THE EFFECTIVENESS AND SUSTAINABLE EFFECTS OF SENSORY IMAGINATION PROGRAM IN ENHANCING FIGURAL CREATIVITY OF GIFTED ELEMENTARY STUDENTS IN SAUDI ARABIA

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by

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DEDICATION

Firstly, and before all others, all my sincerely dedication to The Almighty Allah. Then, I dedicate my sincere loyalty to my greatest guide, the dearest human to my heart, Prophet Mohammad, “Peace be Upon Him”. My sincere dedication of this scientific effort to my dear parents (My dear Father: Faisal -may Allah bless him- & My dear Mother: Mariam). My dear husband, I dedicate this humble scientific fruit for you, my best loyal companion. Also, I will never forget to dedicate the fruit of this scientific work to my father and mother-in-law (Abdalsalam & Sawsan), who supported me in many aspects. Finally, the special dedication of the fruit of this effort to my dear daughters Sawsan, Jana, Bana and my dear Son (Assol -may Allah bless him), who have been sacrificing of their own time for my success.

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF ABBREVIATIONS

SIP	Sensory Imagination Program
SI	Sensory Imagination
GS	Gifted Students
MOE	Saudi Ministry of Education
TTCT-Figural	Torrance Test for Creative Thinking - Figural
SBMC	School Based Management Committee
CFS	conceptual framework of the study
IV	Independent Variable
DV	Dependent Variables
FC	Figural Creativity
NAGC	National Association of Gifted Children
IE	Imaginative Education
TFSIP	Theoretical Framework of the Sensory Imagination Program

LIST OF APPENDICES

KEBERKESANAN DAN KESAN KELESTARIAN PROGRAM IMAGINASI SENSORI DALAM MENINGKATKAN KREATIVITI FIGURA MURID- MURID PINTAR CERDAS SEKOLAH RENDAH DI ARAB SAUDI

ABSTRAK

Program Imaginasi Sensori (SIP) merupakan satu program baru yang dibangunkan khas untuk meningkatkan kreativiti figural murid-murid pintar cerdas sekolah rendah di Arab Saudi. Keberkesanan SIP dan kelestarian kesannya dalam meningkatkan kreativiti figura dari segi keaslian, fleksibiliti, kelancaran dan elaborasi telah diuji secara empirikal. Reka bentuk kuasi-eksperimen telah dijalankan untuk mengujik keberkesanan SIP. Subjek kajian ini terdiri daripada kumpulan eksperimen (n = 31) dan kumpulan kawalan (n = 31). Instrumen yang digunakan untuk mengukur kreativiti figura adalah *Torrance Tests of Creative Thinking-Figural* (*TTCT*-Figural). Kumpulan eksperimen melalui 15 sesi latihan SIP. Data kajian dikumpul semasa ujian pra, ujian pasca dan ujian pasca tertunda. Keputusan *Analysis of Covariance* (ANCOVA) menunjukkan bahawa SIP berkesan dalam meningkat kreativiti figura kerana terdapat perbezaan yang signifikan dalam skor min pasca ujian antara kumpulan eksperimen dan kumpulan kawalan selepas skor ujian pra dikawal [$F (1, 59) = 24.60$, $p < 0.05$]. Seterusnya, keputusan *Multivariate Analysis of Covariance* (MANCOVA) membuktikan bahawa terdapat perbezaan yang signifikan dalam skor min ujian pasca kreativiti figura dari aspek keaslian [$F(1, 59) =5.06$, $p < 0.05$], fleksibiliti [$F (1, 59) =10.70$, $p < 0.05$], dan kelancaran [$F (1, 59) = 5.46$, $p<0.05$]. Perbezaan antara kumpulan eksperimen dan kawalan dalam elaborasi adalah tidak signifikan [$F (1, 59) =2.99$, $p>0.05$]. ANCOVA dijalankan sekali lagi, selepas selama dua

bulan intervensi tamat. Perbezaan skor min ujian pasca-tertunda menunjukkkan bahawa masih terdapat perbezaan yang signifikan dalam kreativiti figura antara kumpulan eksperimen dengan kumpulan selapas selepas skor min ujian pra dikawal [F (1, 59) = 9.75, $p < 0.05$]. Keputusan ini menunjukkan bahawa kesan SIP terhadap kreativiti figura secara keseluruhannya dapat dikekalkan. Perbezaan skor min ujian pasca-tertunda dari segi kreativiti keaslian [F (1, 59) = 4.40, $p<0.05$]. dan fleksibiliti [F (1, 59) = 4.57, $p < 0.05$], juga signifikan. Namun, perbezaan dalam kelancaran [F(1, 59) = 2.33, $p>0.05$], dan elaborasi adalah tidak signifikan [F (1, 59) = 0.53, $p > 0.05$]. Hal ini bermakna keberkesanan kelancaran tidak dapat dikekalkan selepas dua bulan dan elaborasi pula tetap tidak berkesan. Dapatan kajian ini membuktikan keberkesanan SIP dan kelestarian kesannya dalam meningkatkan kreativiti figura murid pintar cerdas di Arab Saudi. Kajian ini memberi sumbangan penting kepada bidang pendidikan pintar cerdas. Implikasi kajian dari segi pendidikan dan teoritikal serta cadangan untuk kajian masa depan dibincangkan dalam kajian ini.

THE EFFECTIVENESS AND SUSTAINABLE EFFECTS OF SENSORY IMAGINATION PROGRAM IN ENHANCING FIGURAL CREATIVITY OF GIFTED ELEMENTARY STUDENTS IN SAUDI ARABIA

ABSTRACT

The Sensory Imagination Program (SIP) is a newly developed program aimed at enhancing figural creativity of gifted elementary students in Saudi Arabia. The effectiveness of SIP and its sustainable effects in enhancing figural creativity in terms of originality, flexibility, fluency and elaboration were tested empirically. The quasi-experimental design was carried out to test the effectiveness of SIP. The subjects of this study comprised of experimental group (n=31) and control group (n=31). The instrument used to measure figural creativity was *Torrance Tests of Creative Thinking-Figural* (*TTCT*-Figural). The experimental group undergone a 15 sessions of SIP training. Data for the research were collected during pre-test, post-test and delayed post-test. The results of *Analysis of Covariance* (ANCOVA) showed that SIP was effective in enhancing figural creativity as there was significant differences in the post-test means between experimental and control groups after the pre-test scores were controlled [$F(1, 59) = 24.60$, $p < 0.05$]. Next, the results of *Multivariate Analysis of Covariance* (MANCOVA) proven that there was significant difference in post-test means of figural creativity in terms originality [$F(1, 59) = 5.06$, $p < 0.05$], flexibility [$F(1, 59) = 10.70$, $p < 0.05$], and fluency [$F(1, 59) = 5.46$, $p < 0.05$]. Differences between experimental and control group in elaboration was not significant [$F(1, 59) = 2.99$, $p > 0.05$]. ANCOVA was carried out again, two months after the intervention ended. The difference in delayed post-test means revealed that there were

still significant differences in figural creativity between the experimental and control groups, after the pre-test scores were controlled [$F (1, 59) = 9.75$, $p < 0.05$]. This result showed that the effect of SIP on creativity figural as a whole can be sustained. The differences in delayed posted means in creativity originality [$F (1, 59) = 4.40$, $p < 0.05$]. and flexibility [$F (1, 59) = 4.57$, $p < 0.05$], were significant. However, differences in fluency [$F(1, 59) = 2.33$, $p > 0.05$] and elaboration were insignificant [$F (1, 59) = 0.53$, $p > 0.05$]. This suggests that the effectiveness of fluency could not be sustained after two months while elaboration remained ineffective. The findings of this study have proven the effectiveness of SIP and its sustainable effects in enhancing figural creativity among gifted students in Saudi Arabia. This study has important contributions to the field of gifted education. The implications of the study in terms of education and theoretical as well as suggestions for future studies were discussed in this research.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter covers the main idea of the study, on enhancing figural creativity of gifted children by igniting their sensory imagination, the related terminologies from the global and Arab Saudi perspectives. where the chapter tries to light the main gaps that justify the study problem which is followed by the objectives that generated from the study problem and try to fill in its gaps answering its questions and prove or reject its hypotheses, the chapter shows the conceptual framework, limitation and definition to the study terms, finally the chapter ended by summary on its content.

The study aimed at developing an entirely new special program as intervention for enhancing figural creativity of Saudi gifted elementary students by igniting their sensory imagination, this was as response to the need for this type of enhancement attempt at this crucial development stage in gifted child's life (Noh & Lee, 2020), beside the need for preparing this special category of students, in specific, to present their hopeful innovations and inventions for addressing the rapid and abrupt changes of human needs in this era (Manning, 2018, Urbanc, Fridl & Resnik, 2020).

Mertens (2014) indicated that developing new special intervention to enhance thinking skills of gifted children grants them good opportunities to be engaged earlier for gaining their hoped high level of thoughts and innovations, where, Young (2019) also considers that regardless of their high abilities, gifted students need to sharpen and

maintain their creative abilities by special training activities prepared by specialist researchers, where it is known that the humanity placing high hopes on the solutions for the emerging problems that could be found by the hoped innovations by the gifted students in the future.

Researchers in gifted education (e.g., Ginsburg, 2007; Rugh, 2002; VanTassel, 2017) indicated that special programs for gifted students have more benefits and positive effects in elementary stage than in the later stages, So, the several interventions and special programs should be provided during elementary stage to play its role, right on time, towards enhancing and polishing their several types and skills of thinking. Especially, that the positive effects of using special intervention for enhancing students' several abilities in the elementary stage has been proven in many previous studies, (Snyder, Barger, Wormington, Schwartz & Linnenbrink, 2013; Pavie, 2019), this is affirmed that using such programs is necessary for improving creativity among gifted children.

Several studies indicated that early interventions through special programs for gifted students during elementary stage was for enhancing their various skills, or at least, the programs were to prevent the potential of decline in giftedness, and likewise to improve creative thinking skills of gifted students (Al Garni, 2012; Hertberg & Callahan, 2013; Pavie, 2019). On the other hand, VanTassel (2017) stressed the importance of practicing proper care in choosing the convenient methods, curriculums and programs for gifted students especially those in elementary stage.

For all the mentioned purposes, enhancement programs should tackle gifted students during elementary stage to enhance their creativity to obtain the best effective

and sustainable results. Additionally, some researchers (e.g., Glaveanu, 2019; Seligman & Csikszentmihalyi, 2014; Webb, Zhbanova & Rule, 2019) pointed out that gifted children have little creativity when compared with adults, because elementary students have low stock of experience and knowledge than adults. Therefore, gifted children need special programs to enhance their stock of experience and knowledge, in order that they could fulfil the criterion of big creativity, create original products which are useful, and present an original idea through imagination that surprises and stimulate viewers' attention. Also, the way children introduce the things around, their way in expressing their new and strange ideas and their brave in being free from reality, and their own original ways in ignoring social conventions easily and politely at the same time, all of that make their actions as surprise source to adults around. Hence, creativity during elementary school years of gifted students should be considered developmentally and have many purposeful activities for enhancing their creativity (Beghetto & Karwowski, 2019).

It is clearly necessary to prepare special programs based on reliable psychological theories in gifted education field for enhancing figural creativity of gifted students (Aljughaiman & Grigorenko, 2013). Therefore, the sensory imagination program developed in the present study gleaned its idea from previous principles in the literature which indicates that education science should suggest imagination as one of the greatest workhorses of learning. The idea of sensory imagination program is supported mainly by strong scientific principles Piaget's theory (1936) as explained in Morra, Gobbo, Marini & Sheese (2012), Vygotsky (1962), and Egan (1988) which will all be detailed in the coming chapters of the study. Specifically, the study covers the subject of enhancing figural creativity skills of third and fourth grade gifted Saudi students. Accordingly, the

current study aims to develop and evaluate a sensory imagination program based on three scientific theories namely Egan's theory of Imagination (1988), Piaget (1936), and Vygotsky (1962) in enhancing figural creativity skills of third and fourth grade gifted Saudi students. Specifically, figural creativity represents substantial humanity wealth as a resource and value of national and universal societies and for all mentioned earlier.

1.2 Background to the Study

Historically, the first school of Gifted Students (GS) of the Arab countries were found in Egypt in 1960s. other new movement after has initiated, subsequently, in many other Arab countries towards establishing special education programs, institutions, associations and interventions for identifying gifted students and enhancing their abilities in several education stages, such as the Arab Council for Gifted, Al-jubilee Schools, King Abdullah II for gifted and talented students in Jordan (Hamza, & Ahmad, 2014), King Abdulaziz and His Companions Foundation for Giftedness and Creativity (KACFGC) in the Kingdom of Saudi Arabia (KSA), and Emirates Association for the Gifted in United Arab Emirates, etc. (Aljughaiman & Ayoub, 2017). To contribute to the progress of the Arab nation on a national level, the KSA government has adopted a wise policy by paying special attention to and by investing on educating gifted students and by developing their potential by appropriately harnessing their capabilities. For instance, KACFGC is a Saudi national institution that seeks to identify and harness gifted students to develop a national system of talent, giftedness, and creativity by providing programs and services for them (Al Garni, 2012). The existence of the National Research Centre for Giftedness and Creativity in King Faisal University was important as evidence for the strategic planning

in Saudi Arabia for achieving high quality research of the giftedness on the national and international levels (Al Garni, 2012).

The government of the Kingdom of Saudi Arabia formed its educational policies under the global slogan "Education for All" (Hein, Tan, Aljughaiman & Grigorenko, 2014). All students, including those with giftedness and talents should be provided with appropriate high-quality education (Mourgues et al, 2016). The Saudi education system is also multi-track and multilevel. There are parallel educational tracks, such as public versus private, general versus vocational, religious versus secular, and civic versus military. On the other hand, there are five levels of education in the Kingdom—preschool (very limited in scope), elementary (6-12 years of age, 6 grades), intermediate (12-15 years of age, 3 grades), secondary (15-18 years of age, 3 grades), and postsecondary and university level (18 years of age and older, where the number of years depends on the type of the program in which a person is enrolled) (Aljughaiman et al, 2012).

The present study could represent a valuable reference for the coming research in the literature on the identification and education of the gifted in the KSA which has not been adequately explored. Also, it appears that the policies toward the identification and services for gifted students are still being formed; as is the case with the system of general education, these policies have features that are unique to the KSA and features that are common among gifted programs, in the Middle East, and around the world (Subhi-Yamin, 2009).

The general education system in the Kingdom of Saudi Arabia was designed for the average learner; newly the provisions were made for gifted learners (Ayoub &

Aljughaiman, 2016). Primarily driven by the ideas of equal opportunities or Education for All, It appears, however, that the situation began changing in the middle of 1990s, where a policy analyses and set of literature reviews in Saudi Arabia Kingdom with support of the King Abdul Aziz City for Science and Technology were conducted, where a definition of intellectual giftedness has started to be presented. Where, as it became known that the beginning of gifted education in Saudi Arabia dates to 1999s. relative to what is called "Saudi Project of talent search" (Alghamdi & Holland, 2020).

The interest of the researchers in contemporary gifted students' education has attracted the attention of several countries throughout the world because those GS are considered a national and universal treasure of the human civilization and an important factor in all of these country's development and scientific progress (Al–Zoubi & Bani Abdel Rahman, 2015; Hertberg & Callahan, 2013; Al Garni, 2012), because those GS contribute to the welfare of society globally, and therefore, sustaining and developing them will help ensure this human civilization security, and even more, the welfare of humanity in the present and the future (Bhola, Klimmek, Kingston, Burgess, Soesbergen, Corrigan, Harrison & Kok, 2021). In fact, the neglect of GS education leads to serious negative consequences for the society (Kerr, Vuyk & Rea, 2012).

Lately, the educational policies and trends in the Arab countries were starting to be more interest and attempting to establishing new educational institutions and new special education programs to meet the unique needs of gifted and talented and to provide them with intellectual challenges, may be that were as result for the continuous calls by many scientific researchers for propelling the Arab countries toward greater scientific and cultural development. So, it has witnessed obvious rising interest on the gifted education,

where (Srour, 2010). Al–Zoubi and Bani Abdel Rahman (2015) found that gifted students were satisfied with teachers and administration, whereas they were only moderately satisfied with, enrichment and enhancement activities and teaching methods, facilities, equipment and students' relationships.

The education of gifted students has appeared as a strong and noticeable subject in many countries including Saudi Arabia. The policy of education in Saudi Arabia recognized the special needs of the gifted category and the necessity for enhancing their mental abilities in general and figural creativity specifically, to provide gifted students with the entirely new streams of culture and the appropriate experience. Hence, MOE in Saudi Arabia has invited researchers to construct special programs and curricula for these students (Alghamdi & Holland, 2020).

The policy also focuses on providing gifted students with tools for scientific research to invest in their giftedness, talents, and abilities; this is approved the MOE's awareness of gifted students as a substantial and important treasure for the society's prosperity (MOE, 2018; Al Qahtani, 2016). It is therefore necessary to prepare training programs for enhancing the special skills of gifted students particularly the programs that are based on reliable psychological theories in the gifted education field (Aljughaiman & Grigorenko, 2013). In Saudi Arabia, like most Arab nations, the opportunity to apply a special program for gifted students is available outside general schools like public and private institutions for serving gifted students, private schools for gifted students or gifted centres (Al Garni, 2012).

Accordingly, the researcher developed SIP based on the combination of some principles from some educational literature, with the premise that imagination should be used as the greatest workhorse to students' learning, and failure in recognizing the significance of imagination in education makes teaching and learning harder than they need to be or should be. Such idea is supported by literatures of Piaget (1936) as explained in Morra, Gobbo, Marini & Sheese (2012) on the developmental rules of children's characteristics and features during their developmental stages and their details of schemas (assimilation, accommodation, and equilibration stages of development). Also, the program applies Vygotsky's principles (1896-1934) about children's imagination and creativity and Egan's perceptions (1979 -2015) of children's imagination and how to expand and the practice it in the educational process.

Saudi Arabia is in the Middle East, in the Arabian Peninsula and has an area of about two million square meters with a population of about 29 million people. The main language of KSA is Arabic, and the major religion is Islam. The KSA is divided into 13 provinces. The school education in KSA follows the traditional system, which is divided into elementary, middle, and secondary schools. The education system of the KSA involves gender-based segregation, and the government announced that education is a top priority of the country. The government is eagerly involved in developing and adopting the curricula and training the teachers. In the past two years, the KSA adopted the curricula of McGraw-Hill for its science track. Thus far, the education system of KSA employs rote learning (Aljughaiman & Grigorenko, 2013; Al Garni, 2012).

This study came as one of the episodes of the development of the science of gifted education in the Arab countries and in Kingdom of Saudi Arabia, to fill in the gap resulting

from the lack of training programs that aimed at improving the Figural creativity of gifted students in the Arab countries, specifically in the Kingdom of Saudi Arabia. So, The current study aimed at developing a new sensory imagination program and evaluate its effectiveness and its sustainable effects in enhancing figural creativity skills among gifted students of grade 3 and 4 in Saudi Arabia.

1.3 Statement of the Problem

Gifted students have suffered from the rigid traditional curriculum and methods of education that consider students as mere recipient of information (Nazario, 2021). As a result, most students do not possess high level of creative thinking skills, and this problem is particularly serious among gifted students, who are supposed to exhibit high level of creativity (Gube & Lajoie, 2020). The same issues are experienced by gifted students in Saudi Arabia as the country's education could not meet the needs of gifted students in developing their thinking skills due to several issues such as rigid curriculum, pedagogical shortcomings, lack of trained special education teachers and so on (Aljughaiman et al, 2012; Al Qahtani, 2016; Almazroui, 2020).

Almazroui (2020) presented an overview of the state of the creativity in Saudi Arabia and discussed the low level of creativity among Saudi students. As supported by the literature reviews, gifted Saudi students tend to have lower level of creativity (Aichouni, Touahmia, Al-Ghamdi, Ait-Messaoudene, Al-Hamali, Al-Ghonamy, & Al-Badawi, 2015; Al-Zahrani, 2015) and are in need of enhancement program to improve their creative thinking skills.

The problem faced by gifted education in Saudi Arabia is the lack of effective intervention for enhancing creativity (Alghamdi & Holland, 2020), even though that literatures in the field (e.g., Alghamdi & Holland, 2020; Al Garni, 2012; Hein, Tan, Aljughaiman & Grigorenko, 2014; Callahan, Moon, Azano & Hailey, 2015) have pointed out that creative thinking skills could be promoted through intervention. Ritter, Gu, Crijns and Biekens (2020) has indicated that some past empirical studies have assured that training programs could have positive effects on students' creative thinking skills. In fact, Ashman and Conway (2017) found that training programs on creativity at different educational stages have direct bearing on students' creative thinking development. Such programs should be carried on gifted students' creativity since young (e.g., Al Garni, 2012; Ginsburg, 2007; VanTassel, 2017), staring from elementary school level (Ginsburg, 2007). This is because during this school age, rapid cognitive development occurs, and school could play important roles in developing and enhancing gifted students' creativity. Unfortunately, there is currently an absence of educational programs in Saudi Arabia to develop figural creative thinking of gifted students (Al Garni, 2012).

Other issue faced by Saudi context is that the very few available training programs are not focusing on creative thinking skills, what more are not focusing on figural creativity. Even though the positive effects of training programs on creativity for elementary students is supported by several empirical studies (Pavie, 2019; Snyder et al, 2013), similar interventions for enhancing the figural creativity of elementary gifted students have not been carried out in Saudi Arabia. Most of the available studies on gifted students in Saudi Arabia were descriptive studies environment and cultural challenges (e.g., Alamer, 2014; Al Garni, 2012). The very few available studies on intervention effect

(e.g., Aljughaiman & Ayoub, 2012) were not for enhancing figural creativity. The current intervention in the adopted conventional program for gifted students in the governmental centres, that affiliated to the ministry of education, focused heavily on academic and general thinking skills (MOE, 2018). The development of creativity, especially figural creativity was not given enough attention (Ayoub & Aljughaiman, 2016). In addition, the conventional program also did not optimize sensory stimulation to enhance elementary children's figural creativity. Hence, the existing conventional intervention was found to be ineffective in enhancing gifted elementary students' creativity (Pavie, 2019).

Several researchers including Baer (2012), Dziedziewicz and Karwowski (2015); Dziedziewicz, Oledzka and Karwowski (2013), and Lawrence and Armstrong (2018), indicated that there is no limit to the enhancement of creativity. Further, the recent report from the National Association for Gifted Children (NAGC, 2018) based on Loveless, Farkas and Duffett (2008) indicated that gifted students need sustainable enhancement to their creativity. However, the conventional education programs are not covering the figural creativity and not yet ready to meet all needed aspects in enhancing the creativity skills of gifted students, due to many reasons such as lack of purposeful activities for enhancing figural creativity of gifted students, lack of readiness among general educators in dealing with gifted student’s needs, and pressure on classroom teachers which prevents them from increasing the performance of the gifted students.

Several studies (e.g., Al Qahtani, 2016; Hertberg & Callahan, 2013; Mourgues, Tan, Hein, Al-Harbi, Aljughaiman & Grigorenko, 2016) indicated that new programs on creativity should be made available to gifted students. Some studies (e.g., Lovelesset al, 2008) also have shown significant effects of several examples of a proposed program, by

researchers from several specializations, in enhancing several targeted skills of gifted students. Moreover, Hertberg and Callahan (2013) found that more than 70 % of gifted students who received gifted education services through their childhood level during the primary stage pursued high degrees of education at more than 50% of the based rate of experts' expectations. In the same study, 203 (63%) participants ultimately held a high education degree (postgraduate degrees), in other words, 44% of them have held their doctoral degrees, while around 6% of the aforementioned study sample, have earned their postdoctoral studies.

Noh and Lee (2020) addressed the crucial rule of figural creativity in the special education for polishing other thinking skills at elementary school level, where he touched that in his program that he tested on the computational thinking of elementary students. This supported the need for enhancing figural creativity of elementary students, beside some focuses on the type of the needed programs to enhance figural creative thinking of gifted students, Taverna, Tremolada, Tosetto, Dozza and Renata (2020) have found that a proposed program with multiple activities including several sensory imagination activities (e.g., sight, visualization, imaginative drawing, expansion and innovative questions) had a long-term impact on the participating gifted students' achievements. In fact, a longitudinal study showed that more than 50% of participants of the program earned high education degrees. Further benefits of those interventions have also been discussed; students who participated in his study kept their attention of their education over time and have remained interested in creative productive work even after accomplished their education and graduation.

The importance of Figural Creativity in special education and its nature related to the environment – referring to Piagetian Theory – is discussed in the literature that has been explored the development and evaluation of different proposed enrichment or training programs in enhancing verbal creativity or other thinking skills, studies that explored the effectiveness of any sensory or imagination program in enhancing gifted students' abilities in general or figural creativity in particular appear to be limited (VanTassel, 2017).

These gaps have prompted a strong call for the development of a special program to enhance gifted students' figural creativity in the Saudi Arabian context. Considering, that if there were training programs that developed in other countries, it could not be applied to the Saudi context due to cultural and language issues. It is therefore best that a new program is developed to enhance figural creativity of gifted elementary Saudi students. This initiative could prevent potential decline of giftedness among the students in the country. In order to promote figural creativity among Saudi gifted children, it is crucial to optimize their senses and imagination during the intervention. Seligman and Csikszentmihalyi (2014) pointed out that children have shorter attention span, and a smaller repertoire of knowledge and experience compared to adults, therefore, in order to engage them in the training programs, particularly to encourage the development of creativity, their imagination and senses must be stimulated.

When gifted children are engaged and stimulated, they are likely to create products that are both original and useful, furthermore, children are expected to be creative in non-verbal activities during their elementary age especially female who like to express new and strange ideas (Beghetto & Karwowski, 2019). Hence, intervention on figural

creativity is expected to promote gifted students' imagination and curiosity. Where, Beghetto and Karwowski (2019) found that gifted students who have been participated in a special program that emphasized sensory imagination with multiple activities (e.g., Sight visualization, imaginative drawing, expansion, and innovative questions), their creativity skills were enhanced, and had more significant long-term impact on their creative performance.

Due to the lack of empirical studies, not much is known about the actual effect of sensory and imagination on figural creativity (Callahan et al, 2015). Against this background, it is crucial to develop a sensory imagination program specifically for gifted elementary students in Saudi Arabia. The idea of SIP development is supported by strong theoretical principles from literatures like Piaget (1936), Vygotsky (1962) and Egan (1988). In this regard, to fill the knowledge gaps, the effectiveness and sustainable effects of SIP in enhancing gifted elementary students' figural creativity should be tested, especially the female students who are seldom researched. The effects of the program on each dimension of figural creativity namely (a) originality, (b) flexibility, (c) fluency and (d) elaboration, should also be evaluated. The empirical study ought to take into consideration the sustainable effects issue of intervention effect. This is because past studies (Saggar, Quintin, Bott, Kienitz, Chien, Hong & Reiss, 2017; Shelton, Cooper & Stirman, 2018) have shown that it is challenging to sustain the effects of intervention.

1.4 Research Objectives

This study aims to evaluate the effectiveness and sustainable effects of the sensory imagination program in enhancing and sustaining figural creativity of gifted elementary students in Saudi Arabia. The specific objectives are as follows:

1. To develop a Sensory Imagination Program (SIP) to enhance figural creativity of gifted elementary students in Saudi Arabia.

2. To evaluate the effectiveness of SIP by comparing the experimental group's and control group's post-test scores on figural creativity and its four dimensions (originality, flexibility, fluency & elaboration).
3. To evaluate the sustainable effects of SIP by comparing the experimental group's and control group's delayed post-test scores on figural creativity and its four dimensions (originality, flexibility, fluency & elaboration).

1.5 Research Questions

Considering the established objectives, the present study attempts to address the questions below:

1. What are the content of Sensory Imagination Program (SIP) that can be used to enhance figural creativity of gifted elementary students in Saudi Arabia?

2. Are there any differences in the experimental group's and control group's post-test scores for figural creativity and its four dimensions (originality, flexibility, fluency & elaboration)?

3. Are there any differences in the experimental group's and control group's delayed post-test scores for figural creativity and its four dimensions (originality, flexibility, fluency & elaboration)?

1.6 Research Hypotheses

The following research hypotheses are derived from the research objectives:

Ho_1: There is no significant difference in post-test means of figural creativity between experimental and control groups.

Ho_{2a}: There is no significant difference in post-test means of originality between experimental and control groups.

Ho_{2b}: There is no significant difference in post-test means of flexibility between experimental and control groups.

Ho_{2c}: There is no significant difference in post-test means of fluency between experimental and control groups.

Ho_{2d}: There is no significant difference in post-test means of elaboration between experimental and control groups.

Ho_3: There is no significant difference in delayed post-test means of figural creativity between experimental and control groups.

Ho_{4a}: There is no significant difference in delayed post-test means of originality between experimental and control groups.

Ho_{4b}: There is no significant difference in delayed post-test means of flexibility between experimental and control groups.

Ho_{4c}: There is no significant difference in delayed post-test means of fluency between experimental and control groups.

Ho_{4d}: There is no significant difference in delayed post-test means of elaboration between experimental and control groups.

1.7 Conceptual Framework

As mentioned before, many recent studies (e.g., Dygert & Jarosz, 2020; Gralewski & Karwowski, 2018; Nazario, 2021) indicated that the best means to enhance gifted children's creativity is through their imagination. So, the sensory imagination program (SIP) was developed by the researcher specifically to enhance figural creativity of gifted elementary school students in Saudi Arabia. This study aims to test the effectiveness of SIP and its sustainable effects in enhancing figural creativity. The effects of SIP on the four dimensions of figural creativity namely originality, flexibility, fluency, and elaboration were also tested.

Figure 1.1 illustrates the Conceptual Framework of the Study (CFS), which is made up of Independent Variable (IV) and Dependent Variables (DV). The independent or manipulated variable in this study was SIP while the dependent variable was figural creativity. There are four dimensions of figural creativity; originality, flexibility, fluency, and elaboration.

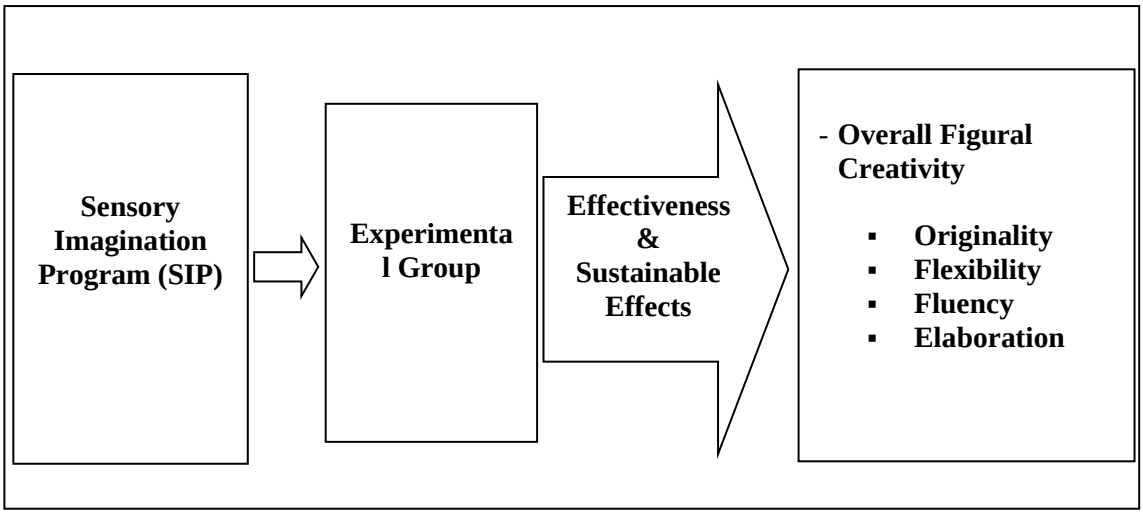

Figure 1.1. elementary female gifted students' and 'control group'

1.8 Research Significance

This study is significant to stakeholders in the field of gifted education. The outcome of this study would determine the effectiveness and sustainable effects of SIP on female gifted student's figural creativity in Saudi Arabia context. If the new intervention is found to be effective and has sustainable effects. This means that the study has a significant contribution in the development and evaluation of a completely new sensory imagination program for enhancing figural creativity of gifted elementary students in Saudi Arabia. This study sheds light on special intervention using sensory imagination for enhancing the figural creativity among gifted elementary students.

The results of this study revealed that SIP could enhance the four figural creativity skills of participants, contributed a significant attempt at developing and evaluating the effectiveness of new intervention based on a new idea represented in the sensory imagination, considered as a significant attempt in enhancing figural creativity skills.

Additionally, such knowledge can give insights into the design and development of further imagination training programs for gifted students.

One of the indirect significances of this study is the enhancement of imagination of participants, aside from providing a tool to enhance figural creativity skills of gifted students which is expected to enhance their expressing tools like what mentioned in Egan's (1997) view is also a means of enlarging the mind. This is achieved through increasingly sophisticated use of language forms, such as figural, oral, written, and theoretic use of expressing, which leads to the acquisition of greater understanding of the world and all that it encompasses; all of these are expected to help these students and support their general academic enrichment, while also sharpening their learning processes, and opening the door to future studies, Such direction can promote the involvement of the primary gifted students in the outward expansion of their interests and involvement in the society.

Some previous studies have reported that figural creativity skills are positively correlated with enhancing other aspects of the gifted student skills, like geometric thinking and academic performance (Hawthorne, Quintin, Saggar, Bott, Keinitz, Liu & Reiss, 2014). The category of gifted students could most likely be taken an important role in their society in the future (Hawthorne et al, 2014). Therefore, such category of students should be well prepared and trained on the figural creativity to ensure their benefits in the figurative missions in their future to society. The issue of education for gifted children in Saudi Arabia has been minimally explored; hence, the current study can be a significant addition to the literature. Moreover, this study can bridge the gap concerning the issues related to education for gifted students, particularly the development and evaluation of an

imaginary program to enhance figural creativity skills of gifted elementary students in Saudi Arabia.

The present study contributes to the body of special education knowledge for increasing field specialists' understanding and using of the sensory imagination as tool for enhancing figural creativity of gifted elementary students. This study is also important because it expands the limited literature related to the development and evaluation of an imaginary program to enhance figural creativity of gifted elementary students particularly in Saudi Arabia. To the best of the researcher's knowledge, no study has examined the development and evaluation of an imaginary program to enhance figural creativity skills among Grade 3 and Grade 4 gifted students in eastern region of Saudi Arabia, Thus, this study attempted to fill this research gap.

The outcomes of this study may help researchers in developing other interventions to meet figural creativity or other needs of gifted students. This study is also beneficial for students, particularly gifted ones who are high achievers, because understanding their needs is a priority for any successful society. This study is important for teachers, particularly those of gifted students, in addition to other relevant parties. Overall, this study presents useful information for teaching staff, school administrators, supervisors, inspectors, Saudi MOE in general, and other concerned personnel, particularly the special education sector. The results of this study are expected to increase the awareness of the involved personnel and organizations. These results may also assist in the development of policies and decisions regarding the procedures that must be adopted to help Saudi students to overcome the problems related to figural creativity skills, while also improving their skills, and ultimately facilitate them in achieving academic success.

This study is equally useful for parents who have children in schools, particularly those with gifted children. It particularly provides parents with necessary information that could help them seek procedures for improving figural creativity skills and academic achievement of their children. This study is significant to the government of Saudi Arabia because its results could motivate the government, personnel, and other concerned organizations to further help Saudi students by determining their needs and concerns, especially female gifted students in eastern region of Saudi Arabia.

Finally, this study is useful to international organizations, such as UNICEF, UNDP, UNESCO, USAID, and UNGEI, especially in planning programs on special education, particularly those related to figural creativity skills and academic achievement of gifted students in Saudi Arabia and other Arab countries.

1.9 Research Limitations

Some elements (e.g., the location of study, the students' age stage) could be superficially appeared as limitation of this study, but they are delimitations that they were not beyond the control of the researcher, those delimitation elements done intentionally to determine the boundaries and the scope of the study. Where some scientific procedures in the study were taken to avoid those limitations' effects on the results, for instance, determining and limiting the results in the titled terms in the study title, taking some methods to avoid the limitation effect of the results, like the randomization in assigning the study sample and dividing it into two groups, and so on.

The study presents an entirely new sensory imagination program abbreviated as SIP for enhancing figural creativity of the 3rd and 4th Grade of gifted Saudi students and

for evaluating its effectiveness. The experimental group of this study received the SIP application, and students in this group were studying in the gifted centre of Dammam in eastern province region of Saudi Arabia. This centre is located in Alnozha district in the Capital of this Eastern province (Dammam City). The students were in the second semester of the study year 2017-2018, and the administered SIP comprised 15 sessions, in the duration of 8 weeks, whereby each session contained 3 phases, and each phase contained several activities which took 50 minutes to complete.

The study is limited in its application in the Saudi centres for female gifted students, where it was as compulsory during the study application period to take the cluster of female gifted students among the two genders according to the educational policy in the gender segregation system of Saudi Arabia. Then, complying with the Saudi MOE, this experimental study was carried out just on gifted students in the after-school program among the two types of the adopted programs of gifted students in Saudi Arabia in the study application period (school program and after- school program).

1.10 Definition of Terms

The definition of this research terms is as follow:

1.10.1 Sensory Imagination Program

The Sensory Imagination Program (SIP) in this study is an entirely new enhancement Program developed by the researcher to enhance gifted elementary students' figural creativity. The development of SIP was based on an educational and development principles, gleaned mainly from three educational theories (Paget's theory, Vygotsky's theory, Egan's theory). SIP comprises 15 sessions involving several activities by and on

the five senses inputs. In particular, the activities depend on the imagination and perceptions of the five senses from the daily life and daily class learning experiences to make more expansion of the existing imaginary SIP's activities in the gifted student mind, depending on to the Imagination principles for learner engaged by cognitive tools for the classroom which found in Egan and Gillian (2015).

Pavie (2019) explained that the imagination concept was derived from the Latin word imaginatio, which is associated with a concept of 'fantasy', while 'fantasy' and 'fancy' were derived from the ancient Greek term phantasia. In the works of Plato and Aristotle, phantasia meant the power of apprehending or experiencing phantasm at a ('phantasms'). Phantasm originally meant an 'appearance' – an occurrence of something appearing to be such-and-such, as when the sun looks to us as being only a foot across. However, Aristotle also referred the concept as a 'mental image', which is how it was subsequently understood. Phantasia came to be translated by imagination and phantamsa by imago in Latin, preserving the etymological and conceptual connection here, although the original Greek terms were also used in their transliterated form (i.e., employing the Latin rather than Greek alphabet, as the researcher has done here) alongside their Latin correlates.

1.10.2 Effectiveness

Ghasemi and Mahdavi (2020) defined the effectiveness as the degree to which objectives are achieved and the extent to which targeted problems are resolved. In this study, effectiveness refers to the development and evaluation of the significance of the entirely new special program (SIP) which consists of a set of sensory imagination activities based on a tough theoretical framework, for the purpose of enhancing figural

creativity among gifted elementary students in Saudi Arabia. The effectiveness of SIP in enhancing figural creativity of gifted elementary students in Saudi Arabia was tested in this study, by investigating the enhancement of figural creativity scores of experimental group participants, after the SIP been has carried out on them, through comparing their scores on the post-test with their scores on the pre-test, and controlling this comparison with the control group results on the two test, this process done statistically by special analysis tests (Analysis of Co-variance).

1.10.3 Sustainable Effects

Sustainable Effects means here the SIP ability to sustain effectiveness in enhancing the figural creativity. Which would to be assessed the delayed - post test of the two groups of the study after the post-test in nearly similar time duration of the experiment, which was 8 weeks, where the SIP duration was 8 weeks, and the post testing was done immediately after the SIP. and 8 weeks after the post – testing the Delayed – post-test was done on the two groups for testing the sustainable effects of the SIP in enhancing the figural creativity of the experimental group,

1.10.4 Figural Creativity

The four sub-figural creative skills have been measured using Torrance Test of Creative Thinking - Figural form B (TTCT-Figural) which has been selected owing to its high relationship between the nature of questions the study aimed at testing them, and the nature of the study program on figural creativity that were expected to be enhanced of gifted elementary students whom would be targeted by its sessions, whom would be trained depending on SIP activities that included in this enhancement program sessions. The TTCT-Figural is a form of Torrance tests that examine figural creativity through three