaptability deals with reality-testing, adjustability, and problem solving; while the general mood scale consists of optimism and happiness. The test takes about 40 minutes to complete and the scores are computer generated.

The third and fourth measuring tools are the Multifactor Emotional Intelligence Scale (MEIS) and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Conte, 2005). The latter is an updated and improved version of the former. The MSCEIT includes four branches, each measured through two tools (Mayer, Salavoy, & Caruso, 2004). The first branch is about how emotions are perceived and is measured through faces and pictures. The second branch is about utilizing emotions to enhance thoughts and is measured through sensations (associate emotions to tangible stimuli) and facilitation (recognize the emotion that best fits with a particular thought). The third branch involves understanding emotions and is measured through changes (emotions change according to circumstances) and blends

(recognize the emotions that are tangled in complex situations). Finally, the last branch deals with managing emotions and is measured through theoretical situations in which individuals are asked how these situations would change their feelings (emotion management) and emotional relationships (managing others' feelings).

2.6 Effect of Emotional Intelligence on Academic Achievement

As the popularity of the topic of emotional intelligence kept increasing, further research was conducted to examine its efficiency in various aspects. In this section, the focus is the effect of emotional intelligence on academic achievement.

Ogundokun and Adeyemo (2010) examined the relationship between emotional intelligence and academic achievement in a sample of secondary students. The results showed that emotional intelligence is strongly and positively correlated with academic achievement. The researchers argued that such results were not surprising given that the skills emotional intelligence subsumes, such as problem solving, interpersonal and intrapersonal abilities are highly associated with academic success. For example, a student who has the ability to regulate his/her feelings can manage stress or fear during an exam, thus increasing his/her chances for success or a student with interpersonal skills will not hesitate to ask the teacher or a peer for help.

In another similar study, Maroveli and Sanchez-Ruiz (2010) investigated the relationship between trait emotional intelligence and academic achievement on one hand and school behavior on the other. The sample consisted of 565 children whose ages ranged between 7 to 12 years. Students were asked to complete the Trait Emotional Intelligence Questionnaire-Child Form (TEIQue-CF), the Guess Who peer assessment, the Peer Victimization scale, and the Bullying behavioral scale. TEIQue-

CF included 75 short statements that tackle issues related to adaptability, emotional perception and regulations, self-esteem and five others related variables. The Guess Who peer assessment involves asking students to nominate classmates who possess particular behavioral descriptions. Peer Victimization scale and the Bullying behavioral scale are self-reports used to describe verbal and physical action the victim of bullying encountered. The results revealed that trait EI scores were associated with progress in math performance in younger children. The positive results were more evident in pupils who were 3 years old. Older students did not show improvements in academic performance. However, trait EI was positively related to peer-rated prosocial behavior (being kind), and negatively related to peer-rated antisocial behavior (being a bully, and being bullied).

In another study with a similar purpose, Nasir & Masrur (2010) used the EQ-I model to measure the EI of university students in Pakistan and correlate it with their academic records. The results revealed a strong relationship between emotional intelligence and academic success. Regression analysis showed that emotional intelligence was a major predictor of academic progress. This study has validated the findings of Goleman (1995) who speculated that high levels of EI were better than high levels of IQ for success at school, work, and relationships.

A dissertation written by Vela (2003) at the University of Texas A & M Kingsville aimed to examine the relationship between emotional intelligence and academic achievement in first year college students. A total of 760 students participated in the study. Emotional intelligence was measured through self reports and academic achievement was assessed through students' grade point average for the first semester. The results revealed that emotional intelligence was significantly associated with academic achievement and could predict students' performance. The

particular skill in emotional intelligence that contributed to academic success is the ability to accomplish goals and enjoy the personal contentment that comes with it; or what is called “drive strength”. Moreover, self management abilities were extensively correlated with academic accomplishment.

Brackett and Katulak (2006) tracked the results of implementing a program called ELMS (Emotional Literacy in Middle School) that aimed to increase students’ emotional literacy, such as their ability to find words to express their feelings and expand their feeling words. The results showed that students who followed the intervention displayed better study skills and work habits, and achieved higher grades in reading and writing compared to the control group.

In another study, an attempt to determine the efficiency of the social and emotional programs (SEL) was done by Durlak, Weissberg, Dymnicki, Taylor and Schellinger (2011). The researchers gathered the results of a meta-analysis of 213 schools who adopted the SEL programs for 270,034 students. About 56% of the intervention programs were taught to elementary students while the other intervention programs took place in middle and high schools. Results revealed that the implementations of the programs resulted in improvement in students self perception and outlook toward school and others. Moreover, the program also decreased behavioral problems, improved students’ adjustment, and enhanced academic performance, as evidenced by their higher scores on achievement tests. In fact, the academic achievement of the experimental group increased by 11 points percentile in comparison to the control group.

At last it’s important to note that the academic achievement of the student is influenced by his/her school environment. Durlak et al. (2011) noted that schools that care about teacher-student relationships, encourage cooperative learning, foster

student well-being, and provide a safe learning environment are more likely to attain better school performance and accomplish individual and societal growth.

2.7 Self- Science

In the current study, Self-Science is the program adopted to determine whether emotional intelligence and academic achievement could be improved through self-awareness. The Self- Science program, designed by Six Seconds: The Emotional Intelligence Network, aims to teach students how to make decisions, share ideas, and solve problems through promoting emotional intelligence (Kearney, 2011). The Self- Science program teaches students to develop their thinking processes, express their feelings, and maintain a state of balance between thoughts and feelings. As a consequence, students will improve their skills in decisions making (Freedman, 2003).

In her dissertation “The relationship between emotional intelligence and academic achievement in elementary schoolchildren”, Fatum (2008) used the Six Seconds “Self-Science program” in an attempt to improve students’ emotional intelligence. The program is divided into three major levels: Know Yourself, Choose Yourself, and Give Yourself. The Know Yourself level comprises the growth of emotional literacy. The children come to realize how their way of thinking and feeling affects them and others. Choose Yourself comprises the progression of the emotional literacy skills. At this level, children learn to gain trust, work together, and start developing consequential thinking. The final level, Give Yourself, emphasizes the development of empathy, which entails learning to recognize the feelings of others and caring for them.

The study included 75 fifth-grade students at two suburban elementary schools in the San Francisco Bay and followed the mixed-methods research design. One school is traditional while the other is alternative. The school members and students' parents at both schools were trained by the Six Seconds Organization on the topic of emotional intelligence. Moreover, emotional intelligence programs and the SEL programs were taught for years in both schools and were integrated in the school curriculum starting from kindergarten till grade 5. Academic achievement was measured by the Californian Standardized Testing and Reporting program (STAR) in both schools where it assessed students' scores in Mathematics, English-Language Arts, and Science. Self science was implemented in the alternative school while an EI-SEL program that teaches EI competencies especially the skills of leadership and citizenship was integrated in the traditional school curriculum. In the alternative school, the teacher chose the time that best suited her/him to teach the Self-Science program and trained students to use emotional intelligence formally and informally while in the traditional school, the teacher taught the competencies of EI within the regular classes. The SEI-YV was administered in both schools to measure emotional intelligence.

Results revealed a positive weak significant relationship between "Life Satisfaction" and academic achievement and "Personal Achievement" and academic achievement in English-Language Arts in the alternative school where the Self-Science program was implemented. Integrating emotional intelligence in the alternative school curriculum resulted in intrinsically motivating students to utilize the EI skills which in turn affected the school environment and community positively. Students in the traditional school were motivated extrinsically to utilize the EI skills which positively affected the school environment but not the

community. Students who scored high on the SEI-YV were able to apply the competencies in their daily lives, coach others on how to apply it, discuss and reflect on their emotions. Students who scored low on the SEI-YV acquired the basic skills of utilizing emotional intelligence, but they had more difficulties in applying it compared to the students with high scores on EI. In addition, the program benefited students with high and low EI to succeed academically and socially inside and outside the school environment.

In an attempt to determine the impact of the self science program implemented at the Nueva School for gifted children, Jensen (2003) interviewed teachers, parents, and students for their feedback on the Self-Science program. A total of 70% of the students believed that the self science program was the most beneficial program they ever followed. It taught them to identify their strengths and weaknesses, feel with others and strive for success, become aware of their responsibilities, and weigh the advantages and disadvantages of their choices. Parents reported that their children's social and emotional abilities increased. Moreover, their friendship skills were enhanced and they learned more about responsibility and integrity. In fact, one of the mothers reported that the self science program has saved her child's life who was diagnosed as depressed and suicidal. The Self Science program helped that child intellectually and emotionally to connect with others and engage in positive thinking. Many teachers reported that Self Science created a new culture that encouraged taking responsibility, rejecting unsuitable behavior, thinking of consequences, and adopting a positive way of thinking in life.

In another study, the results were similar and showed that 100% of the teachers benefited from the Self-Science program in increasing classroom relations

and teamwork. Also, 77-85% of the teachers reported that the program decreased the undesirable verbal messages among students (Freedman, 2003).

Research on the effectiveness of Self-Science was not limited to the field of education. In a study conducted by Fiedeldey-Van Dijk and Freedman (2007), the researchers investigated the effects of adopting the Six Seconds model in the business field. The model holds a group of values and principles that could be applied in different environments with similar results. The sample included 3,305 workers who filled the Six Seconds Emotional Intelligence questionnaire; among those were students, professionals, employees, managers, entrepreneurs, and executives. The SEI includes scores on three complex areas: Know Yourself, Choose Yourself, and Give Yourself. Each area consists of competencies. Know Yourself includes Enhancing Emotional Literacy and Recognizing Patterns; Choose Yourself consists of Applying Consequential Thinking, Navigating Emotions, Engaging Intrinsic Motivation, and Increasing Optimism; Give Yourself comprised of Increasing Empathy, and Committing to Noble Goals.

The study aimed to assess the level of emotional intelligence among workers from different ranks. It is hypothesized that as the rank of the workers increase, their EQ competencies are better employed to achieve success. Results showed that workers in each level of employment exhibited particular kinds of competencies. For instance, low-level employees showed strength in increasing Empathy, Intrinsic Motivation, and increasing Optimism whereas executives showed strength in Applying Consequential Thinking, Enhancing Emotional Literacy, and Pursing Noble Goals. Furthermore, the highest EQ scores were found among managers, entrepreneurs, and particularly executives. The SEI measuring tool was found to be a

beneficial instrument for measuring a range of abilities and skills needed in the business field.

2.7.1 Criticism of Self-Science

Marrero (2007) adopted an integral approach developed by Esbjorn-Hargens (2007) to evaluate the effectiveness of four school educational models; among these educational models was the Self-Science program. An integral approach is one that could be implemented in the real world, is practical, and covers various aspects in the field of education and affective domains (Marrero, 2007). The integral model of Esbjorn-Hargens focused on four educational areas (Esbjorn-Hargens, 2007). To evaluate the educational models, Marrero (2007) used the four educational areas of Esbjorn-Hargens and added 10 affective domains from the integral toolbox. Each of the educational areas contained three subareas and were listed as follows: educational experiences (contemplative inquiry, critical reflection, experiential knowing), educational behavior (skillful action, practical application, empirical observation), educational culture (ethical participation, perspective embrace, connective encounters), and educational systems (global dynamism, social sustainability, ecological flourishing). The affective domains included myths and stories, explicit principals, proverbs, affirmations, personal and social application, service in community, environment, injunctive calls to social conformity, inquiry, emotional fluency, and a teacher who is a learner.

Marreoro (2007) used a four-point scale to evaluate the program: 1 representing “worthy to notice”, 2 “evidently presentable”, and 3 as “strongly developed”. No rating was given to areas that were not presented. Self-Science received a rate of 3 in the following areas: experiential knowing, empirical

observations, explicit principals, inquiry, emotional fluency, and a teacher who is a learner. A rate of 2 in the following: practical applications, critical reflections, personal and social applications, and all the educational cultural subareas. A rate of 1 was given to contemplative inquiry, skillful action, and the six remaining factors in the affective domain and no rating was given to the educational systems subareas. Marrero (2007) concluded that the self science program is strong in cognitive abilities and emotional fluency noting that the program's emotional fluency consists of essential modules, such as its ability to encourage empathy and optimism, adjust behavior, recognize feelings, support social interaction, motivate oneself, and thrive to achieve noble goals. Furthermore, Marrero (2007) argued that Self- Science belongs to a philosophy that is comprehensible, mature, and practical. The model stipulates that one can achieve more progress as he/she understands him/herself more. Finally, Marrero (2007) indicated that the program could be strengthened by paying more attention to the educational systems area.

2.7.2 Criticism of the Emotional Intelligence theory

Although the topic of emotional intelligence has gained more popularity, various criticisms were voiced about the emotional intelligence theory. Waterhouse (2006) found that the theory of emotional intelligence includes diverse problems in its empirical evidence. While Goleman (1995) stressed the importance of linking emotional intelligence to its scientific basis, Waterhouse (2006) argued that there are not enough experiential proofs that validate the emotional intelligence theory, thus questioning its approval in the scientific community. In fact, Zeidner, Matthews, and Roberts (2004) found that much of the evidence employed to uphold the emotional intelligence theory was built on subjective observations and self reports surveys.

Matthews, Zeidner, and Roberts (2002) deduced from the existing research that there has not been yet a unifying theory on emotional intelligence in the different domains, such as the role of the brain and the conceptualization of the personality traits. Matthews, Roberts, and Zeidner (2004) also criticized the contradictory definitions of emotional intelligence and their effect on the theory's internal coherence. For instance, Mayor and Salovey (1990) perceived emotional intelligence as the ability to reason about emotions, while Goleman (1995) focused on character; Bar-on on the other hand (1997) referred to emotional intelligence as non-cognitive abilities.

Moreover, Waterhouse (2006) disputed that the elements that constitute emotional intelligence intermingle with the elements that constitute both IQ and personality, thus making it difficult to distinguish EI from the two other elements. Along these lines, Schulte, Ree, and Carretta (2004) conducted a study to explore the relationship of emotional intelligence to general intelligence g and the Big Five personality dimensions; which are: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Results showed that a significant positive correlation exists between emotional intelligence factors, general intelligence g and the five personality factors. The correlation between the measures of g and EI was $r=0.454$ and the correlation between scores on general intelligence and agreeableness was $r=0.81$. Moreover, a regression model analyzing the relationship between g , the Big Five domains of Agreeableness, and sex yielded an index of $r= 0.617$. As such, Schulte et al. (2004) questioned the individuality of emotional intelligence as a model and argued that the theory didn't provide new insights into human behavior.

Furthermore, Matthews et al. (2004) questioned whether levels of emotional intelligence accurately predict success in the workplace and the educational settings.

In fact, research conducted to determine the relationship between EI and job success was based on unoriginal arguments, unreliable descriptions, and was not published in peer-reviewed literature (as cited in Barrett et al. 2001). Even the academic books that were published to describe the role of EI in determining job success were based on house research. On the other hand, Goleman (1998) insisted that EI accounts for 80% of life success. However, Waterhouse (2006) argued that the above claim has to be substantiated by research that shows a positive correlation between the statistics derived from valid assessment of life success and those that measure EI.

With respect to the educational settings, Matthews et al. (2004) acknowledged the advantageous aspect of implementing emotional intelligence programs, but believed that these programs had little significant effects on one's progress. Moreover, the researchers criticized many emotional intelligent programs for lacking focus on emotional features and discarding major methodological aspects, such as valid assessment tools and high internal validity.

Finally, MacCann, Matthews, Zeidner, and Roberts (2003) discussed the validity and reliability of the measuring tools used to assess emotional intelligence, depending on the particular construct. If emotional intelligence is viewed as ability, the major problems are in the validation of a truthful scoring scheme, the unclear identification of the competence that ought to be measured, and the lack of predictive validity. If emotional intelligence is viewed as dispositions measured by self reports, the main problem is that the test would be measuring personality traits rather than abilities. Thus, assessing emotional intelligence poses problems that need to be solved before sounding a call for the use of these instruments.

2.8 Conclusion

In sum, research on emotional intelligence seems to indicate that the construct is difficult to measure. However, recent instruments, such as SEI-YV seem promising as studies on its validity and reliability have yielded positive results (Fatum, 2008). Moreover, research on whether emotional intelligence could be improved has yielded positive results as well. For example, implementing the Self-Science program has led to an increase in the EI scores of Life Satisfaction and Personal Achievement (Fatum, 2008). In Lebanon, research on emotional intelligence is scarce. Thus, the current study shed light on an important topic that needs further explanation, especially in school setting.

CHAPTER THREE

Method

3.1 Introduction

The current study examines the efficacy of the Self-Science program in improving the emotional intelligence and academic achievement of upper elementary students. This chapter describes the research design used to verify the efficiency of the Self-Science program, the sample, the instruments utilized to collect data, and finally the procedures applied to collect the data.

3.2 Research Design

The design of this study is an exploratory pretest/posttest, non-randomized evaluation of the effectiveness of the Self-Science program in improving the emotional intelligence and academic achievement of upper elementary classes.

3.3 Participants

The study was implemented in grades 4, 5, and 6 in one private elementary school located in Beirut. No attempt at sampling was made as the entire student body was included in the study.

The students' age ranged between 8 -12 years. As seen in table 1, the minimum age was 8 and the maximum age was 12. Grade 4 included 15 students, grade 5 consisted of 10 students, and grade 6 comprised 14 students. As a result, the total number of students who were involved in the study was 39. Table 2 shows the percentage of students that were presented in each class. The percentage of Grade 4

students was 38.46%, and the percentage of Grade 5 students was 25.64% and the percentage of Grade 6 students was 35.90%. This indicates that in this study the number of students were approximately the same in the three grades. The students of that particular school belong to middle socio-economic status, as evidenced by their place of residence and the school’s location.

Table 1: Age distribution of participants

| | | |
|---------|---------|-------|
| N | Valid | 39.00 |
| | Missing | .00 |
| Minimum | | 8.00 |
| Maximum | | 12.00 |

Table 2: Students’ grade level distribution

| Grade | Frequency | Percent |
|-------|-----------|---------|
| Forth | 15.00 | 38.46 |
| Fifth | 10.00 | 25.64 |
| Sixth | 14.00 | 35.90 |
| Total | 39.00 | 100.00 |

3.4 Instruments

3.4.1 Emotional Intelligence

The instrument used to assess the participants’ emotional intelligence was the SEI-YV (see Appendix A). It is a self-report measure used with individuals whose age ranges between 7 to 18 years. The SEI-YV yields scores on the three complex measures of EI, eight competencies and five scores for each of the Barometers of Health. The instrument also yields one score called “Total EQ” that summarizes the scores of the three complex measure and eight competencies, and another score called “Overall” that summarizes the scores of the five Barometers of Health (see diagram below).

The three complex measures are Know Yourself, Choose Yourself, and Give Yourself. The eight competencies are Enhancing Emotional Literacy, Recognizing Patterns, Applying Consequential Thinking, Navigating Emotions, Engaging Intrinsic Motivation, Increasing Optimism, Increasing Empathy, and Committing to Noble Goals. As for the Five Barometers, they are Good Health, Relationship Quality, Life Satisfaction, Personal Achievement, and Self-Efficacy.

The first complex measure, Know Yourself, is about self- knowledge. Enhancing Emotional Literacy starts with constructing emotional vocabulary. Students recognize and classify their emotions, name them, and begin to comprehend their origin and consequences. Recognizing Patterns involves the ability to utilize patterns of behavior that help individuals meet their needs. Students act in specific ways to get what they want, and over time this action becomes habitual. The aim of Recognizing Patterns will be to breakdown the habitual actions that result in negative outcomes and strengthen those that result in positive effects.

The second complex measure, Choose Yourself, is about managing emotions. Applying Consequential Thinking aid students to assess their own thoughts and feelings, as well as allow their actions and intentions to work together in a harmonious mindful approach. Navigating Emotions entails using both the brain and one's emotions to make the best possible decision. The power to use one's inner strength, make decisions, and take actions is known as Engaging Intrinsic Motivation. Exercising Optimism is helping students recognize their ability to create positive change in their lives and environment; it is expecting the good in their everyday lives and future.

The third complex measure, Give Yourself, is about extending oneself to others. Increasing Empathy is recognizing and replying suitably to the emotions of

others. This competence consists of two modules: cognitive empathy which is recognizing others’ emotions at the brain level and emotional empathy, which is at the heart level. Finally, Pursuing Noble Goals helps students discover that they can influence the world and be the change.

| Know Yourself (Items 1-18) | Choose Yourself (Items 19-52) | Give Yourself (Items 53-68) | Barometers of Health |
|---|---|---|-----------------------------|
| Enhancing Emotional Literacy (Items 1-11) | Applying Consequential Thinking (Items 19-26) | Increasing Empathy (Items 53-61) | Good Health |
| Recognizing Patterns (Items 12-18) | Navigating Emotions (Items 27-35) | Committing to Noble Goals (Items 62-68) | Relationship Quality |
| | Engaging Intrinsic Motivation (Items 36 -44) | | Life Satisfaction |
| | Increasing Optimism (Items 45-52) | | Personal Achievement |
| | | | Self-Efficacy |

Figure 2: SEI-YV measuring tool

The Five Barometers of Health include the following: (1) Good Health entails eating healthy food, being active and feeling fit; (2) Relationship Quality indicates the feelings a person has toward friends, the way he/she communicates, and the feeling of trustworthiness; (3) Life Satisfaction is linked to the level of satisfaction in one’s self and others; (4) Personal Achievement is associated with sports, hobbies, and volunteer activities; and finally (5) Self-Efficacy is the belief in one’s ability to take the correct actions to solve problems.

The SEI-YV is composed of 99 items (see Appendix A). The first 74 items assess the 8 competencies and the three domains (Know Yourself, Choose Yourself, and Give Yourself). The last 25 items assess the five Barometers of Health.

The items are constructed using a 5-point Likert-type scale (1= almost never, 2 = seldom, 3 = sometimes, 4= often, and 5=almost always). Thus, each student received one score on each of the following measures: the three complex measures of EI, eight competencies, the five Barometers of Health, “Total EQ” and “Overall”.

3.4.2 Interviews

Interviews were conducted with the school principal (see Appendix B) and three teachers to investigate their views on the efficiency of the Self-Science program. Three teachers taught Arabic, English, and Physical Education (P.E) in Grades 4, 5 and 6 (See Appendix C).

In addition, following the implementation of the Self-Science program, the researcher assessed students’ experiences with all the sample participants to examine their perceptions of the effectiveness of the program (See Appendix D).

3.4.3 Achievement Data

Before the implementation of the program, students’ overall average from their previous academic year was collected and considered pre-test data. The students’ overall average after the implementation of the program was again collected and considered post-test data. A t-test was conducted to determine whether the differences in the students’ averages were significant.

3.5 The Self Science Program

In the current study, Self-Science is the program adopted to determine whether emotional intelligence and academic achievement could be improved. Self-Science was developed by Karen Stone-McCown in 1967 in consultation with many

experts in the field; among those were Abraham Maslow, Anna Freud, and Eric Erikson. The basic assumption that the program follows is based on one simple premise: the more aware one is of his/her experiences, the more he/she could attain self-knowledge. Consequently, the person is better equipped to respond to oneself and others (2000-2001 Self-Science Pilot: Preliminary Reports). The need to develop the Self-Science program stemmed from the observation that teachers, administrators, and those responsible in the school setting were mostly focusing on the overt actions of children while ignoring the reasons underlying those undesirable actions. An example of a student snapping her pencil in anger as she tries to write an essay shows that this student does not know how to write an essay; not that she wants to cause disturbance. Teaching self-science helps teachers and adults to better understand students' emotional responses and aid students themselves to cleverly understand and apply emotional cues (McCown, Jensen, Freedman, & Rideout, 2010).

In fact, the Self-Science Curriculum was first developed by Stone McCown in 1967 at La Nueva School in California for gifted children. McCown's intention was to create new meanings to the notion of education to comprise the social-emotional realm that is now known as the Social and Emotional Learning (SEL). McCown's aim was to investigate what would occur if the emotional growth of children and a supportive school community were given equal importance to intellectual development.

The Six Seconds network offers the Self- Science program and the emotional intelligence assessment youth version (SEI-YV) as a means to integrate emotional intelligence within the school curriculum. Self- Science program is named self-

science because the study of emotional intelligence develops from examining oneself and relationships with others.

The goal of the Self- Science program is to enhance the children's thinking processes, the way they express their feelings, and their decision making processes (Freedman, 2003). As a result, freedom of choice is achieved through a program based on emotional literacy, emotional optimism, and management. The program relies on the essence of "capacity development" that focuses on understanding the hindrances that prevent children from meeting their goals. A typical Self-Science class is one that encourages individual and group work, discusses the implementation of activities, and helps students to apply the program in their everyday life. When students realize that their thinking, feelings, and actions are interrelated, they will be able to make better decisions (Freedman, 2003).

The features of Self-Science are based on experiential learning, humanistic style, and student-centeredness (Freedman, 2003). The experiential learning provides the learner with an opportunity to engage in authentic experiences to discover meanings beyond content and build knowledgeable and motivated individuals who are interested in captivating their beliefs and skills (Marlow & McLain, 2011). The humanistic style is an open system that has for aim self-understanding and emotional comfort while focusing on the individual's growth and holistic goals (Morris & Krajewski, 2001). Finally, the student-centered approach views the students as experts and the teachers as facilitators (Tebabal & Kahssay, 2011).

The Self-Science program consists of 18 lessons (McCown et al., 2010). The first nine lessons aim to familiarize students with key concepts, attract their attention to the topic, and strengthen their ability to work as a cohesive group. The next eight lessons aim to teach the eight competencies and the final lesson's objective is to

summarize all previous learning. The lessons and the objective of each are summarized in the table below.

| Lesson | Objectives |
|--|--|
| 1. Past, Present, Future | Identify events in students past, present, future and choose a symbol that represents each of the above events. |
| 2. Name Me, Name Me, 1, 2, 3 | Introduce the term inventory and create an inventory of feelings. |
| 3. Take Inventory of Your Feelings | Create a self inventory that consist students' feelings. |
| 4. The Alien Experiment | Introduce the word imagination and expand feelings' vocabularies. |
| 5. Build Your Own Classroom Experiment | Understand the terms "pattern" and "agreement". |
| 6. Experiments | Apply the scientific process (predict, observe, analyze, present) in preparing a recipe and examining students feelings in the activity. |
| 7. One for All and All for One | Understand the term "consequences" and create a list of consequences for breaking rules in the class activity. |
| 8. Now What? | Understand the term "costs and benefits" and write a letter of apology. |
| 9. Killer Statement/ Watch Your Words | Understand the term "killer statement" and "respect", and communicate in a respectful manner. |
| 10. Feelings Dance | Introduce the first competency "Enhance Emotional Literacy", and express and communicate feelings. |
| 11. The Volunteering Experiment | Introduce the second competency "Recognize Patterns", identify one's patterns, and helping others to identify their patterns. |
| 12. Patterns for Sale | Introduce the third competency "Apply Consequential Thinking", identify one pattern for each student and its positive and negative outcomes, and apply consequential thinking to improve decision making. |
| 13. Acting on Emotions | Introduce the fourth competency "Navigate Emotions", identify emotions and actions that are accompanied with specific situations, and selecting better actions that produces positive feelings to deal with those situations. |
| 14. Success Symbol | Introduce the fifth competency "Increase Intrinsic Motivation", and identify feelings that motivate students to work hard and behave well. |
| 15. Frogs and Toads Talk | Introduce the sixth competency "Exercise Optimism", understand the difference between optimism and pessimism, analyze situations when they felt optimistic and pessimistic, and write an inventory of feelings associated with each. |
| 16. Fear in a Hat | Introduce the seventh competency "Increase |

| | |
|-------------------------------------|---|
| | Empathy”, understand the term, and show more empathy to the feelings of others. |
| 17. Wish For Me, Wish for the World | Introduce the eighth competency “Pursue Noble Goals”, identify one’s role model, and develop a noble goal vision. |
| 18. Life Barometers | Identify the 5 life barometers and one barometer students’ would like to improve, increase awareness toward skills of emotional intelligence, and identify next steps for students’ growth. |

Figure 3: Self-Science Lessons

3.6 Procedure

In August 2012, the researcher received training on how to apply the Self-Science program and its measuring tool (SEI-YV). The training was an intensive 3-day period. On the first day of the training, participants were introduced to the concept of emotional intelligence and the Six Seconds Model (the complex measures and competencies). The second day was “hands on” and had for objective to teach the participants to apply the Self- Science lessons. Five lessons from the Self science program were discussed on that day; two were delivered by the instructors and three were delivered by the participants who were divided in to 3 groups. The final day of training was designated to train participants in the use of the measuring tool (SEI-YV). Further Skype meetings followed the training to ensure that the participants completed successfully all the program’s requirements.

Following the training, implementation of the Self-Science program was executed in different phases. At the beginning of October, the researcher started implementing the first phase of the study. She explained to the students of grades 4, 5 and 6 the program and its goals. Next, the researcher took the students to the computer lab to fill the SEI-YV questionnaire that was considered pretest data. Every student worked on a separate computer to fill the electronic version of the questionnaire. The researcher turned on the computer and prepared the questionnaire

before the students' arrival so that everything would be ready for them. As students arrived, they were asked to enter the name of the school, their grade level, and the date. Then, the researcher read the instructions and urged students to answer honestly assuring them that their responses will be kept anonymous and in confidence. Next, the researcher read the questions out loud, notifying the students that they may choose to follow along or work at their own pace. Furthermore, the researcher was ready to clarify any word or question at the request of the participants.

The second phase occurred in mid October where the implementation of the 18 lessons of the Self-Science program started and lasted five months. The researcher taught one lesson per week and the final lesson took place on March 12, 2013.

The final phase started on March 20; students returned to the computer lab and completed the same SEI-YV questionnaire they were administered in October. The data collected were posttest measures. Two days later, a small party was held to celebrate the completion of all the Self-Science lessons. Teachers' and principal interviews; in addition to assessing students experiences were conducted on that same day.

3.7 Validity and Reliability of the Instrument

According to Fatum (2008), the internal consistency of the SEI-YV is an extensively used indicator of psychometric reliability calculated using the Cronbach's coefficient alpha. This statistic can vary from -1.0 to 1.0 with a positive value indicating to what extent the items in a scale measure the same construct. An alpha greater than .3 is widely accepted as a cut-off to show that two scales from different instruments both measure the same construct. Values in the .70 to .87 range indicate good structural validity. Cronbach's coefficient alphas for each of the competencies

on the SEI-YV are as follows: Enhance emotional literacy (EEL)= .69; Recognize Patterns (RCP) = .65; Exercise Optimism (EOP) = .70; Apply Consequential Thinking (ACT) =.67; Navigate Emotions (NVE) =.69; Engage Intrinsic Motivation (EIM) = .81; Increase Empathy (ICE) = .74; Pursue Noble Goals(PNG) = .72, thus providing support for the sound psychometric properties of the instrument. In addition, Pearson Product Moment correlations between the three composites yielded the following results: the correlation between the Composites "Know Yourself and the "Choose Yourself was $r=.75$; the correlation coefficient between the Composites "Choose Yourself and "Give Yourself was $r= .82$, and the correlation coefficient between the Composites "Know Yourself and "Give Yourself was $r=.74$. These results support the high reliability and validity of the instrument.

A study conducted by Six-Seconds on a sample size of $n= 5, 715$ from 2007 to the beginning of 2011 revealed the following associations between the scales: the correlations between the three complex measures (Know Yourself, Choose Yourself, Give Yourself) ranged between 0.69-0.72; the correlations between the eight competencies yielded an average of 0.53 (ranging between 0.40 and 0.68); and the correlations between Barometers of Health yielded an average of 0.42(ranging between 0.23 and 0.63). The composite correlation between the eight competencies and the Barometers of Health was 0.77. These results also support the high reliability and validity of the instrument.

3.8 Procedures for Reviewing the Literature

The purpose of this study was to examine whether applying the Self-Science program would result in improving the emotional intelligence and academic achievement of upper elementary classes, thereby enhancing students'

communications, social interaction, verbal correspondence, and academic achievement. Consequently, the review of literature focused on the topic of emotional intelligence and the importance of adopting a program that enhances students' emotional intelligence. The sources of the reviewed literature were research articles, books, and electronic databases.

CHAPTER FOUR

Results

4.1 Introduction

This study was conducted to examine the effectiveness of the Self- Science program in increasing the emotional intelligence and academic achievement of upper elementary students. Accordingly, the emphasis was on studying the effect of the predictor variable “Self-Science program” on the outcome variables “Emotional Intelligence” and “Academic Achievement”. The sample consisted of 39 boys and girls distributed in the following grades: 15 students in Grade 4, 10 students in Grade 5, 14 students in Grade 6. The Six Seconds Emotional Intelligence Assessment Youth Version (SEI-YV) was the instrument used to assess the participants’ emotional intelligence and students’ school grades served as academic data. Data were collected using an exploratory pretest/posttest design.

The first outcome variable, Emotional Intelligence (EI) includes the following sub variables: Know Yourself, Choose Yourself, Give Yourself, Enhancing Emotional Literacy, Recognizing Patterns, Applying Consequential Thinking, Navigating Emotions, Engaging Intrinsic Motivation, Increasing Optimism, Increasing Empathy, Committing to Noble Goals, Good Health, Relationship Quality, Life Satisfaction, Personal Achievement, Self-Efficacy, Total EQ, and Overall. The second outcome variable, Academic Achievement, includes students’ overall average (GPA) from their previous academic year in 2012 and students’ overall average in the year 2013 during which the program was implemented. Each of the outcome variables (emotional intelligence and academic

achievement) and their sub variables yielded two scores from before and after implementing the Self-Science program (Pre/Post).

The sub variables of Emotional Intelligence were measured using a 5-point Likert-type 1= almost never, 2 = seldom, 3 = sometimes, 4= often, and 5=almost always. The variable of academic achievement was measured using students' GPA (year 2012 and 2013) and a t-test was conducted for pre/post comparison of scores.

4.2 Preliminary Analysis

The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS, version 21). The variables were examined to check for the following: Mis-entered data, Analysis of missing values, Univariate Outliers, and the assumption of Normality.

4.2.1 Mis-entered Data

Mis-entered data was examined by looking at the range (maximum and minimum values) of the given variables: Know Yourself, Choose Yourself, and Give Yourself, Enhancing Emotional Literacy, Recognizing Patterns, Applying Consequential Thinking, Navigating Emotions, Engaging Intrinsic Motivation, Increasing Optimism, Increasing Empathy, Pursue Noble Goals, Good Health, Relationship Quality, Life Satisfaction, Personal Achievement, Self-Efficacy, Total EQ, Overall, academic GPA. Examining the mis-entered data is crucial because mis-entered data distort both the analysis of assumptions and the main analysis of results by shifting the mean and standard deviations of each variable.

The analysis revealed that there was no mis-entered data; thus the researcher proceeded with further data analysis.

4.2.2 Analysis of Missing Values

The maximum percentage of missing value on a variable recommended by Tabachnick and Fidel (2013) is below or equal to 5%. In this study, the missing value analysis revealed 0% of missing values on all variables.

4.2.3 Univariate Outliers

The univariate outliers were examined using two methods: (a) Positive Impression scores, and (b) z-scores.

a- Detecting outliers using Positive Impression scores:

According to the Six Seconds Network, any score greater than 135 is considered invalid (“SEI-YV Youth Report,” n.d.). As shown in Table 3, the range of the scores of the participants on the Positive Impression Pretest was between 75 and 130 and the range of scores of the participants on the Positive Impression Posttest was between 67 and 130. As a result, none of the scores on the participants on all the variables was invalid.

Table 3: Positive Impression scores

| N | Pretest Positive Impression | Posttest Positive Impression |
|---------|-----------------------------|------------------------------|
| Valid | 39.00 | 39.00 |
| Missing | .00 | .00 |
| Minimum | 75.00 | 67.00 |
| Maximum | 130.00 | 130.00 |

b- Detecting outliers using z-scores:

Using z-scores, no univariate outliers with a z-score of $> |3|$ were detected on any of the variables. Thus, all cases were maintained for further data analysis.

4.2.4 Normality of Dependent Variables

Given that the size of the sample is small $N=39$ ($N<100$), a check for normality using Z-scores of skewness and kurtosis was adopted instead of the KS test. Typically, the values of Z-scores on skewness and kurtosis above $|1.96|$ correspond to a significant level below 0.05 and indicates a significant deviation from normality, whereas values of Z-scores on skewness and kurtosis below $|1.96|$ correspond to a significant level above 0.05, and indicate normality (Field, 2009).

As shown in Table 4, all of the variables (pre/post) indicated skewness and kurtosis below $|1.96|$ except for two (Pretest Know Yourself and Pretest Give Yourself). Thus, the assumption of normality was met.

4.3 Effect of Self-Science on Emotional Intelligence

4.3.1 Repeated Measures MANOVA

Given that the study included more than one dependent variable, a repeated measures MANOVA design was used to determine whether the intervention (independent variable) Self- Science affected the following two dependent variables: 1) Total EQ which consists of a combination of 3 Composites (Know Yourself, Choose Yourself, Give Yourself), and 8 Competencies (Enhancing Emotional Literacy, Recognizing Patterns, Applying Consequential Thinking, Navigating Emotions, Engaging Intrinsic Motivation, Increasing Optimism, Increasing Empathy, and Committing to Noble Goals); 2) The variable Overall which consists of the 5 Life Barometers (Good Health, Relationship Quality, Life Satisfaction, Personal Achievement, and Self-Efficacy).

Table 4: Skewness and Kurtosis scores

| | Pretest | | Posttest | |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| | <u>Skewness</u> | <u>Kurtosis</u> | <u>Skewness</u> | <u>Kurtosis</u> |
| GPA | .78 | -1.62 | -.04 | -1.68 |
| Total EI | -1 | .29 | .00 | -.95 |
| Overall | -1.76 | .43 | .50 | .99 |
| Know Yourself | -.32 | 2.41 | -.35 | -.61 |
| Enhancing Emotional Literacy | -.04 | 1.15 | -1.04 | -.89 |
| Recognizing Patterns | -.12 | .85 | .25 | -.45 |
| Choose Yourself | -1.05 | -1.41 | 1.22 | -.81 |
| Applying Consequential Thinking | -1.18 | .54 | -.39 | -.69 |
| Navigating Emotions | -.70 | -1.13 | .29 | -1.13 |
| Engaging Intrinsic Motivation | -.43 | -.98 | -.01 | -1.78 |
| Increasing Optimism | -.05 | -.13 | 1.37 | -1.12 |
| Give Yourself | .00 | 2.16 | .38 | -.54 |
| Increasing Empathy | .18 | -.28 | -.38 | -.47 |
| Pursue Noble Goals | .25 | .83 | .1 | -.14 |
| Good Health | -.60 | -.13 | -.38 | .65 |
| Relationship Quality | -1.45 | -.30 | -.48 | -.14 |
| Life Satisfaction | -.59 | -.13 | -.87 | 1.07 |
| Personal Achievement | -1.26 | .04 | .60 | -.40 |
| Self-Efficacy | .59 | -.88 | 1.93 | -.34 |

Assumptions of MANOVA:

The Assumptions of Repeated Measures MANOVA were met as follows:

- 1- The dependent variables data were entered as scale.
- 2- All the scores of dependent variables were normally distributed.
- 3- The assumption of sphericity of within group variances, as shown by Mauchly's test (see Table 5) was met as there was only one independent variable with two levels (pre and post)
- 4- The dependent variables must be correlated (conceptually related). According to the Six Seconds Emotional Intelligence Assessment (2008), emotional intelligence (the dependent variable) is composed of 3 composites, 8 competencies, and 5 Life Barometers that were measured in this study. Thus, the model is coherent and interrelated.

As shown in Table 6, the results of the repeated measures MANOVA revealed no significant within subject differences between the pretest and posttest, $F(18,21)=1.38, p>.05$. This indicates that the Self Science program did not lead to significant differences between the pretest and posttest.

Similarly, the Univariate Tests did not show significant differences between pretest and posttest on all the dependent variables (see Table 7).

Table 5: Mauchly's Test of Sphericity

| Within Subjects Effect | Measure | Mauchly's W | Approx. Chi-Square | df | Sig. |
|------------------------|---------|-------------|--------------------|-----|------|
| Prepost | EI | 1.00 | .00 | .00 | . |
| | Outcome | 1.00 | .00 | .00 | . |
| | KY | 1.00 | .00 | .00 | . |
| | CY | 1.00 | .00 | .00 | . |
| | GY | 1.00 | .00 | .00 | . |
| | EEL | 1.00 | .00 | .00 | . |
| | RP | 1.00 | .00 | .00 | . |
| | ACT | 1.00 | .00 | .00 | . |
| | NaE | 1.00 | .00 | .00 | . |
| | IM | 1.00 | .00 | .00 | . |
| | IO | 1.00 | .00 | .00 | . |
| | IE | 1.00 | .00 | .00 | . |
| | PNG | 1.00 | .00 | .00 | . |
| | GH | 1.00 | .00 | .00 | . |
| | PA | 1.00 | .00 | .00 | . |
| | LS | 1.00 | .00 | .00 | . |
| | RQ | 1.00 | .00 | .00 | . |
| SE | 1.00 | .00 | .00 | . | |

However, it is important to note that when comparing the mean and standard deviation of the variables, an increase in the scores was noticed (see Table 7). The variables in the three composites increased, but the increase was not significant. The variable that increased the most is Know Yourself with a pretest mean score of $M=91.41$ and $SD=17.38$ and a posttest mean score of $M=97.13$ and $SD=14.25$. The

result indicates that the participants' emotional intelligence on this particular complex measure improved between pretest and posttest. The variable that increased the least is Choose Yourself with pretest mean score of $M= 94.85$ and $SD= 15.06$ and a posttest mean score of $M= 98.31$ and $SD= 14.23$ (see Table 7).

All the in the variables in the eight competencies increased slightly, but not significantly. The variable that increased the most is Recognize Patterns with a pretest mean score of $M= 91.31$ and $SD= 18.92$ and a posttest mean score of $M= 98.21$ and $SD= 14.78$. The variable that increased the least is Pursue Noble Goals with a pretest mean score of $M= 93.90$ and $SD= 14.66$ and a posttest mean score of $M= 95.33$ and $SD= 13.23$ (see Table 7).

Table 6: Multivariate Tests

| Effect | Value | F | Hypothesis df | Error df | Sig. | |
|-----------------|-------|------|---------------|----------|------|-----|
| | .54 | 1.38 | 18.00 | 21.00 | .24 | .54 |
| Within Subjects | | | | | | |
| Prepost | .46 | 1.38 | 18.00 | 21.00 | .24 | .54 |
| | 1.18 | 1.38 | 18.00 | 21.00 | .24 | .54 |
| | 1.18 | 1.38 | 18.00 | 21.00 | .24 | .54 |

In the Life Barometers, three out of five variables increased slightly, but not significantly. The variable that increased the most is Relationship quality with a pretest mean score of $M= 89.36$ and $SD= 13.60$ and a posttest mean score of $M= 94.79$ and $SD= 12.71$. These results indicate that the participants' score on this particular Life Barometer improved between pretest and posttest. The scores of Life Satisfaction and Personal Achievement decreased after the intervention. The variable Life Satisfaction had a pretest mean score of $M= 98.51$ and $SD= 13.99$, and a posttest mean score of $M= 94.18$ and $SD= 14.16$. Also, the variable Personal Achievement

had a pretest mean score of $M= 101.97$ and $SD= 14.27$ and a posttest mean score of $M= 101.10$ and $SD= 12.48$ (see Table 7).

Table 7: Univariate analysis of dependent variables

| | Pretest | | Posttest | | F | P |
|---------------------------------|----------|-----------|----------|-----------|------|------|
| | <u>M</u> | <u>SD</u> | <u>M</u> | <u>SD</u> | | |
| GPA | 14.23 | 1.98 | 14.32 | 2.05 | | |
| Total EI | 91.67 | 14.47 | 96.26 | 13.62 | 1.94 | 0.17 |
| Overall | 93.28 | 13.9 | 96.31 | 13.91 | 0.83 | 0.37 |
| Know Yourself | 91.41 | 17.38 | 97.13 | 14.25 | 2.44 | 0.13 |
| Enhancing Emotional Literacy | 92.92 | 15.92 | 96.67 | 13.53 | 1.26 | 0.27 |
| Recognizing Patterns | 91.31 | 18.92 | 98.21 | 14.78 | 3.13 | 0.08 |
| Choose Yourself | 94.85 | 15.06 | 98.31 | 14.23 | 1.21 | 0.28 |
| Applying Consequential Thinking | 99.46 | 14.6 | 101.59 | 13.63 | 0.67 | 0.42 |
| Navigating Emotions | 91.05 | 15.09 | 94.38 | 13.77 | 1.11 | 0.3 |
| Engaging Intrinsic Motivation | 98.36 | 15.86 | 101.36 | 14.12 | 0.88 | 0.36 |
| Increasing Optimism | 94.74 | 16.3 | 97.18 | 14.18 | 0.53 | 0.47 |
| Give Yourself | 91.79 | 13.7 | 94.72 | 13.4 | 0.75 | 0.39 |
| Increasing Empathy | 90.92 | 14.6 | 94.95 | 13.95 | 1.24 | 0.27 |
| Pursue Noble Goals | 93.9 | 14.66 | 95.33 | 13.23 | 0.19 | 0.67 |
| Good Health | 98.51 | 13.99 | 100.56 | 11.71 | 0.64 | 0.43 |
| Relationship Quality | 89.36 | 13.6 | 94.79 | 12.71 | 3.45 | 0.07 |
| Life Satisfaction | 98.51 | 13.99 | 94.18 | 14.16 | 1.93 | 0.17 |
| Personal Achievement | 101.97 | 14.27 | 101.1 | 12.48 | 0.09 | 0.77 |
| Self-Efficacy | 91.21 | 14.85 | 94.13 | 16.21 | 0.53 | 0.47 |

4.4 Effect of Self-Science on Academic Achievement

A dependent t-test was performed to investigate the differences between the participants Pretest GPA and posttest GPA following the implementation of the Self Science program. The assumptions of the dependent t-test were met since interval data (grades) were used. Also, the KS test showed that the distribution of the sample was normal $D(39) = .09, p > .05$ (see Table 8).

Table 8: K-S Test of Normality (GPA)

| <u>Kolmogorov-Smirnov^a</u> | | | |
|---------------------------------------|-----|-------|------|
| Difference | .09 | 39.00 | .20* |
| GPA | | | |

*. This is a lower bound of the true

significance.

As seen in table 9, no significant differences were found between the GPA pretest and GPA , $t(38)=.72$, $p>.05$. The variable GPA had a pretest mean score of $M= 14.23$, and $SD= 1.98$ and a posttest mean score of $M= 14.32$ and $SD= 2.05$ (see Table 7). Thus, the participants GPA increased slightly but not significantly from pretest to posttest.

Table 9: T-test for Pre/Post GPA

| Paired Samples Test | | | | | |
|----------------------------|---------------------------|-----------|----------|-----------|------------------------|
| | <u>Paired Differences</u> | | <u>t</u> | <u>df</u> | <u>Sig. (2-tailed)</u> |
| | <u>Mean</u> | <u>SD</u> | | | |
| Posttest GPA - Pretest GPA | .09 | .79 | .72 | 38.00 | .48 |

4.5 Relationship between Emotional Intelligence and Academic

Achievement

To investigate the relationship between emotional intelligence and academic achievement, Pearson Correlation test was used. The relationship was examined by using pre and post data for the variables GPA, Total EQ, and Overall.

The results showed no significant relationship between the two variables emotional intelligence and achievement on both pre and post test data. As shown in Table 10, no significant correlation was found between pretest GPA and Total EQ (r

=.06, $p = .71$) on one hand and pretest GPA and Overall ($r = -.02$, $p = .91$) on the other. Similarly, no significant correlation was found between students' posttest GPA scores ($r = .09$, $p = .57$) and their scores on Total EQ and Overall ($r = .07$, $p = .69$).

Table 10: Correlation Matrix

| | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------|----|-------|-----|-----|-------|-----|
| Pretest GPA | -- | .00** | .71 | .18 | .91 | .55 |
| Posttest GPA | | -- | .30 | .57 | .98 | .69 |
| Pretest Total EQ | | | -- | .67 | .00** | .52 |
| Posttest Total EQ | | | | -- | .65 | .00 |
| Pretest Outcome | | | | | -- | .49 |
| Posttest Outcome | | | | | | -- |

4.6 Qualitative Data Analysis

To examine the reactions to the Self- Science program, interviews were conducted with the school principal and three of the participants' teachers. The students' experiences were assessed as well to investigate their perceptions of the effectiveness of the program.

The school principal reported that the Self-Science program gave students the chance to experience something new, a skill not emphasized at the school. Students mainly learned how to control themselves, their temper, and to show empathy towards others. Moreover, the program contributed to the reduction bullying incidents at the school. Students' used less killer statements and acted less aggressively following the program's implementation. In addition, the principal revealed that the Self-Science program helped students to have more self confidence and more acceptance of the problems of their peers. They started to see things from a different perspective. Before the program, students used to react without thinking; after the program they started reflecting on the situation before acting. This helped them improve the relationships they had with each other and with their teachers.

Finally, students' communication skills and academic achievement were enhanced as well. The school principal noted that she was surprised that everyone's academic achievement had improved in the second semester, during which most of the Self-Science lessons were taught and she believed that program had a significant role in this regard (see Appendix B).

The three teachers reported being satisfied with the influence that the Self-Science program left on the thoughts, behaviors, and academic achievement of the students (see Appendix C). The English teacher added that the Self-Science program helped students improve their ability to reflect on questions rather than jump to answers, thus attaining a higher level of self-control and management of their emotions, especially those related to anger. The teacher also added that the program benefited the students by encouraging them to be more interactive in the classroom and respect the school rules and policies. The Arabic teacher noticed an increase in the students' emotional intelligence and academic achievement, which allowed them to act more appropriately with each other and enhanced the quality of their behavior. Students' used less killer statements and their behavioral disturbance had also decreased. The teacher acknowledged the importance of the program; however, she suggested that the program should be implemented in collaboration with the teachers, students, and principal with a follow-up provided by the school counselor. The Physical Education teacher observed that students were more disciplined during class sessions after the program's implementation. She also added that they treated each other more kindly, were using less killer statements, and their communication skills had also improved.

The results of assessing the experiences of the 39 students revealed that the Self Science program helped the participants use less killer statements, choose their

words carefully, and express their feelings more constructively. The program helped them also attain a higher level of self-control, be more forgiving and empathetic of others, and increase their optimism. All students spoke about previous incidents during which their mood affected their performance negatively and how the Self-Science helped them have better self-control, thus improving their performance. When asked to talk about how Self-Science helped them in resolving an argument they had with a peer or a teacher, some of the students' answers were: "Self-Science helped me solve the problem by just adding words that changed the negativity of the arguments to positive", "it helped me to have responsibility and to talk with [him] with responsibility, thus avoiding a fight", "I remembered emotional intelligence from Self-Science, and now I tell my parents my feelings why and how I get mad", "one time I wanted to play with my old friends but they didn't let me so when they asked me if they could play with me, at first I told them no then I thought about it and I let them play with me. I told them I let you play with me because I am not like you". Finally, the Self-Science program spread awareness on the meaning and understanding of the term "emotional intelligence" which was totally unfamiliar to the students. Before the program's implementation, students were ignorant of the meaning of the term "emotional intelligence", but after the program, some defined emotional intelligence as the following: "it is the ability for me to know my feelings whether I am happy or sad or any other feelings and also understand it so I can act on it", "knowing yourself, your personality, it's the ability to understand your feeling and taking choices based on it", "express our feelings with different ways and care about our feelings and those of others", "emotional intelligence makes me express my feelings more, care about others' feelings, and think before doing anything", "to talk about your feelings and it help us have a friend", "to express our feelings, to

share them with each other and it helps me to never be shy to share my friend's feelings; this is how life will be better”.

4.7 Conclusion

The results of the study revealed that the Self-Science program did not lead to significant improvements in either emotional intelligence or academic achievement. However, students' scores on emotional intelligence and their academic achievement increased slightly after the implementation of the program. The two variables that increased the most were: Recognize Patterns { $F(1, 38) = 3.13, p > .05$ } and Relationship Quality { $F(1, 38) = 3.45, p > .05$ }. Moreover, no significant relationship was found between the two variables emotional intelligence and achievement on both pre and post test data.

CHAPTER FIVE

Discussion

5.1 Introduction

The purpose of this study was to assess the effectiveness of the Self-Science program in increasing the emotional intelligence of upper elementary students. Another purpose was to investigate whether the development of emotional intelligence would influence their academic achievement. The study was implemented in grades 4, 5, and 6 in one private elementary school located in Beirut with a small sample of 39 students. The Six Seconds Emotional Intelligence Assessment Youth Version (SEI-YV) was the instrument used to assess the participants' emotional intelligence. The students' school grades represented academic achievement data. A t-test was performed to determine differences in the students' overall GPA from the year preceding the implementation of the Self-Science program to the year during which the Self-Science program was implemented. Finally, an exploratory pretest/posttest design was adopted to evaluate the effectiveness of the Self-Science program in improving the students' emotional intelligence and their academic achievement.

The results of the study revealed that the Self-Science program did not lead to significant changes in the students' emotional intelligence or in their academic achievement. Besides, no significant correlation was found between the two variables emotional intelligence and achievement on both pre and post test data.

In the current study, the implementation of the Self-Science program did not lead to significant improvements in either students' emotional intelligence or their

academic achievement. The review of literature suggested that implementing a program that aims to increase students' emotional intelligence could also lead to improvements in social and emotional competencies (Domitrovich, et.al , 2007). Such programs would improve students' self perception, adjustment, academic performance, outlook toward school and others, as well as lead to a decrease in behavioral problems (Durlak, et.al, 2011). In this study, the results corroborated the literature. The implementation of the Self-Science program did create a positive caring environment in the school setting (see Appendix B) The school principal reported that the program reduced bullying and increased students' self confidence and acceptance of others. It also allowed students to see things from a perspective other than their own. Moreover, the principal noted that before the program's implementation, students used to react impulsively without thinking; however, following implementation, they started to reflect on the situation before acting. As a result, the program has allowed them to have better relationships with each other and with their teachers. Moreover, students' communication skills were enhanced (see Appendix B).

The two variables that showed a marked increase in students' scores were Recognize Patterns and Relationship Quality. Recognizing Patterns involves the ability to utilize patterns of behavior that help individuals meet their needs; Relationship Quality indicates the feelings a person has toward friends, the way he/she communicates, and the feeling of trustworthiness. The increase in participants scores in the above two variables might be due to the awareness that students established about themselves and others. Also, the majority of students believed that the Self-Science program helped them in uttering less killer statements and in being more accountable for choosing appropriate words because "one's statements affect

others' feelings" (See Appendix D). When students were asked how the Self-Science program has affected their performance, some of their answers were (See Appendix D):

"I learned when I am angry to count till 10"

"It helped me to show people empathy"

"I came to school angry so my friend asked me to play but I shouted at him, then I thought about Self-Science and I apologized and promised to get my attitude better"

"When I was in a bad mood, by mistake I said a killer statement to my sister but then I remembered that in self-Science we should not use killer statements, so I apologized"

"I was very tired in the morning and I didn't want to go to school but I did I said to myself I have got to learn and my mom isn't spending money for me to stay at home"

"I was in a good mood but my dad and mom were saying killers statements and I told them please don't say killer statements, I was sad and told them don't say killer statements".

Teachers also noticed that students were kinder to one another, used less killer statements, and were more able to control their feelings (see Appendix C). For instance, one of the teachers interviewed, revealed that when students applied the skill of Recognizing Patterns, they were able to foresee the effect of saying a word or performing an action, thus, they used less killer statement and showed more empathy. As a result, their relationship with each other and even with their family members improved. This finding is compatible with the study conducted by Fatum (2008) who found that the Self-Science program helped students to succeed

academically and socially inside and outside the school environment by allowing them to better understand their feelings and the feelings of others.

The current study also revealed no significant correlation between emotional intelligence and academic achievement. Previous research has determined the existence of a relationship between emotional intelligence and academic achievement (Ogundokun & Adeyemo, 2010). Thus, in one study implementing intervention programs helped students acquire higher academic performance through developing more efficient study skills and work habits (Brackett & Katulak, 2006). In this study, the results were incompatible with the literature. One explanation might be related to the short duration of this study. For programs on improving emotional intelligence to be effective, they need to be integrated within the curriculum and implemented on regular basis with the involvement of the entire school body (Khan, 2013).

5.2 Limitations of the Study

Several limitations apply to this study. The first limitation pertains to the language. The SEI-YV and the Self-Science program were developed for students whose native language is English. The students of the school where the program was implemented are all Lebanese whose native language is Arabic; therefore, they might not have understood fully some of the words. For example, while completing the SEI-YV, many students were confused with the meaning of the words they should circle to answer the question. Those are: “Almost never”, “seldom”, “sometimes”, “often”, and “almost always”. Some students didn’t comprehend the meaning of “seldom” and “often”. The researcher did explain to them the meaning of the words, but it is possible that they still confused some words for others even after the

explanation. Also, some questions in the SEI-YV were hard to grasp because they included statements such as (see Appendix A):

“I like using descriptive words when I write”

“ “When I want my way, I stretch the truth, I finish tasks without reminders”

“I solve my struggles with people, my teacher praise me”

“ I can help with world problems”

“ I can see whether people are amazed, or surprised”.

According to Omaggio-Hadley (1993), individuals living in areas where English is not their native language need about 720 hours of comprehensive study to become skilled in only the first level identified by the ACTFL (American Counsel on the Teaching of Foreign Languages). The ACTFL identified 5 levels to reach proficiency in English for non-native speakers (Swender, Conrad, & Vicars, 2012). Therefore, it is possible that students in this study might not have fully grasped the concepts of emotional intelligence described in the Self-Science program.

The second limitation is related to the first. In hindsight, importing a program designed for American students and implementing it in a Lebanese school might not be an effective procedure. The different norms and values that Arabs have might have influenced the results of implementing the Self-Science program in Lebanon. Arabs live in a collectivist society where individuals are dependent on their families and the foremost focus is on the well being of the family as a whole (Shakibai, 2005). Moreover, people care more to follow the norms than to follow their own desires. On the other hand, in individualistic societies, as it is with the West, people are raised with values such as independence and freedom of choice where the focus is on the individual rather than on the family or the group (Shakibai, 2005). Children are encouraged to accomplish their own individual wishes where the opinion of the

other does not count much. The Self-Science program defines emotional intelligence in its relation to the three composites, eight competencies, and five Life Barometers. The notions of Know Yourself or Choose Yourself or Life Satisfaction or Self Efficacy or any of the variables measured in this study differ from one culture to another. When students were asked about their opinion on the Self-Science program, the majority replied that the program helped them in understanding themselves better (see Appendix D). This may explain why students' scores on the composite Know Yourself improved the most from pre to post among the three composites. It is also possible that the authoritarian style of parenting adopted in the Lebanese culture is the reason why students' scores on the composite Choose Yourself increased the least. After all, the aim of the program is to teach students how to make decisions, share ideas, and solve problems through promoting emotional intelligence (Kearney, 2011).

The third limitation is the length of the program's implementation. The Self-Science program was implemented for only 6 months, a shorter time duration needed for emotional intelligence to develop. Kahn (2013) gathered the findings of multiple studies on emotional intelligence. He concluded that implementing a social-emotional learning program for one complete year leads to better results with regard to reducing students' aggressive behavior in comparison to students who received no training. Moreover, using the emotional intelligence skills in everyday life requires much work; these skills do not develop within a short period of time (as cited in Brackett, 2013).

Another factor that influences the success of a social-emotional program is related to the people involved in implementing the program. Mark Greenberg, the founder of the PATHS curriculum suggested that the success of such programs

depend to a great extent on the classroom teacher. When teachers enhance their own social-emotional skills, they will be able to help students to exploit these skills through creating a positive caring environment (Khan, 2013). In this study, the researcher was the only individual involved in implementing the Self-Science program. Teachers did not receive a training in the topic and had no role in the study. The integration of the program in the school curriculum and the collaboration of the school staff would have increased the chances of the Self-Science program's success.

The fourth limitation is related to the small sample size. The sample consisted of 39 students distributed as such in the following grades: 15 students in Grade 4, 10 students in Grade 5, 14 students in Grade 6. The limited number of students does not provide a correct representation of the population of students in grades 4, 5, and 6 in Lebanon. Therefore, the results of this study cannot be generalized to students beyond those involved in this investigation.

5.3 Implications for Practice

The following recommendations stem from the findings of this study:

The first recommendation is related to the program's implementation. The researcher should start with two preparation sessions before implementing the Self-Science program or administering the SEI-YV. The first session will have for aim to break the ice and facilitate communication between the researcher and the students. In the second session, the researcher will take time to explain the difficult concepts and make sure that the students understand all the terms related to the program. Also, the researcher will need to train students in the implementation of the procedure.

The second recommendation is integrating the program within the school curriculum. The principal, teachers, nurse, and all school staff should receive training

in emotional intelligence and the Self-Science program. Thus, they should be involved in teaching the program and reflecting on it formally and informally to allow students to process the information and utilize the skills learned in their daily lives. Parents should receive a short training on emotional intelligence as well to ensure the continuity of applying the values of the Self-Science program at home to promote emotional intelligence.

5.4 Recommendations for Research

The first recommendation for future research is to include a control group in the study for such practice allows the researcher to evaluate the effectiveness of the program and eliminate bias (Fraenkel & Wallen, 2008). In other words, the presence of a control group allows comparing the emotional intelligence and the academic achievement of students who received the training to those who did not.

The second recommendation is to include in future research larger samples of students across grade levels and in different regions in Lebanon in order to generalize the results to the Lebanese population of students.

The third recommendation is to modify certain lessons or ideas in the Self-Science program to adopt it to the Lebanese culture; thus, it will be more relevant to students' experiences. However, research should be conducted to ensure that the changes did not compromise the validity of the Self-Science program.

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