

**Exploring Twice-Exceptionality in Dubai Private
Schools: Awareness, Perceptions, Current Practices and
Suggested Enhancing Educational Strategies**

استكشاف الطلاب ذوي الاستثناءين في مدارس دبي الخاصة:
الوعي والتصورات والممارسات الحالية ومقترح لاستراتيجيات تعليمية تعزيزية

by

AIDA CAMILLE YOUNIS

**A thesis submitted in fulfilment
of the requirements for the degree of
DOCTOR OF PHILOSOPHY IN EDUCATION
at
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Abstract in English

By the time the UAE pursues a first-rate education system that offers equal opportunities to all students, the Ministry of Education does not recognise twice-exceptional learners as a separate category of students who requires special education. Due to the complexity of their educational needs, they require identification and support that matches their coexistent disability and giftedness. Thus, this research is a transformative study aiming to reveal policymakers and educators' awareness and perceptions about twice-exceptionality. Moreover, this study seeks to determine how these students are identified and supported in schools in private schools in Dubai. As a result, strategies to enhance their education are discussed. Underpinned by social justice philosophy, a transformative concurrent mixed methodology is used to investigate the awareness and perceptions of educators and policymakers, and current practices provided to twice-exceptional learners at the level of identification and support, in Dubai. Derived from the theoretical framework, this study is transdisciplinary as reflected in its findings and recommendation. For this purpose, surveys for educators, as well as semi-structured interviews with inclusion specialists, policymakers, and twice-exceptional students are conducted. Additionally, non-participant observation and a sample of work are analysed. This triangulation aims to boost the validity, and trustworthiness of this dissertation. Aiming to suggest strategies to support twice-exceptional learners, in the emirate of Dubai, semi-structured interviews with international experts in twice-exceptionality research are led. Findings showed that schools support twice-exceptional students proactively. Furthermore, educators and policymakers need further awareness. Accordingly, recommendations are suggested. Finally, it is hoped that such recommendations support policymakers and educators for better provisions for twice-exceptional learners in Dubai, the UAE, and perhaps in the region.

ملخص تنفيذي

في الوقت الذي تسعى فيه دولة الإمارات العربية المتحدة إلى إنشاء نظام تعليم من الدرجة الأولى يوفر فرصًا متساوية لجميع الطلاب، لا تعتبر وزارة التربية والتعليم الطلاب ذوي الاستثناءين (الطلاب الموهوبون ذوو الإعاقة) فئة منفصلة عن الطلاب المحتاجين إلى التعليم الخاص. نظرًا لتعدد احتياجاتهم التعليمية، فإنهم يحتاجون إلى تشخيص ودعم يتناسب مع كونهم ذوو إعاقة وموهبة في آن واحد. وبالتالي، يعد هذا البحث دراسة تحويلية تهدف إلى الكشف عن وعي وتصورات واضعي السياسات والمعلمين حول الطلاب الموهوبين مزدوجي الاستثناءية. علاوة على ذلك، تسعى هذه الدراسة إلى تحديد كيفية التعرف على هؤلاء الطلاب ودعمهم تربويًا في المدارس الخاصة في دبي. كما ستعرض هذه الدراسة إلى مناقشة الاستراتيجيات التي تعزز تعلمهم. استنادًا لفلسفة العدالة الاجتماعية، سيتم استخدام طريقة البحث المختلطة التحويلية المتزامنة للتعرف على مدى وعي وتصورات المعلمين وصانعي السياسات تجاه الطلاب الموهوبين مزدوجي الاستثناءية، كما سيتم التعرف أيضًا للممارسات الحالية المقدمة على مستوى التشخيص والدعم، في دبي. بناءً على الإطار النظري المستخدم، تعد هذه الدراسة من الدراسات المتعددة التخصصات كما سيتضح جليًا من نتائجها وتوصياتها. لتحقيق الغرض من الدراسة تم استطلاع رأي المعلمين، بالإضافة إلى إجراء مقابلات شبه منظمة مع متخصصين في الدمج وصانعي السياسات وطلاب موهوبين مزدوجي الاستثناءية. بالإضافة إلى ذلك، تم تحليل بيانات ظهرت من خلال الملاحظة من بعد ومن عينة من عمل هؤلاء الطلاب. يهدف هذا التثليث إلى تعزيز معتمدية (استحقاق الثقة) ومصادقية هذه الرسالة. بهدف اقتراح استراتيجيات لدعم الطلاب الموهوبين مزدوجي الاستثناءية، في إمارة دبي، تم إجراء مقابلات شبه منظمة مع خبراء دوليين ممن لديهم باع في هذا المجال. أظهرت النتائج أن المدارس تدعم الطلاب الموهوبين مزدوجي الاستثناءية بشكل استباقي. كما اتضح أيضًا أن المربين وصناع السياسات يحتاجون إلى المزيد من التوعية بخصوص هؤلاء الطلاب. وفقًا لذلك، تم اقتراح التوصيات. وأخيرًا، من المرجو أن تدعم مثل هذه التوصيات صانعي السياسات والمعلمين لتوفير دعم أفضل للطلاب الموهوبين مزدوجي الاستثناءية في دبي، في الإمارات العربية المتحدة، وعلى الأغلب في المنطقة بأسرها.

Dedication

I am writing this thesis in loving memory of my father, Camille Younis, who passed away right before I embarked on this beautiful adventure. He was always lighting up my way and showing me that with the right focus, love, and dedication, I can achieve anything I want to achieve in life. Coco, thank you for always believing in me and for always guiding me.

I would also like to dedicate my work to my biggest role model, my late grandma Teta Aida, whom I would love to always honour and to whom I proudly owe the legacy of my name.

I am also offering this doctoral thesis to the rest of my beautiful family, who has always believed in me, provided me with endless support and love. Namely, I would love to say a big thank you to my great mom Samia and my backbone, my brother Shady and his family. Being born into your life is the biggest blessing anyone can ever hope for. My soulmate Reda, thank you for nurturing me with your endless support on this journey; also, to my aunts, uncles, and cousins, your belief in me made me push through.

Further, I would offer this doctoral thesis to all the twice-exceptional students I taught, especially Abdullah Jawad, who is now studying at university and other ones who are still struggling, requiring adequate education. I hope that this study facilitates the discovery of these buried gems in the soil of the education system. Together we are stronger... May this just be the beginning!

Thank God for his Light throughout my journey ...

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List of Acronyms

2e: Twice-exceptional

ADHD: Attention Deficit Hyperactivity Disorder

ALP: Advanced Learning Plan

AP: Advanced Placement

ASD: Autism Spectrum Disorder

DSIB: Dubai School Inspection Bureau

G&T: Gifted and Talented

GCSE: General Certificate of Secondary Education

IB: International Baccalaureate

IEP: Individual Education Program

KHDA: Knowledge and Human Development Authority

NAGC: National Association for Gifted Children

SEND: Special Educational Needs and Disabilities

SLD: Specific Learning Disabilities

UAE: United Arab Emirates

UN: United Nations

Chapter One: Introduction

1.1 Background of the Study

1.1.1 United Arab Emirates Background

The United Arab Emirates (UAE) is a country located in the Gulf peninsula, in Asia. The country is ruled by a federal government and is formed of seven emirates: Abu Dhabi (political capital), Dubai (economic capital), Sharjah, Ajman, Umm Al Quwain, Fujairah, and Ras Al Khaimah. Based on the World Bank records of 2019, its population is 9.68 million, of which 1.48 million are Emiratis, and the rest are expatriates, a majority of which are from South Asian countries such as India and Pakistan (World Bank 2019).

Ever since it was formed in 1971, the country has witnessed significant progress in all economic fields. Due to its perseverance, it has attracted many talented people from all over the world. Furthermore, its Prime Minister H.H. Sheikh Mohammed Bin Rashid Al-Maktoum announced in 2010 the Vision for 2021 of the UAE aiming to make the UAE one of the best countries in the world by its Golden Jubilee. This vision is founded on six pillars: sustainability, healthcare, first-rate education, competitive knowledge economy, safety and fairness, and cohesion of the society (United Arab Emirates Government 2019b). However, all these pillars are interconnected, and they all rely on achieving an advanced and competitive education system.

1.1.2 The Education System of the United Arab Emirates

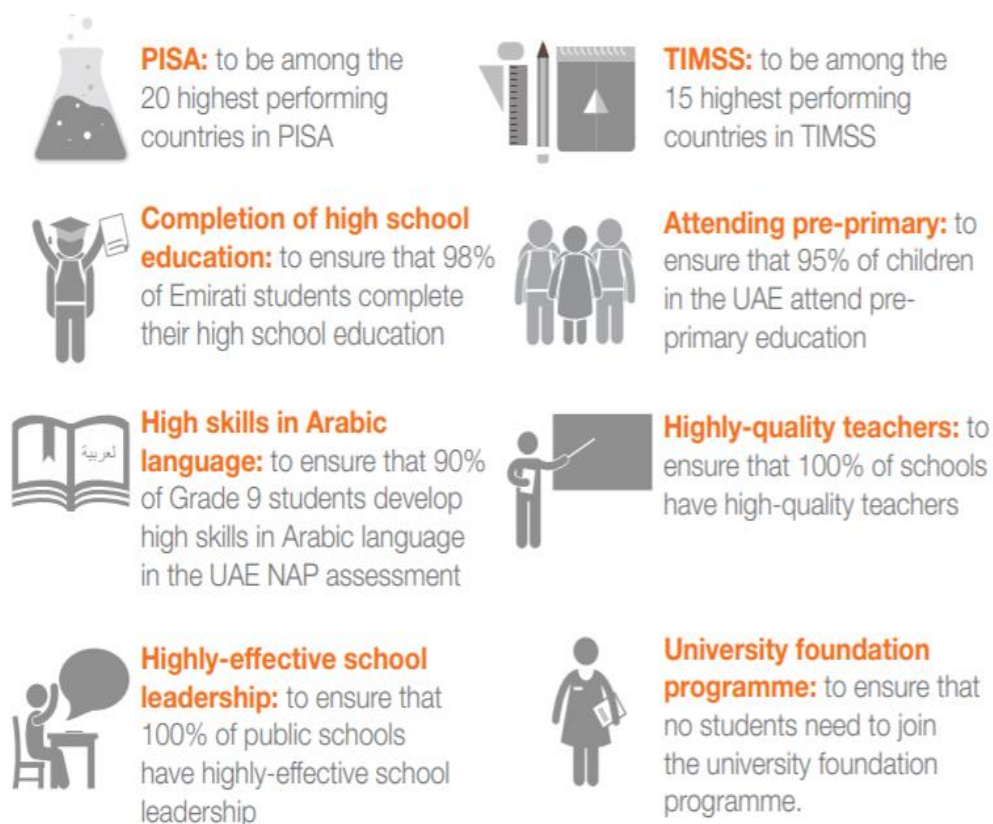
The Ministry of Education governs the whole education system. The latter includes all schools and universities across the UAE's seven emirates. In the UAE, schools are either public or private (Gaad et al. 2006). However, Abu Dhabi, Dubai and Sharjah have set their own local education bodies in charge of their own relevant private schools. For example, and for the purpose of this study, while the Ministry of Education supervises and controls public schools, the Knowledge and Human Development Authority, known as the KHDA, is set to strictly regulate and monitor the different private schools in the emirate of Dubai, with the support of the Ministry of Education (United Arab Emirates Government 2019a). While public schools follow the national curriculum of the UAE, private schools adopted different international curricula such as the Indian education system (CBSE), the British system, French system or International Baccalaureate, due to the different nationalities of the population.

However, despite the previously described differences, the country is working on developing the education system as education represents a priority for the nation. As part of the UAE Vision 2017-2021, by its Golden Jubilee, the country aspires to have established a first-rate education system. As noted by the KHDA, "Education is a fundamental element for the development of a nation and the best investment in its youth." (KHDA UAE School Inspection Framework 2017, p.11)

As a result, the UAE National Agenda was developed and reinforced in the UAE School Inspection Framework as shown in Figure 1.1 UAE National Agenda. Aligned with the UAE Vision 2021, the National Agenda 2021 for

schools was established and it includes the following terms: achieving high results in international standardised tests of PISA and TIMSS, building effective leadership of schools with high-quality teachers, ensuring that all students complete high school and do not use foundation years at university, developing high skills in Arabic language, and guaranteeing that students join pre-primary classes (United Arab Emirates Government 2019b).

Figure 1.1 UAE National Agenda (KHDA UAE School Inspection Framework 2017, p.11)



Even though none of the previously mentioned points of the National Agenda explicitly highlight the education of students with special education needs and disabilities, the UAE education system is determined to provide equal opportunities to all students, including students with special needs. Furthermore,

equity in education is articulated, like a key that the UAE education system focuses on achieving. Special education needs students are to be offered benefits derived from adequate provision programmes, adapted to their abilities and potential. Thus, the UAE has set a strategic plan enabling this goal to be achieved (United Arab Emirates Government 2019b). In addition, talents are considered one of the pillars of the United Nations Agenda for the Sustainable Development Goals of which the UAE is taking part, locally and globally. Therefore, education is recognised by the authorities of the country as a foundation of the economic prosperity of the country (United Arab Emirates Government 2019a).

Moreover, the Vision of the Special Education Department- annexed to the country's Ministry of Education- relies on the provision of inclusive education for both students with disabilities and gifted and talented students (Special Education Department 2010). Even the KHDA has been working hard towards providing a holistic framework for inclusive education (KHDA 2017a). Furthermore, the Hamdan Foundation, founded in 1998 by H.H. Shaikh Hamdan bin Rashid Al Maktoum, Deputy Ruler of Dubai and Minister of Finance of the UAE, is a governmental organization working with the Ministry of Education to develop giftedness education in the UAE (Hamdan Awards 2019). A detailed explanation about the foundation is explained in the following chapters.

1.2 Statement of the Problem

Despite the country's determination to achieve international standards of education, a category of special education needs students remains unrecognised. In the only document issued by the Special Education Department in 2010,

nothing is mentioned about twice-exceptional students' provision for education (Special Education Department 2010). At the level of Dubai, the same marginalization of twice-exceptionality applies to the most recent KHDA Inspection Framework and Supplement (KHDA 2017a; KHDA 2017b).

According to Baum, a twice-exceptional learner is a person who possesses both a given learning difficulty or disability and a gift or talent (1990). Dual exceptionality is another term used for the same concept with 2e and G/LD (Gifted/Learning Disability). According to Betts and Neihart (1998), during their studies of different types of gifted children, they traced the profile of the Double-Labelled type of gifted children, also known as twice-exceptional children, due to their possession of giftedness and disabilities. Silverman's research suggested that learning disorder tendency increases with the level of IQ (2002). Even though giftedness definition has evolved throughout history, the adopted definition of giftedness by the National Association of Gifted Children considers giftedness a superior ability that a person possesses in at least one domain (NAGC 2018). Disabilities include ADHD, Autism Spectrum, and social and emotional-behavioural problems. Furthermore, twice-exceptionality is a paradox and remains puzzling for both educators and psychologists (Seely 1998). This concept is vast, and this group is heterogeneous, especially in that there is a potential of multi-exceptionality (Beckmann & Minnaert 2018). Based on Gardner's multiple intelligence theory, there are different types of intelligence (1995). In addition, a person may be diagnosed with one or more than one learning disability, such as dyslexia and digraphia (Reis et al. 2014).

Furthermore, the incidence of gifted children with disabilities is significant and is found in 10 percent of this population (Silverman 2002). Some researchers found out that 5 percent of the disabled population tends to be intellectually gifted (McCoach & Siegle 2003). However, due to the lack of adequate identification of twice-exceptionality, the incidence of twice-exceptionality should be higher than these findings.

Due to the complexity of these children's educational needs, they require identification, intervention, provision programmes, assessments, and continuous monitoring, matching their coexistent disability and giftedness (Yssel et al. 2010); otherwise, they are in danger of being misdiagnosed or undiagnosed (Schultz 2011; Beckmann & Minnaert 2018). In simpler terms, they could lose the advantage of developing their high abilities due to their disabilities (Jeweler et al. 2008). Furthermore, if these children's disabilities are diagnosed, they tend to become labelled as "disabled," without any opportunity to reveal and develop their giftedness (Lummis 2018). They are also at risk of underachievement due to the lack of motivation as their social, emotional and educational needs are not satisfied in the school environment (Yssel et al. 2010; Assouline et al. 2010).

In the UAE, twice-exceptional learners can be undiagnosed or misdiagnosed due to the lack of guidance and expectations from the policymakers and educators. Specifically, stakeholders' awareness and perceptions shape the educational, social, behavioural, and emotional development of twice-exceptional children (Isernhagen 2012). Thus, they could be misunderstood by their parents, peers, and teachers. Furthermore, due to being underserved, they could academically fail and drop out of school (Weng & Neihart 2016; Baum et al.

2017). Not only are twice-exceptional children challenged by their own complex individual learning needs, but also educators and policymakers are challenging them by marginalising them (Leggett 2010). Therefore, aiming for consistency with the UAE Vision 2021, educators and policymakers need to be aware of the existence of this underrepresented population of students in the UAE to be able to support them efficiently.

1.3 Purpose and Questions of the Study

Based on equity and ethics in education, ensuring adequate education for twice-exceptional students is mandatory (Leggett et al. 2010). As there is no existing literature about twice-exceptionality in the UAE, this study is addressed to policymakers and educators as they are responsible for shaping the education system of the country. If this category is to be recognised, it is through their perseverant efforts. Thus, the study aims to shed light on what outstanding and very good rated schools, as per the last KHDA inspection, offer to these students in order to support their challenging needs. The latter is done through the analysis of the perceptions and awareness of the educators in these schools.

In addition, the perceptions and awareness of policymakers in the emirate of Dubai are also assessed. As they are responsible for issuing laws, policies, frameworks, and conducting inspections, representatives from the KHDA and Hamdan Foundation are interviewed to explore what they know, think and offer to twice-exceptional children. This snapshot is the foundation of the potential strategy that could be established to enhance equity in the fulfilment of their educational needs.

Thus, the purpose of this mixed method study is to determine these stakeholders' awareness and perceptions of twice-exceptional students in Dubai private schools. Secondly, only identification systems and provision programmes that have already been established to support twice-exceptional learners are examined because the fulfilment of these needs is a prerequisite of other support stages. In simpler terms, investigating twice-exceptional assessments and monitoring rely on a thorough study of identification and provision programmes. Finally, based on experts in the field of twice-exceptionality, such as Assouline, Neihart, Baum and Renzulli, a literature review, and these study findings, strategies to support these children are suggested to the policymakers and educators of Dubai private schools.

Founded on the statement of the problem and purpose of the study and as a transformative research, the overarching research question is listed as follows.

Overarching Research Question: How could the educational practices offered to twice-exceptional students be improved in Dubai based on the current educators and policymakers' awareness, perceptions and provisions?

From the above overarching research question, are derived the below research questions that explore its different components.

Research Question 1: To what extent are educators and policymakers aware of twice-exceptional learners in Dubai?

Research Question 2: What perceptions do educators and policymakers have of twice-exceptional learners in Dubai?

Research Question 3: What are the identification processes used to recognise twice-exceptional learners in Dubai?

Research Question 4: What are the provision programmes offered to twice-exceptional learners in Dubai?

Research Question 5: What are the suggested best practices recommended to support the education of twice-exceptional learners in Dubai?

1.4 Rationale and Significance of the Study

After reviewing the literature, twice-exceptionality has not yet been addressed by researchers in the UAE. Thus, no literature review is present about twice-exceptional learners concerning the UAE. This incident could be justified by recognising the relatively young age of this growing country. However, reviewing the literature shows that the focus has been mainly on the inclusion of students with disabilities, rather than giftedness (Al Ghawi 2017). Thus, research on twice-exceptionality presents an opportunity to shed light on another category of special education learners who also require identification, intervention, provision programmes, assessments, and monitoring support. From an equity perspective, these gifted students with disabilities also require remediation and enrichment (Yssel et al. 2010). Furthermore, from social justice and advocacy perspectives, the education system of Dubai, and the UAE is called upon to fulfil the educational needs of such students (Blackmore 2013).

Due to access advantage and convenience, the research shall study the field of twice-exceptionality only in private schools of the emirate of Dubai, rather than other schools across the country. Private schools in Dubai follow various

curricula, and their students are of different nationalities. As educators are of different nationalities in Dubai, they may be aware of the existence of this group of learners and could be implementing some practices to support them. However, for this study, schools rated as outstanding and very good by the KHDA are the ones to be studied due to their expected fulfilment of special education support requirements. Further details about the KHDA inspection process are discussed in later chapters.

While the Special Education Department still considers that a learner could either be gifted or have a learning disability, other countries have elaborated laws, acts, and policies to support the education this underrepresented population of students. For instance, in the USA even before the 21st century, educators and policymakers used to consider that the demonstration of symptoms of the two conditions was implausible or shocking (Baum et al. 2017).

Nevertheless, twice-exceptional learners became legally recognised as part of the Gifted Plus category due to the perseverance of empirical research of twice-exceptionality. According to Zirkel, giftedness education legislation has evolved significantly, including Gifted Plus category adjudication over a timeframe of 11 years (2016). Despite relevant changes in the USA, this group is still underrepresented by gifted programmes (Missett et al. 2016). Furthermore, some teachers still tend to have low expectations of students who demonstrate learning difficulties, without realising that some of them could be gifted (Missett et al. 2016). Derived from the Individuals with Disabilities Education Act (IDEA), programming and school counselling was implemented in schools to both develop

giftedness and overcome the learning disabilities of twice-exceptional learners (Yssel et al. 2010).

In some countries, such as the USA, schools for twice-exceptional children have been founded, such as Bridges Academy in Los Angeles, realising the complexity of satisfying their needs. In addition, in the USA and Netherlands, some universities are developing graduate studies specialised only on twice-exceptionality. Research in other countries has developed toolkits for identification of twice-exceptionality despite its complexity.

Therefore, recognising that the UAE is working towards giftedness education development, it is high time for the UAE to use earlier related research to enhance its special education standards, including the population of twice-exceptional learners. Furthermore, this research shall be the first step in the revelation of the country's standards in this field and the recommendation of best practices. Thus, based on the results of the study, awareness and perceptions of twice-exceptionality should be enhanced. Policymakers, along with educators, should provide needed support for the twice-exceptional students based on the recommendations of the study. Other researchers could then contribute to the improvement of the education practices offered to these highly demanding children in the UAE.

1.5 Thesis Organization of Chapters

This thesis dissertation is comprised of five different chapters. Chapter One represents an introduction, discussion of the background, the purpose of the study, the research questions, the rationale and significance of the research, along

with a methodology and research design overview. Chapter Two represents an exploration of the theoretical framework, conceptual framework, and an intensive analysis of the literature review of twice-exceptionality. Chapter Three discourses the methodology employed for this study, including the research approach, paradigm, instruments along with the data collection and analysis processes. Further, the research limitations, ethical considerations, methodological challenges and issues are disclosed. Chapter Four offers a thorough presentation and analysis of the research findings. Finally, in Chapter Five, research results are discussed. Based on the discussion, recommendations to establish strategies to enhance twice-exceptionality education in Dubai are proposed and intensely discussed. To end this thesis, suggestions for further research, and conclusion along with final thoughts and personal gains are presented.

Chapter Two: Theoretical Framework, Conceptual Framework and Literature Review

2.1 Overview

From an equity perspective, twice-exceptional students' needs should be met through catering to their deficits while simultaneously enriching and supporting their strengths and gifts (Yssel et al. 2010). Otherwise, they could end up being misdiagnosed, underachieving, and labelled (Schultz 2011; Beckmann & Minnaert 2018; Jeweler et al. 2008). The purpose of this thesis is to shed light on what private schools offer to twice-exceptional learners in Dubai as there are no related regulations set by the Ministry of Education and the KHDA. In addition, strategies of best practices regarding twice-exceptionality are suggested to policymakers and educators based on experts' recommendations and other countries' literature. These recommendations include enhancing awareness, improvement of perceptions, and setting valid identification and support for twice-exceptional children. As mentioned in the introduction, the research lens is limited to outstanding and very good rated private schools in Dubai because of research convenience and due to the variety of faculty nationalities, their high standard of special education, and the different international systems implemented in these schools.

As stated in the introduction, the UAE aims to attain a first-rate education system by 2021, based on its vision of 2021 (United Arab Emirates 2014). Thus, the country has developed a consistent strategy to achieve this target by applying international education standards. However, despite the effort of the Department

of Special Education to support students with special education needs, twice-exceptional learners remain marginalised as they are not even listed in the official documents issued by both the Ministry of Education and the Department of Special Education (Ministry of Education 2010; Knowledge and Human Development Authority 2017; Ministry of Education 2016; Knowledge and Human Development Authority 2019). Nevertheless, such a heterogeneous group of students requires more intense support as their learning needs are complex. As explained earlier, they could combine both giftedness features and learning differences and disabilities (Beckmann & Minnaert 2018).

Furthermore, the UAE literature has mainly focused on special education rather than giftedness (Al Ghawi 2017). As for twice-exceptionality, research about this category of students is still absent. Not only is the significance of the study to provide an investigation of what private schools in Dubai offer to twice-exceptionality, but also it is an opportunity to recommend how to initiate the necessary support for these children.

In this chapter, the conceptual framework is discussed based on showing the relation among different variables and sketching the various stages of this transformative research. In other words, to develop enhancing strategies to support twice-exceptional students, an exploration of educators and policymakers' awareness, perceptions, and practices is executed. Besides, the theoretical framework is explored while highlighting the different learning theories and models supporting and refuting twice-exceptionality. As there are no theories for twice-exceptionality, the theoretical framework is grounded on the two spectra of exceptional education. On the one hand, the evolution of giftedness research is

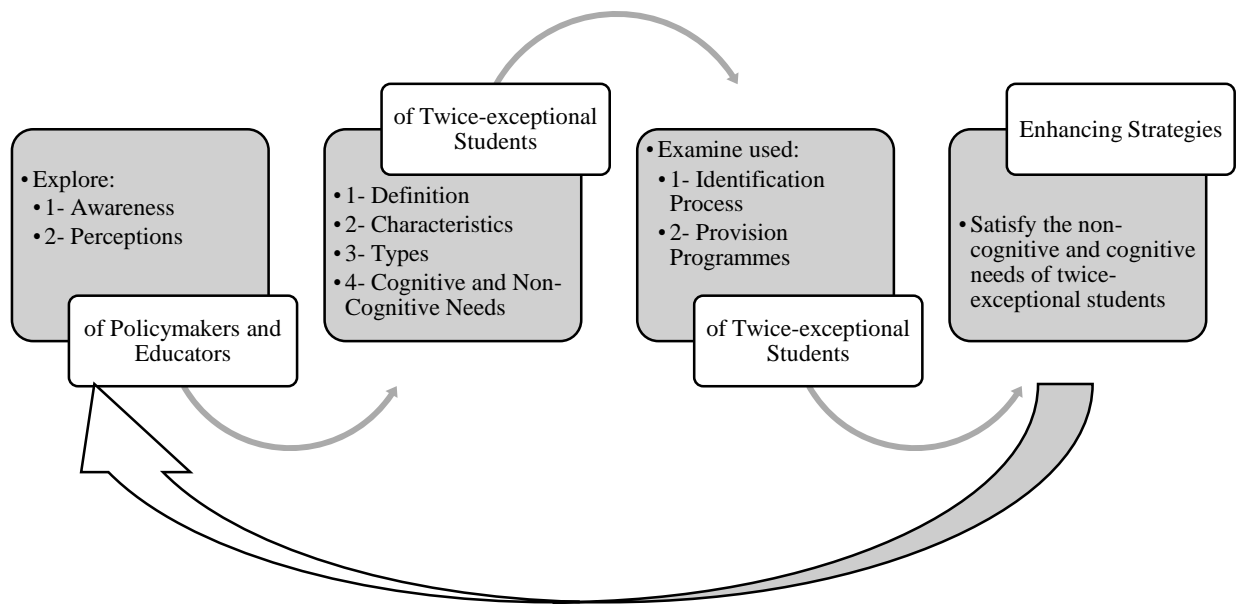
discussed. On the other hand, the development of the special education models from medical to social and recently to right-based models are thoroughly examined. Based on such a foundation, the theoretical framework of twice-exceptionality is launched while merging the two spectra ends. In addition, from a transdisciplinary perspective, the theoretical framework is founded in the Social Justice Theory of Education, Functionalist Theory, Maslow's Hierarchy of Needs, and Sociocultural Learning Theory. Furthermore, it incorporates three stakeholders: policymakers, educators, and twice-exceptional students.

In the literature review, twice-exceptionality development in the world is examined in further detail. An overview of the special education system in the UAE is also extended. Finally, the current study is positioned in the twice-exceptionality literature while focusing on the gap in UAE literature.

2.2 Conceptual Framework

Derived from the purpose of the study, the conceptual framework is structured to depict the relationships among the different variables that are involved in this study. In addition, as a transformative research, the different stages of the study are portrayed highlighting also its impact.

Figure 2.1 Conceptual Framework of the Study



As Figure 2.1 Conceptual Framework of the study shows, this transformative study aims to start by exploring the awareness and perceptions of educators and policymakers about twice-exceptional students. For the purpose of the study, awareness is defined as what is acquired or known, while perceptions are subjective because they are based on thoughts and experience (Merikle 2001).

In order to cater to offer an equity-based education for twice-exceptional students, policymakers and educators must be able to define what this category of students is. Further, they should be able to determine all the characteristics of this heterogeneous group of students, as they are not similar to gifted students or to

students with special needs. By stating that they are a heterogeneous group of students, policymakers and educators must recognise the different types of twice-exceptional students. Also, such students, due to their complexity, have different needs that are not strictly related to their school performance. Policymakers and educators must determine what cognitive and non-cognitive needs they have. Otherwise, without a robust awareness and correct perceptions about twice-exceptionality, educators and policymakers shall fail to offer adequate support for them.

2.2.1 Twice-exceptionality

After years of research and advocacy that began in the 20th century, it was urgent to agree upon one single operational definition that could guide all practitioners, policymakers, and parents about the meaning, type, and characteristics of twice-exceptional students. This definition should provide a clear system to identify and support twice-exceptional learners. Before this definition, twice-exceptionality was criticised for being ambiguous, vague, and not present among students. Thus, the purpose of this section is to dissect and discuss the agreed-upon definition set by the National Commission of Twice-Exceptional Students structured in 2010 (Reis, Baum & Burke 2014). As Reis, Baum and Burke noted:

“Twice-exceptional learners are students who demonstrate the potential for high achievement or creative productivity in one or more domains... AND who manifest one or more disabilities as defined by federal or state eligibility criteria” (Reis, Baum & Burke 2014, p. 222).

As previously defined, twice-exceptional students are students who manifest high potential in different domains, such as mathematics, arts, or any productivity that is valued by humanity. In the meantime, they possess disabilities that are recognised by the law, such as specific learning disabilities and physical disabilities. In the context of the USA, where the twice-exceptionality definition was established, there are 13 categories of disabilities. The following disabilities are listed as per the Individuals with Disabilities Education Act (IDEA). This list would vary from one country to another, but all these disabilities are listed even if under different terms or categories (Ronksley-Pavia & Townend 2017). For the context of this study, the list stated by the UAE is discussed in section 2.4.3 of chapter two.

(1) Specific Learning Disabilities: they challenge students in reading, writing, listening, speaking, reasoning, and mathematical processing. There are disabilities under this umbrella:

- Dyslexia: it is a disability that limits reading.
- Dysgraphia: it is a disability that limits the writing ability.
- Dyscalculia: it is a mathematical disability.
- Auditory processing disorder: a disability that makes a child unable to distinguish between sounds and words (Fletcher et al. 2019).

(2) Other Health Impairment: these disabilities challenge the strengths, energy, and attention of students. One example of these impairments is the ADHD (Fletcher et al. 2019).

- ADHD (also known as Attention Deficit and Hyperactive Disorder): a chronic condition that limits the attention of students and perpetuates their hyperactivity.
- (3) ASD (also known as Autism Spectrum Disorder): a developmental form of disability that demonstrates many symptoms affecting a student's social and communication skills. As the term spectrum implies, there are different levels of ASD from mild to severe.
- AS (also known as Asperger's Syndrome): is considered one type of ASD. However, it is high-functional as students with Asperger's syndrome do not have a speech delay, and their cognitive development is manifested by an IQ that is either average or higher than the average (Fletcher et al. 2019).
- (4) Emotional and Behavioural Disorders: many mental health disorders fall under this umbrella of disabilities. Examples of these disorders are depression, anxiety, and OCD (Fletcher et al. 2019).
- OCD (also known as Obsessive-Compulsive Disorder): a chronic condition that pushes a student to repeat his actions over and over or stimulates unwanted thoughts or feelings over and over without control.
- (5) Speech and Language Impairment: affected students may stutter as they have trouble in pronunciation and speaking. Thus, this impairment inhibits their ability to express themselves (Fletcher et al. 2019).

- (6) Visual Impairment: affected students can have problems affecting their eyesight. However, if the visual impairment is solved with spectacles, the issue is not considered as a disability (Fletcher et al. 2019).
- (7) Deafness: affected students who cannot hear at all or most of the sounds are considered disabled under this category (Fletcher et al. 2019).
- (8) Hearing impairment: affected students who fall under this category cannot hear properly but are not considered deaf (Fletcher et al. 2019).
- (9) Deaf-blindness: affected students are severely challenged in hearing and eyesight (Fletcher et al. 2019).
- (10) Orthopaedic Impairment: this category of students is of ones who lack the abilities and functions of their body (Fletcher et al. 2019).
- Cerebral palsy: a permanent movement disorder by birth that limits the mobility of students.
- (11) Intellectual Disability: affected students with intellectual disabilities have a below-average intellectual disability manifested by low IQ. Down Syndrome is an example of an intellectual disability.
- (12) Traumatic Brain Injury: a brain injury that affects the abilities of students (Fletcher et al. 2019).
- (13) Multiple Disabilities: affected students have different disabilities covered in the previous 12 disabilities (Fletcher et al. 2019).

The combination of the above-described disabilities and the high abilities in various domains stem from a unique population with different needs. Due to the mask effect, twice-exceptional students may not show their high ability or

disability. All depend on the severity of the disability and the level of ability. In other words, in a school setting, their high academic performance may hide their disability. Alternatively, their disability could hide their ability. Furthermore, neither the disability nor the ability might be demonstrated (Nicpon et al. 2011; Reis, Baum & Burke 2014; Baum, Schader & Owen 2017). As an elaboration on the mask effect meaning, based on King's research, there are three main types of such children. One type of twice-exceptional learners is the one whose giftedness is stronger than their disabilities so that their disabilities tend to be covered by giftedness. For such a child, they may not have their disabilities identified and supported because giftedness overrides their deficits. Another type of twice-exceptional learner is the one whose giftedness compensates for their learning disabilities. Thus, such a child remains unidentified either as gifted or as learning disabled. The last category is one of the children whose deficits and gifts are of equal intensity so that the child is identified as both gifted and learning disabled (2005).

Furthermore, the definition of twice-exceptionality highlights the comorbidity of giftedness and disability. In other words, the incidence of twice-exceptionality means that there is a complex interaction between the gift and disability. Thus, twice-exceptional students should neither be identified or supported as if they possessed these two exceptionalities as standalone. They require a distinct framework. In addition, this population is heterogeneous due to the various combinations between disabilities and gifts, while recognising the intensity of each one of the exceptionalities. Intensity levels lead to the mask effect. Furthermore, a new trait may rise due to comorbidity. In simpler terms, the

interaction between the two exceptionalities may lead to new symptoms. These symptoms are derived from the combination of the exceptionalities. Other students without the disability or the high ability may not display these traits (Trail 2008; Nicpon et al. 2011; Foley-Nicpon, Assouline & Colangelo 2013; Reis, Baum & Burke 2014b; Baum, Schader & Owen 2017).

Due to the comorbidity of twice-exceptionality, the definition of the National Commission for Twice-Exceptional Students proceeded by explaining that these students require a comprehensive form of assessments for both giftedness and disabilities. Thus, professionals and educators should take part of the assessment to point out the deficits and the gifts (Trail 2008; Nicpon et al. 2011; Al-Hroub 2013; Foley-Nicpon, Assouline & Colangelo 2013; Al-Hroub 2014; Reis, Baum & Burke 2014; Baum, Schader & Owen 2017).

Furthermore, to support this category of students, twice-exceptional students need a comprehensive education plan recognising a cognitive and non-cognitive aspect of the students' abilities and challenges (Beckmann & Minnaert 2018). Thus, the Individual Education Plan (IEP) should be customised while setting students' goals and strategies to be used to develop the gifts while accommodating and compensating for the deficits. As students learn differently and twice-exceptional students are heterogeneous, their IEP should be SMART, as specific, measurable, attainable, realistic, and time-based. However, students' social and emotional needs must be controlled and satisfied because satisfying their psychological needs is required for them to grow their talents and compensate for their deficits (Beckmann & Minnaert 2018). The comprehensive plan should include instructional differentiation. For deficits, accommodations,

and modifications can be used based on either the curriculum or instructions. As for gifts, acceleration and enrichment can be used in order to develop students' talents while considering the dual-diagnosis of the deficits and gifts (Tomlinson et al. 2002; Reis, Baum & Burke 2014; Renzulli & Reis 2014; Baum, Schader & Owen 2017).

2.2.2 Types of Twice-exceptionality and Neurodiversity

Due to the combination of different high abilities and disabilities, there are various types of twice-exceptional students. In this part, the most commonly identified types of twice-exceptional students are explained as there are various articles and books about them. However, there are other types with less frequent reporting¹; further research should describe them. In Table 2.1 Sample Characteristics of Diverse Twice-exceptional Students, the most frequent types along with their characteristics are outlined. The table is taken from an article by Reis, Baum and Bruke and presents a comparison among gifted students with Attention Deficit and Hyperactivity Disorder, Specific Learning Disabilities and Asperger's Syndrome (2014 p. 221). The comparison is based on the following criteria and they may vary from one student to another so that this list does not cover all the characteristics of these categories of twice-exceptionality: (1) academic difficulties, (2) attention issues, (3) organizational issues, (4) social issues, (5) behavioural issues, (6) impulsivity, and (7) emotional volatility².

¹ The researcher examined a type of twice-exceptional students that is not frequently reported in literature: Gifted with Turner Syndrome. Such a case is expected to enrich the literature of twice-exceptionality.

² This table has been adapted by the researcher to prepare the observation checklist when observing and interviewing twice-exceptional students. Furthermore, along with other articles, it will be used for data analysis.

Table 2.1 Sample Characteristics of Diverse Twice-exceptional Students

	Attention deficit/hyperactivity disorder	Specific learning disabilities	Autism spectrum disorder (Asperger type)
Academic difficulties	<ul style="list-style-type: none"> • Difficulty beginning, listening to, or completing tasks, as well as expressing ideas in writing • Strengths in critical and creative thinking • Preference for spatial tasks 	<ul style="list-style-type: none"> • Verbal precocity but poor reading; confusion about similar letters and words • Dysgraphic • Dyslexic • Dyscalculia • Problems with short-term memory • Strengths in critical and creative thinking • Knowledgeable about specific areas • Preference for spatial tasks 	<ul style="list-style-type: none"> • Appropriate cognitive development with no delay in language • Difficulty with abstract concepts or with tasks that involve critical and creative thinking • Preference for spatial tasks • Preoccupation with one or more stereotyped and restricted patterns of interests that is abnormal in either intensity or focus
Attention Issues	<ul style="list-style-type: none"> • Fidgets, squirms, is restless • Difficulty remaining seated • Easily distracted 	<ul style="list-style-type: none"> • Short attention span, easily distracted • Overactive, inactive, or listless 	
Organizational issues	<ul style="list-style-type: none"> • Difficulty following directions and finishing tasks 	<ul style="list-style-type: none"> • Difficulty understanding or following directions • Difficulty in expressing or organizing thoughts verbally or in writing • Difficulty functioning when there is no structure or predictability (nonverbal learning disability) 	<ul style="list-style-type: none"> • Apparently inflexible adherence to specific nonfunctional routines or rituals • Stereotypical or repetitive motor mannerisms • Persistent preoccupation with parts of objects
Social issues	<ul style="list-style-type: none"> • Difficulty in understanding social contexts 	<ul style="list-style-type: none"> • Problems reading the social context (nonverbal learning disability) 	<ul style="list-style-type: none"> • Quantitative impairment in social interactions (manifests at least 2) • Lack of nonverbal behaviors • Failure to develop peer relationships • Lack of spontaneous sharing of interests, joy, or achievement • Lack of social or emotional reciprocity
Behavioral issues	<ul style="list-style-type: none"> • Often interrupts or intrudes on others 	<ul style="list-style-type: none"> • Clumsy 	<ul style="list-style-type: none"> • Restricted, repetitive, and stereotyped patterns of behavior, interests, and activities
Impulsivity	<ul style="list-style-type: none"> • Often engages in physically dangerous activities without considering possible consequences—not for purpose of thrill seeking (e.g., runs into street without looking) 	<ul style="list-style-type: none"> • Impulsivity and inability to foresee consequences 	
Emotional volatility	<ul style="list-style-type: none"> • Blurts out answers to questions 	<ul style="list-style-type: none"> • Oppositional and defiant as a coping skill 	<ul style="list-style-type: none"> • Emotional fragility • Clinical or significant impairment in social, occupational, or other important areas of functioning

Twice-exceptionality with ADHD

The first common type of twice-exceptionality is gifted students with ADHD. These students find various challenges because ADHD is a developmental disorder that begins at childhood and can continue to adulthood (Baum & Olenchak 2002; Kerr & Neumann 2012; Baum, Schader & Owen 2017). Usually, ADHD is treated by medication in addition to intervention by psychologists and

educators (Baum & Olenchak 2002; Lovecky 2004; Fugate 2018). There are different levels of severity when it comes to ADHD, and this is why different doses of medicines and medication can be used. Furthermore, even though the label of ADHD is used with boys more frequently, girls can struggle with ADHD. However, the symptoms displayed by girls are different because of the neurobiological differences between boys and girls (Lovecky 2004). For example, girls may display symptoms of daydreaming, perfectionism, or anxiousness as they internalise their behaviour. Furthermore, the manifested symptoms tend to be milder with girls than with boys. In addition, there is not enough literature about girls with ADHD to explain these differences clearly (Lovecky 2004). Other details about twice-exceptional students with ADHD are presented in Table 2.1.

Amend (2018) has developed a checklist to identify potential twice-exceptional learners in schools in the USA, divided into different disabilities and learning difficulties. His toolkit relies on such students' discrepancies among their academic achievements in different subjects, social behaviour, and health issues, depending on their cases. For instance, using this checklist, a student gifted in science with ADHD could be identified as he tends to have a specific flow of social behaviour, along with his giftedness in science. Nevertheless, Amend admits that such an identification checklist could be successful with "straightforward cases" but may not apply to other more complex cases (Amend 2018 p. 81).

Twice-exceptionality with Autism

The second common type of twice-exceptionality is of gifted children with Asperger's Syndrome. Autism is considered to be genetic by researchers, and

students may take medication due to the symptoms that this disorder displays (Lovecky 2004; Baum, Schader & Owen 2017). Specifically, gifted students with Asperger's Syndrome face many challenges, mainly in social interaction and social awareness. Nevertheless, they are brilliant in abstract thinking and gaining knowledge. In subjects they like, they tend to be very passionate and eager to learn (Lovecky 2004; Burger-Veltmeijer, Minnaert & van den Bosch 2015; Missett et al. 2016). Even though scientists are working on eliminating the gene related to autism, researchers believe that they would lose geniuses like Einstein (Lovecky 2004). Additional information about twice-exceptional students with autism are traced in Table 2.1 even though they may vary depending on the level of autism of the student.

Twice-exceptionality with Specific Learning Disabilities

The third common type of twice-exceptionality is gifted students with specific learning disabilities. This category of twice-exceptionality is by itself diverse because of the different learning disabilities (Al-Hroub 2010; Nicpon et al. 2011; Foley-Nicpon, Assouline & Colangelo 2013; Reis, Baum & Burke 2014; Baldwin et al. 2015; Fletcher et al. 2019).

As the name implies, the impact of the specific learning disability is mainly on the academic performance of students initially. Consequently, if not supported adequately, challenges related to the social and behavioural aspects of students may show. Examples of these students are gifted students with dyslexia and gifted students with dyscalculia. Thus, deficits and challenges vary based on students' specific learning disabilities (Armstrong 2010; Long et al. 2011; Nicpon

et al. 2011). Some of the symptoms or indicators of twice-exceptional students with specific learning disabilities are traced in Table 2.1.

Twice-exceptionality with Emotional and Behaviour Disorder

Even though not listed in Table 2.1, the fourth common type of twice-exceptionality is of gifted students with an emotional and behavioural disorder. These students tend to display many deficits related to their expression of feelings and their behaviour. For instance, twice-exceptional students with depression or anxiety fall under this category. Even though this category of twice-exceptional students has high potential, it was not studied as much as the previous three types of twice-exceptionality (Missett et al. 2016).

The emotional and behavioural disorder is not related to the medical, sensory, or intellectual condition of the student (Missett et al. 2016). These students may have symptoms displayed depending on the conditions in which they find themselves in. Furthermore, research proved that these symptoms do not occur all the time. Moreover, students can either internalise or externalise their behaviour and emotions. For internalising symptoms, students tend to be anxious and depressed, whereby educators cannot notice their deficits in class. They tend to be extremely perfectionist in their work. In contrast, for externalising symptoms, students show aggression and disruption; thus, educators can notice them in class. Nevertheless, they demonstrate confidence and advanced vocabulary, and they tend to be argumentative and lose patience quickly.

Gifted students with emotional and behavioural disorders are considered sensitive, inflexible, and intense by researchers. Furthermore, they possess an advanced level of creativity and critical thinking. However, they tend to resist

interventions designed to support their academic and emotional needs (Ronksley-Pavia 2015; Baum, Schader & Owen 2017; Amend 2018).

The above-discussed types of twice-exceptionality prove that neurodiversity exists with its power and challenges. Neurodiversity presented a new positive way to look at and study differences among humans and in specific twice-exceptional students (Tetreault 2019; Wiebe, Matranga & Baum 2019). According to Armstrong (2010), there are eight principles for neurodiversity that should make schools and the workplace benefit from neurodiversity:

- (1) The first principle is that the human brain, which was long considered as a machine, is similar to an ecosystem by itself as an organ.
- (2) The second principle is the existence of human brains is in a continuum as they make humans different.
- (3) The third principle is that the cultures humans live are the ones to determine competences,
- (4) The fourth principle is that giftedness and disability depend on the society to which a person belongs.
- (5) The fifth principle is that successful people are the ones who can adapt their brain to their milieu.
- (6) The sixth principle is that successful people are also the ones who can change their milieu to match their needs,
- (7) The seventh principle is that neurodiversity requires an environment that provides opportunities suiting their needs in education, career, supportive technology, and other resources,

- (8) The last principle is that if the milieu or niche is built to suit the needs of individuals, the brain would positively change through stimulating its abilities.

Researchers, advocates, universities, and other stakeholders are working towards building a neurodiversity friendly environment to benefit from all the contributions of gifted, twice-exceptional and disabled people (Armstrong 2010; Baum, Schader & Owen 2017; Wiebe, Matranga & Baum 2019).

2.2.3 Identification of Twice-exceptional Students

Referring to Figure 2.1 Conceptual Framework of the Study, once the awareness and perceptions of educators and policymakers are adequate, they can be capable of identifying twice-exceptional students. The identification of twice-exceptionality is challenging due to the complexity of these students. Therefore, solid systems should be implemented in order to find who is twice-exceptional. If they do not know how to identify twice-exceptionality, such students may be misdiagnosed while suffering from psychological problems such as depression.

Recognising that twice-exceptional students exist as a category has been challenging for parents, educators, researchers, and other stakeholders. In order to accurately identify twice-exceptional students, the definition of twice-exceptionality must be clear for all practitioners. That is why the definition was discussed in section 2.2.1, as developed by the National Commission for Twice-exceptional (Reis, Baum & Burke 2014b). Furthermore, based on the IDEA, it is a child's right to be identified as twice-exceptional in order to cater for their needs.

Thus, educators must learn how to identify twice-exceptional students through raising awareness (Friedrichs & Kulkarni 2019).

Many researchers examined methods to identify twice-exceptional students with learning disabilities. However, some limitations made this target hard to achieve because of the ambiguous definitions of giftedness and the diversity of learning difficulties. As a result, many students of the twice-exceptional students with learning disabilities fail to meet the characteristics of this category of students (Brody& Mills 1997).

For a student to be nominated as twice-exceptional with learning disabilities, he should manifest the following four characteristics: (1) a proof of a high ability, (2) an indicator of a difference between aptitude and achievement, (3) an indicator of a difference between verbal-performance IQ, and (4) an indicator of a deficit in processing (Brody& Mills 1997).

However, achieving a unified toolkit, instrument, or method to identify the different types of twice-exceptional students has been a hurdle for scholars and researchers (Baldwin et al. 2015). In this section, the different methods used to identify twice-exceptional students are discussed with their advantages and limitations. Furthermore, problems related to identification such as misdiagnosis are discussed with supportive recommendations to reduce their occurrence.

Multidimensional Model to Identification

The Multidimensional Model to Identification is one of the common ways to identify twice-exceptional students. Al-Hroub has used this approach to identify gifted students in mathematics with learning disabilities (2013). His studies were conducted in Jordan and the UK. This model is a progression of previous

researchers' outcomes of Baum and Owen (2004). According to the latter, two ways can be employed to identify twice-exceptional students with learning disabilities. The first way is a priori identification that involves collecting and analysing data from tests and interviews about the concerned students. The second method is dynamic identification, which consists of using activities to prompt and stimulate creativity in order to detect areas of strengths and talents (Baum, Schader & Owen 2017).

However, as an elaboration, the researcher used eight sources of information in order to identify gifted students in mathematics with learning disabilities. As the name of the approach implies, the purpose is to provide a comprehensive look at the students' strengths and deficits. In his research in Jordan, Al-Hroub used teachers' nominations, teachers' interviews, parents' interviews, dynamic assessments, class observations, the Wechsler Intelligence Scale for Children (WISC-III-Jordan of 1996), documentary evidence about the environment of the school, the Group of Perceptual Skills Tests, which is a mathematical ability testing, and the Diagnostic Arabic Literacy Language Skills Test. These sources of data complemented each other even though they are not only related to mathematics (Al-Hroub 2011, 2014; Al-Hroub & Whitebread 2019). Throughout these years from 2011 till 2019, Al-Hroub used the approach in different schools and environments while working on improving it with further empirical findings (Al-Hroub 2011, 2014; Al-Hroub & Whitebread 2019).

In this context, the dynamic assessment is crucial because it shows the progress of students in tests before and after being taught something new. It is known as the pretest-teach-retest method. Such an approach shows how these

students respond to teaching and how they can be taught (Al-Hroub 2011, 2014; Al-Hroub & Whitebread 2019).

According to Al-Hroub, the Multidimensional Model to Identification minimises the number of hidden twice-exceptional students because it covers all the aspects of students' learning environments and abilities in response to Brody and Mills (Al-Hroub 2014; Brody & Mills 1997). However, this approach has only been reported to be used in mathematics and learning disabilities, not in other types of deficits or gifts.

Response to Intervention

The Response to Intervention³ was designed to incorporate assessment with intervention, as the name implies. Through the multi-layered system, with three-tiered layers, the achievement of students would be optimised, and troubles related to behaviour would decrease. This system was not exclusively designed for twice-exceptional students as it was used for students with different disabilities who require different types of intervention.

Specifically, the system helps to identify at-risk students to supervise their progress through assessments. Accordingly, the type of intervention needed would be determined and adjusted in terms of intensity and type to suit students based on their responsiveness (Pereles & Baldwin 2009; Baum, Schader & Owen 2017).

However, this system can be used for students with high abilities to customise their learning in terms of curriculum according to their needs. Thus, it

³ It is used in the Directives and Guidelines for Inclusive Education released by the KHDA in Dubai in 2019. The document will be discussed in section 2.4.3.

can be used for gifted students in mainstream classes. As a result, it cannot be used for twice-exceptional students if educators are aware of the characteristics and symptoms of twice-exceptionality (Pereles & Baldwin 2009; Baum, Schader & Owen 2017). According to a research conducted to examine the awareness of education professionals about twice-exceptionality in the USA, findings revealed that the sample required intensive professional development in order to use the Response to Intervention with twice-exceptional students (Foley-Nicpon, Assouline & Colangelo 2013).

In order to cater to twice-exceptionality needs, Reflective Response to Intervention was developed by Baum, Schader, Dismuke, and Sly in 2012 (Baum, Schader & Owen 2017). This system was tailored to serve educators in identifying and supporting twice-exceptional students with evidence-based practices. With a reflective approach, different practitioners, such as educators and psychologists and parents, should present what students demonstrate reflectively in order to cater to their strengths and deficits adequately.

Nevertheless, this identification process has limitations derived from the presumed assumption that twice-exceptional students are not achieving (Morrison & Rizza 2007). On the one hand, it cannot identify twice-exceptional students who perform at the level of their class because, according to educators, they do not require any intervention. On the other hand, it cannot help students who excel in class. Intervention can be designed to challenge them without paying attention to their disability (Foley-Nicpon, Assouline & Colangelo 2013; Baum, Schader & Owen 2017).

Strengths and Weaknesses Heuristic

Previous methods of identification were focused more on twice-exceptionality with learning disabilities. However, the Strengths and Weaknesses Heuristic was developed for identifying twice-exceptional students who are suspected to be intellectually gifted with Autism Spectrum Disorder (Burger-Veltmeijer, Minnaert & van den Bosch 2014). This method aims to minimise the impact of the mask effect and to detect underachieving twice-exceptional students with ASD. Furthermore, assessment biases of intellectually gifted students with ASD are expected to be reduced. Such a method serves as a new beginning in clinical and psycho-educational praxis and theory (Burger-Veltmeijer, Minnaert & van den Bosch 2014). According to the founders of this method, it can also support the identification of other types of twice-exceptionality (Burger-Veltmeijer, Minnaert & van den Bosch 2014, 2015).

Not far from the outcome of the empirical evidence research conducted by Nicpon et al. (2011), this method is a Need Based Approach that determines the strengths and weaknesses of twice-exceptional students with ASD; this reduces the risk of misdiagnosis (Burger-Veltmeijer, Minnaert & Van den Bosch 2016).

The approach is composed of five stages: (1) Intake stage in which medical, psychological and educational data are collected from educators and parents, (2) Strategy stage in which the assessment strategy and its justification are covered, (3) Indication stage in which the assessment results are translated into intervention needed for the twice-exceptional student, (4) Advice stage in which interventions are guided, and (5) Evaluation stage in which the time and the way

the intervention results are shown are given (Burger-Veltmeijer, Minnaert & Van den Bosch 2016).

However, the primary concern, through further research, is to minimise biases and increase the systematicity of the method continuously. The progress of this research, as displayed in three articles, is significant even though the last study was conducted only on three cases of students, and the context is still limited to the Netherlands (Burger-Veltmeijer, Minnaert & Van den Bosch 2016).

Problems with Identification

Due to the mask effect of twice-exceptionality, students may be undetected and unidentified, as previously explained. However, further efforts should be addressed for the identification and recognition of twice-exceptional students (Reis, Baum & Burke 2014; Baldwin et al. 2015; Baum, Schader & Owen 2017; Maddocks 2018).

Misdiagnosis may result if the professionals were not aware of the identification tools and characteristics of each type of twice-exceptionality. According to Baum, the following are the consequences of misdiagnosis:

“Misdiagnosis can often worsen the situation and contribute to the student’s continued failure to be successful in the learning environment” (Baum & Olenchak 2002, p.77).

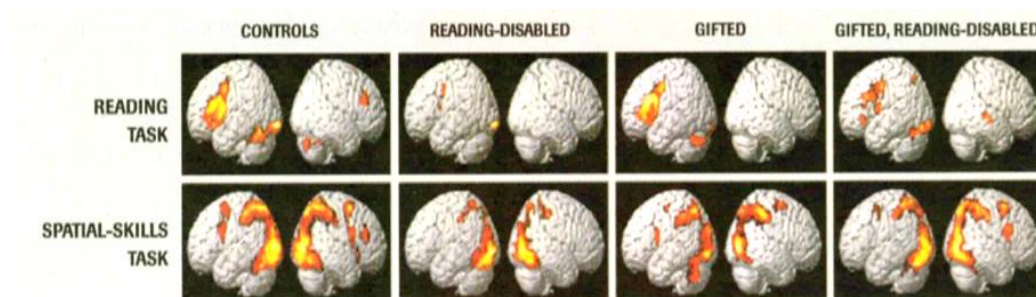
Due to the overlapping of some characteristics and the new trait or profile that results from the comorbidity of twice-exceptionality, professionals tend to misdiagnose their students (Baum & Olenchak 2002; Nicpon et al. 2011; Baldwin et al. 2015). In order to reduce the incidence of misdiagnosis, a comprehensive

assessment is required (Amend 2018). As a result, planned intervention would not be adequate to support the twice-exceptional students. These students are vulnerable to social and emotional instability, apart from academic underachievement (Morrison & Rizza 2007; Missett et al. 2016). Furthermore, the misidentification would lead to further stress for the students and his surroundings because their needs are not addressed (Tetreault 2019).

Delayed identification is also problematic because the intervention required shall be more advanced, and it may be harder for the student to compensate for the deficits. For the Response to Intervention to be more productive, early identification is a must and should be in the elementary school, not later than that, depending on the twice-exceptionality (Pereles & Baldwin 2009; Colangelo & Wood 2015).

The following picture Figure 2.2 fMRI Comparison between Gifted, Reading-disabled and Gifted with Reading-disabled Adults shows that adult gifted students with dyslexia had similar brain functions to adults who are not gifted but have dyslexia. This similarity is the consequence of absence of intervention and lack of identification. Therefore, early intervention and identification of twice-exceptionality is important to develop giftedness of twice-exceptional students. Further research is required in neuroscience at this level (Sparks 2012). In her own words, Assouline called for an urgent early intervention as a response to such fMRI results (Sparks 2012). By challenging twice-exceptional students, the well-connected neural network of these students gets developed. This Figure 2.2 is an illustration of the importance of strengths development (Newman & Malaia 2014).

Figure 2.2 fMRI Comparison between Gifted, Reading-disabled and Gifted with Reading-disabled Adults



Based on Minnaert latest research, he stated that for identification expertise is required due to the complications of discovering the various strengths and challenges of twice-exceptional students.

“it is very difficult to diagnose these students; it is difficult to tap their needs; and it is important to apply an individual approach by an expert diagnostician.” (2020, p.24)

From a holistic perspective, students should be observed thoroughly by their parents, counsellors, and teachers in order to help them unwrap their gifts and cope with their learning difficulties (Reis et al. 2014). To reduce misdiagnosis and delayed diagnosis of twice-exceptionality, professional development is compulsory for education professionals (Foley-Nicpon, Assouline & Colangelo 2013; Besnoy et al. 2015; Pereira, Knotts & Roberts 2015).

2.2.4 Supporting Twice-exceptional Students

If the identification process of these students was successful, policymakers and educators should prepare and implement provision programmes to develop their strengths and aid their weaknesses. Such provision programmes need to be customized to the various needs of the students. Figure 2.1 Conceptual Framework

of the Study demonstrates the relationship between supporting the needs and the other concepts such as identification.

As explained earlier, the Response to Intervention serves to both identify twice-exceptionality while showing their needs. The same applies to the Strengths and Weaknesses Heuristic, which ends with recommendations to be implemented in order to serve twice-exceptional students. However, supporting twice-exceptional students is also challenging because different twice-exceptional students have different deficits and strengths. Furthermore, the interaction of the exceptionalities imposes a different profile of students. For example, not all gifted mathematics students with Asperger's Syndrome are the same. In this section, different approaches, not strictly related to the school framework, to support twice-exceptional students, are explained.

Dual Differentiation

Due to the two exceptionalities, dual differentiation is an approach used in order to satisfy the needs of twice-exceptional students with learning disabilities. While more focused on academic strengths and weaknesses (Maddocks 2018), this approach strives to nurture and develop strengths while compensation for deficits (Baum, Cooper & Neu 2001). The core characteristic of dual differentiation is the balance between these two aspects (Baum, Cooper & Neu 2001; Baum, Schader & Owen 2017). In such a context, the role of the teacher is a facilitator. Furthermore, the curriculum is developed to optimise their gifts and remediate their deficit. The aim of such an approach is not to fix the student.

Dual differentiation could be used in mainstream schools. However, developing such a plan is challenging, especially that each twice-exceptional

student has his learning and personality profile (Baum, Cooper & Neu 2001). As a result, educators need to be trained and guided to use this approach and develop a suitable curriculum.

Response to Intervention

As defined and explained in section 2.2.3, the Response to Intervention is used to support twice-exceptional students (Foley-Nicpon, Assouline & Colangelo 2013). Nevertheless, through this approach, twice-exceptional students benefit from their high abilities to make up for their learning disabilities. As a result, students may reach a level where their giftedness and disabilities get masked again. Consequently, educators assume that these students do not require support anymore (Nicpon et al. 2011; Buică-Belciu & Popovici 2014). Accommodation, modification, and remediation could be used in order to support weaknesses of twice-exceptional students while acceleration and enrichment could be provided to areas of strengths (Baum, Schader & Owen 2017; Nicpon et al. 2011; Mpella et al. 2019).

Strength-based Approach

According to Baum, Schader, and Herbet (2014), strength-based learning consists of using curricular and instructional strategies with twice-exceptional students. The purpose is to bring the learning preferences, students' different types of intelligence, and cognitive styles together. The core of strength-based learning resides in offering students the choice and teaching them core subjects from the lens of the subject they prefer or the subject of their strength.

However, this is extremely complicated for mainstream schools to implement because of the different students that exist in class with their various

abilities. Furthermore, in some countries where there are external exams for high schools, the curriculum tends to be rigid, and such a system cannot be implemented. Bridges Academy has developed a school only for twice-exceptional students. The system used with twice-exceptional students there is founded based on the strength-based learning (Baum 2009; Baum, Schader & Owen 2017).

The Enrichment Triad Model

In section 2.2.4, the Enrichment Triad Model was explained. In this section, this model is discussed as a potential approach to support the strengths of twice-exceptional students. According to Renzulli and Reis, the Enrichment Triad Model could serve twice-exceptional students (2014). With its three stages, students can excel and enrich their giftedness. This is the result of the stimulation of their interest in the activities they get engaged in as far they develop throughout the three stages (Renzulli & Reis 2014).

“The kinds of experiences within SEM allow these students to circumvent problematic weaknesses and soar with their strengths rather than drown in a sea of remediation” (Baum & Novak 2010, p. 259).

As per the above statement, the Enrichment Triad Model boosts the strengths of students without attacking them with constant remediation. As a result, their weaknesses would be less edgy without hindering their growth (Baum & Novak 2010, p. 259).

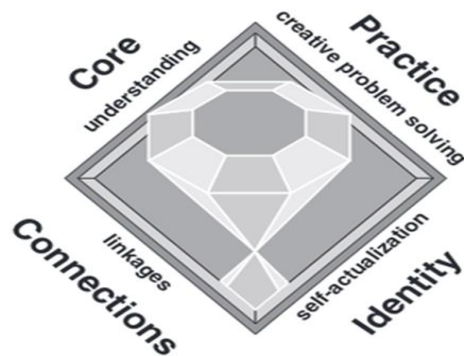
Parallel Curriculum

As shown in Figure 2.3 Parallel Curriculum Model, it is founded on four interrelated designs: (1) core, (2) practice, (3) connection, and (4) identity. This model serves twice-exceptional students.

- (1) The core consists of the content of the subject. In other words, concepts and principles, and standards form this component.
- (2) The connections component uses the concepts, principles, and standards to relate it with other times and cultures.
- (3) The practice is founded on instructions that help students apply what they learn and develop them to be future researchers and practitioners of the subject studied.
- (4) The identity is related to the reflection students make while relating their learning to their personal life and growth to outreach self-actualisation.

Even though the Parallel Curriculum Model could be for students who are not twice-exceptional it offers them many opportunities to develop themselves beyond the concepts they learn at school. As a result, it facilitates the development of abstract thinkers and leaders. In the meantime, it offers the opportunity to explore themselves in terms of interests, to challenge themselves, and become independent learners (Tomlinson et al. 2002; Baum, Schader & Owen 2017). Unlike traditional curricula, the main advantage of this type of curriculum is that it helps develop and grow expertise and self-actualisation that is needed for students. Ensuring cognitive and non-cognitive abilities growth is essential for twice-exceptional students (Beckmann & Minnaert 2018).

Figure 2.3 Parallel Curriculum Model



Psychological support

Twice-exceptional students are a sensitive group of students who do not only need academic and cognitive support. Instead, with academic support, they require psychological care. Thus, schools rely on counsellors and psychologists, apart from the gifted and special education needs specialists. According to scholars, the environment in which twice-exceptional students are nurtured is essential for their growth. Therefore, students need to feel psychologically safe with positive relationships with peers, educators, and parents. Furthermore, tolerating the asynchronous behaviour of students is crucial, without humiliating twice-exceptional students. In other words, students' deficits and strengths should be both respected equally.

A holistic environment for these students should be talent- and strength-based. As labels are socially constructed and initially used for students with a disability, they should not be used to undermine students. Instead, they should be used to make sure that all educators are aware of the needs of the twice-exceptional students to ensure that they receive

adequate support (Bianco 2005; Bianco & Leech 2010; Lovett 2013; Ronksley-Pavia 2015; Sexton 2016).

Moreover, twice-exceptional students are known for bullying, especially that they neither fit in the stereotypes of gifted students nor disabled students (Baldwin, Omdal & Pereles 2015). With this category of students, educators must ignore the stereotypes and prejudices they have of gifted students and special education students to be able to cater to their needs with flexibility.

“The focus should be on the unique needs of twice-exceptional students to create an integrated, individualised approach rather than trying to fit them into an existing system” (Baldwin, Omdal & Pereles 2015, p. 224).

Due to their asynchronous behaviour and other differences, twice-exceptional students tend to be bullied by various stakeholders such as peers and teachers. Hence, twice-exceptional students become socially isolated and emotionally affected. A study of twice-exceptional students’ narratives showed that peers used to bully them through physical abuse, verbal abuse, and vandalism of their own belongings. As for teachers, they were described to negatively target and attack twice-exceptional students, leading to an unsupportive environment. For example, students reported that teachers yelled at them, punished them, and humiliated them while looking down at them due to their disabilities (Ronksley-Pavia, Grootenboer & Pendergast 2019).

As a result, students isolated themselves in order to not interact with the environment as protective measures. Some of these students described their emotions as sadness, crying and depression. From an interpretive approach, these students were bullied and rejected from their society because of their differences from the dominant group of students (Ronksley-Pavia, Grootenboer & Pendergast 2019).

This research, along with other research conducted by Baum, suggests the importance of professional development for educators to understand and support twice-exceptional students to ensure a positive learning environment (Lee & Ritchotte 2018, 2019). Based on Maslow's Hierarchy of Needs, these students, who are victims of bullying, cannot grow as they lack a sense of belonging in the school and self-confidence (Baum 2019).

According to Assouline, Nicpon and Huber, school counsellors play a crucial role in supporting twice-exceptional education. They noted that "School counsellors are in a unique position to make a positive difference in the academic lives of twice- exceptional students" (Assouline, Nicpon & Huber 2006, p. 22).

In other words, they should act as change agents through bridging the gap among educators, special needs teachers, parents, psychologists and other students. Furthermore, they must support their social and emotional needs of twice-exceptional needs while developing their self-awareness and self-advocacy of their strengths and weaknesses.

Career Counselling

The education system for twice-exceptional students should prepare them for the career field (Lin & Foley-Nicpon 2020). As a result, they need to be oriented by career counsellors and other professionals about the career that suits them. Researchers are working with governments, universities, and businesses in order to embrace neurodiversity in the workplace (Tetreault 2019; Wiebe, Matranga & Baum 2019). As a result, businesses are providing support and training for neurodiverse employees to optimise their efforts and contributions. Such businesses are developing cognitive energies of these people in order to

boost innovation and technology while changing the meaning of professionalism in the workplace (Wiebe, Matranga & Baum 2019).

For instance, SAP software business is offering job training for potential candidates on the autism spectrum before hiring them (Wiebe, Matranga & Baum 2019). An additional example is Microsoft that developed an Inclusive Hiring Programme to employ neurodiverse employees. Such a change in the business orientation is that neurodiverse people are present in every family, even families of executives in well-reputed businesses such as Microsoft (Wiebe, Matranga & Baum 2019). With such an orientation, a culture free of bullying, sarcasm, and humiliation can be established. In such a workplace, potential twice-exceptional employees can grow, invent, and self-actualise (Baum 2019).

Thus, while directing twice-exceptional students at school and working with businesses and universities, twice-exceptional students can build their self-confidence and satisfy their self-actualisation needs. Many researchers started to present and discuss careers that could be pursued by different types of twice-exceptional students (Armstrong 2010).

Advocacy of Twice-exceptional Learners

As twice-exceptional students have long been ignored and neglected by policymakers and educators, advocacy was essential to bring change to the education of these students. As per its definition, advocacy is defined as the public support needed for a cause (Baum, Schader & Owen 2017). In this context, from a social justice perspective, advocacy is the support needed to create an impact on the education of twice-exceptional students. Thus, many entities could be advocates of twice-exceptional students in the school and outside the school.

Parents are the first ones to realise the problems that their children face in education. These problems are manifested through their academic performance and their frustrations (Baum, Schader & Owen 2017; Fugate 2018). However, parents are not professionals in twice-exceptionality. In other words, they do not have the knowledge required to support their children. Thus, for their advocacy to be successful, they must be professional at twice-exceptionality (Besnoy et al. 2015). They need to collaborate with other stakeholders who are experts and knowledgeable about twice-exceptionality to harvest change (Besnoy et al. 2015). Regardless of its limitations, parents' advocacy through resilience has been shown to support their children in overcoming their challenges (Ronksley-Pavia & Townend 2017).

Furthermore, educators could also play the role of advocates because they also struggle with their students' behaviours and performance in class (Pereira, Knotts & Roberts 2015). However, educators tend to be reluctant from advocating for twice-exceptionality because of the load of work they have. Through collaboration with the school and parents, they can be supportive of their students' cause (Pereira, Knotts & Roberts 2015; Wang & Neihart 2015; Park et al. 2018).

Moreover, advocacy could be led by foundations focusing on the development of the education of twice-exceptional students. For example, in the USA, the National Association of Gifted Children initiated its support to twice-exceptional students due to their needs even though it was initially focused on gifted students (Baldwin et al. 2015; Baum, Schader & Owen 2017).

Finally, researchers and scholars could have a significant impact on advocacy because of the outcome of their research. For example, grants by governments or businesses could bring a change through supporting research on how best to serve twice-exceptional students (Baum, Schader & Hébert 2014). The neurodevelopmental profiles of twice-exceptional

students are one of the critical domains for research, apart from the school practices (Gilger & Hynd 2008). As a result, based on the transformative paradigm, the most crucial role resides in the hands of twice-exceptional students who should become self-advocates in order to bring change to their education (Assouline, Nicpon & Huber 2006; Mertens 2007a).

The ultimate target is to set and implement a policy, or legislation for twice-exceptional students. As an ethical obligation, this law should be passed through providing guidelines and resources for schools and parents to support the students (Leggett, Shea & Wilson 2010; Besnoy et al. 2015). Therefore, self-actualisation of twice-exceptional students would be facilitated in terms of academics, wellbeing and potential career development (Leggett, Shea & Wilson 2010; Pereira, Knotts & Roberts 2015; Van Gerven 2018).

In conclusion of the conceptual framework, based on this study, the researcher aims to develop strategies that would enhance the education of twice-exceptional students in Dubai. Stating that, such strategies do not only target schools as they address the needs of twice-exceptional students' future in the workplace.

2.3 Theoretical Framework

If twice-exceptionality is still considered a paradox for researchers (Seely 1998; Giovacco-Johnson 2007; Baldwin et al. 2015; Dare 2016), it is tolerable for other stakeholders such as parents, educators, policymakers, and students not to assimilate the coexistence of a person who is both gifted and struggles with learning differences. In simpler terms, a specific example is that these stakeholders cannot understand how autism does not block a child's potential to have gifts.

As a novice field of study in the world without any prior published study in the UAE, literature limits the availability of any antecedent related theoretical framework. However, due to the purpose of the study, a theoretical framework is formulated to discuss the significance of the right-based model for disabilities and the equity-based approach for giftedness. As a result, a twice-exceptionality theoretical bridge is structured to connect these two ends of the spectrum, based on learning theories such as the Sociocultural Theory, the Hierarchy of Needs, and the Functionalist Theory of Education. The target is to attain an education system in Dubai, and the UAE, that supports both the special education needs and promotes the giftedness of twice-exceptional learners. The following Figure 2.4 Twice-exceptional Theoretical Framework illustrates the theoretical framework of this thesis, highlighting the relationship among different education, social and economic theories⁴. As the theoretical framework reveals, this thesis is transdisciplinary as the different lenses of academia are used to project strategies, involving stakeholders beyond schools, to enhance the education of twice-exceptional students (Augsburg 2014). The education of twice-exceptional students relies on the collaboration of different stakeholders (Milligan, Neal & Singleton 2012).

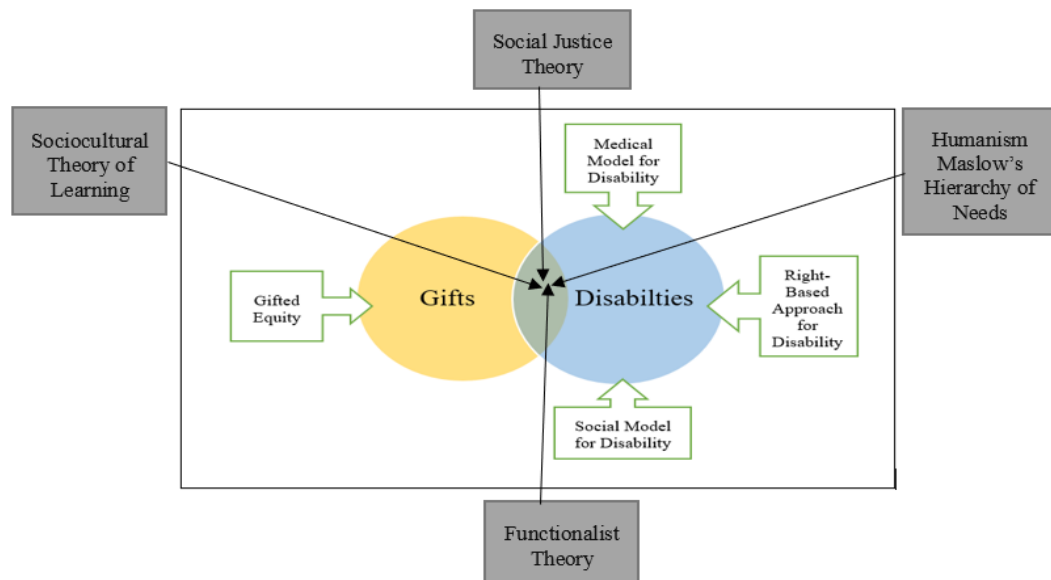
In this section the theoretical framework is presented, while linking it to twice-exceptional education. In Figure 2.4 Twice-exceptional Theoretical Framework, the twice-exceptionality Venn diagram is adapted from Baum,

⁴ The researcher has a Bachelor of Science in Business Economics and Master of Business Administration and has 12 years of Business and Social Sciences teaching. As a result, she is a transdisciplinary researcher.

Schader and Owen (2017). As this diagram shows, the blue colour represents the learning disabilities of twice-exceptional students while the yellow symbolises the gifts of these students. The green colour results from mixing the yellow and blue colours together. This analogy is the new profile emerging from the combination of twice-exceptional strengths and deficits. In other words, twice-exceptional students are the outcome of the blend of deficits and strengths; thus, they should not be treated as if they were gifted on one side and disabled on the other side.

In the theoretical framework, gifted equity is explained first. Secondly, the evolution of the learning disabilities models is discussed, while stressing that this research adapts the right-based approach. Thirdly, the learning theories are elaborated while linking them to the education of twice-exceptional education: (1) Sociocultural Theory, (2) the Hierarchy of Needs, and (3) the Functionalist Theory of Education.

Figure 2.4 Twice-exceptional Theoretical Framework



2.3.1 Giftedness Equity

Gifted students used to be considered as a group who would succeed academically by default (Mansfield 2016; De Boer, Minnaert & Kamphof 2013). Thus, they were considered not to need any provision programmes by educators or governments to develop their giftedness (Baum 2018). However, the lack of support for gifted students may endanger the wellbeing of these students and their performance. In other words, they are at risk of depression, suicidal thoughts, frustration, and underachievement because they lose interest in school (Mueller & Winsor 2018). The role of the school and government is to provide the opportunity for these students to fulfil their potential through adequate giftedness identification and provision of relevant, engaging curriculum and enrichment (Tomlinson et al. 2002; Renzulli & Reis 2014; Renzulli 2019).

According to Passow (1979), giftedness education is neither a luxury nor an appendage; instead, it is an obligation. In other words, gifted children, regardless of their nationality, gender, age, race, and income, should be provided with giftedness education according to their needs (Mansfield 2016). Peters (2016) believes that giftedness equity should offer equal opportunities to all gifted children regardless of their differences. From an ethical and religious perspective, educators should commit themselves not to leave any child behind and to ensure an inclusive environment, including gifted students (Badley & Dee 2010). Furthermore, the UNESCO confirms this right for giftedness education by requiring countries to provide gifted students with support to fulfil their potential (UNESCO 2013).

Other giftedness education advocacy groups and associations support this equity right for gifted students, such as the National Association for Gifted Children. On a national level, Hamdan Bin Rashid Al Maktoum Award for Distinguished Academic Performance and the Emirates Association for the Gifted are the two leading organizations that nurture the needs of gifted students in the UAE (Al Ghawi 2017). Thus, they work on raising awareness and reflecting the adequate perception about such a category of children (Al Ghawi 2017; NAGC 2018).

Despite the challenges of establishing an effective education system to support gifts, some countries have released acts, laws and policies to ensure that schools develop these children's potential, such as Hong-Kong, Netherlands, South Korea and Germany (Wu & Dickinson 2009; De Boer, Minnaert & Kamphof 2013; WCGTC 2020; Han 2007). However, these countries require

further development and consolidation of the implementation to optimise the education of gifted students. Not only shall giftedness equity benefit students, but it shall also contribute to the worldwide economy (Shavinina 2009; Kettler 2016).

According to Shavinina (2016), if a country invested in gifted education, the return on the investment shall be reflected in the innovation of this country. Thus, such an investment would lead to a boost and stimulation of the economy. However, as Kettler (2016) found in his study, the provided programmes that exist for gifted students are not yet effective in boosting the economy as regression showed. Thus, gifted education is not yet effective and requires further development in terms of research and implementation of identification, support, and evaluation.

2.3.2 Giftedness Theories

As gifted equity is one of the theoretical framework components, the major gifted theories are important to discuss. The definition of giftedness has evolved throughout history and has been changed from one era or civilisation to another. Moreover, the nature versus nurture debate has affected the origin of giftedness (NAGC 2018; Robins 2011). In the following section, the main theories and definitions of giftedness shall be discussed. In order to define giftedness, the pentagonal theory is used. As the name of the theory implies, a gifted student must have five criteria, according to Sternberg (Sternberg, Jarvin & Grigorenko 2011). The first criterion is the excellence criterion whereby a gifted person must be superior or excellent at a specific thing relative to peers of his age. The second criterion is the rarity criterion that emphasises the scarce high ability of the student relative to his peers. The third criterion consists of the high productivity of the

student when comparing him with his peers. The fourth criterion is the demonstrability criterion inferring that giftedness should be demonstrated or determined by valid assessments. The last criterion is the value criterion that implies that a gifted student's ability must be highly valued by his society (Sternberg, Jarvin & Grigorenko 2011). This theory paved the way for many other theories, such as the use of psychometrics to measure abilities and models to develop giftedness. Furthermore, it implied that giftedness varies between cultures and societies.

2.3.2.1 Intelligent Quotient and other Related Tests

Before psychometrics, giftedness has been related to a worthy characteristic in a human being relevant to a given civilisation. For example, a warrior used to be perceived as gifted because of his superior ability to fight. Not far from this mindset, due to the economic worth of human capital as a significant resource, giftedness became tied with intellectual abilities and was defined as a superior intellectual ability (Sternberg & Zheng 1995; Ducan & Blau 1978). However, at the beginning of the 20th century, Alfred Binet transformed the definition of giftedness by linking it to intelligence.

A new perception of giftedness was born by quantifying intelligence through psychometrics using the Binet-Simon test (Stanford-Binet Intelligence Scales) (Terman & Oden 1959). Despite its limitations, this psychometric test brought giftedness to another end.

Throughout the years, other similar IQ tests were elaborated, such as the WISC, to improve the way human intelligence is measured (NAGC 2018; Baum 2018). However, other researchers realised that high IQ or WISC results are

neither enough to define giftedness nor to identify a gifted person. Despite its limitations related to cultural biases and academia, the use of such tests has been useful to identify giftedness through quantifying it. Furthermore, these tests are objective and reliable, unlike other forms of identification related to class observation and teachers' referrals that are used today. In addition, these tests can be altered to suit special education people regardless of their disability. Finally, based on IQ test scores, such tests could forecast school performance tests of students to a certain level (Sternberg, Jarvin & Grigorenko 2011).

One of the related tests employed to measure intelligence is the Cognitive Ability Test (CAT4). It is composed of four sections: (1) non-verbal reasoning part, (2) verbal reasoning, (3) quantitative reasoning, and (4) spatial ability. Using this test, educators learn how students reason, learn, and can realise their potential. These tests do not focus on specific subjects such as science. Instead, it evaluates students' reasoning skills. Not only are schools using it to choose the convenient learning styles for students and differentiation, but they are also relying on it to identify gifted students. Such a test is mandatory in the UAE, especially to aid educators in monitoring how students learn and adapt their teaching to their learning styles (Ministry of Education 2016).

2.3.2.2 Renzulli's Three-Ring Conception Model and Enrichment Triad Model

Unlike the conservative and rigid concept of giftedness for Binet and successive researchers, Renzulli's definition does not limit giftedness to high abilities. Instead, through his Three-Ring Conception Model, he considers that a person is considered gifted if he manifests task-commitment and creativity, as

shown in Figure 2.5 Three-Ring Conception Model. Thus, factors other than measuring and quantifying intelligence are considered, such as creativity and commitment. In other words, giftedness is demonstrated only when the child is task-committed due to his interest in the activities he is performing when creativity is witnessed, and when he has a high level of ability (Renzulli & Reis 2014). In addition, throughout his Schoolwide Enrichment Model, Renzulli highlights the importance of the environment the child lives in, in order to develop his giftedness. Unlike IQ tests and a static perception of giftedness, giftedness could be developed if nurtured adequately (Sternberg, Jarvin & Grigorenko 2011).

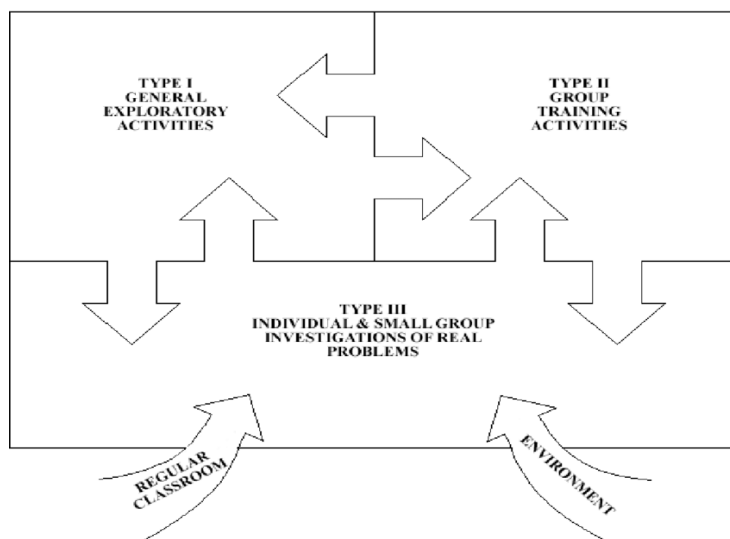
Figure 2.5 Three-Ring Conception Model



As for the Enrichment Triad Model, as shown in Figure 2.6, there are three stages for a student to enrich his giftedness. Firstly, in Type I enrichment, students explore through general tasks and activities in order to trigger the interests of the gifted students. In other words, without exploring these activities, educators and students cannot discover what they like. Secondly, Type II enrichment consists of group training activities where critical and creative thinking are developed. Thirdly, in Type III enrichment, students, individually or as a group, investigate

real-life problems aiming to highly develop research skills and advance the level of creative thinking. These stages are student-centred and require a growth environment of the school (Baum 2009; Renzulli & Reis 2014).

Figure 2.6 Enrichment Triad Model



2.3.2.3 Gagne's Differentiated Model of Giftedness and Talent

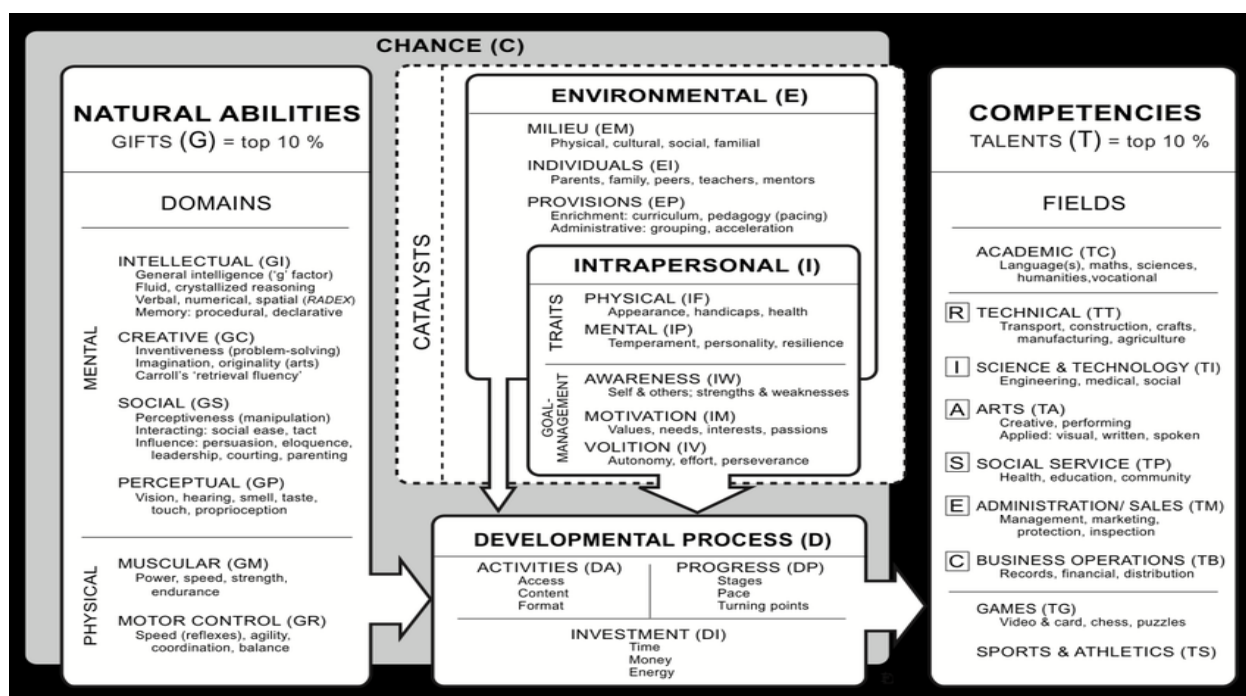
In contrast to other researchers, Francois Gagne considers that talentedness is the result of catalysing giftedness, as shown in Figure 2.7 Differentiated Model for Gifted and Talented (Ministry of Education 2016). This statement implies that giftedness is of a lower standard of talentedness. According to him, giftedness is a superior innate ability. However, through the child's environment, giftedness could be transformed into talentedness through a development process of time, activities, and progress (Gagne 1995). Gifts can either related to a mental or natural physical ability. Furthermore, gifts are of different domains, such as intellectual or muscular domains. Through the catalysts that are either environmental or intrapersonal, giftedness is transformed into

talentedness. These abilities become talents of different fields, not limited to the academic field.

At this stage, schools should support gifted students with enrichment provisions, catalysing them to become talented. Suggested enrichment provisions could be at the level of the curriculum, acceleration, and grouping (Gagne 1995).

Even though many giftedness researchers do not agree with the use of talents in this context, the model is adopted by many countries in the world such as the UAE and New Zealand (Ministry of Education 2016; UAE 2020). Furthermore, just like Renzulli, he focuses on the importance of nurturing giftedness. He also implies that the model applies to all social classes and cultures if students get the change to develop gifts into talents, just like Renzulli. Furthermore, he offers through his model a definition of giftedness and talent that expands beyond academics and quantifying intelligence.

Figure 2.7 Differentiated Model for Gifted and Talented



2.3.2.4 Neuroscience Theories of Intelligence

Neuroscience is the scientific study of the brain and the whole nervous system. Such a science incorporates other disciplines such as biology, chemistry, physics, mathematical modelling, and psychology (Sternberg, Jarvin & Grigorenko 2011).

Through neuroscience, Howard Gardner broadened the definition of giftedness through his Multiple Intelligence Theory. In other words, giftedness released the chains of intellectual ability. According to him, there are eight dimensions of intelligence. Furthermore, each type of intelligence functions alone, distinctly from other ones. In other words, different parts of the brain are responsible for each one of these intelligences. This theory affected how the brain is examined through different activities related to each type of intelligence.

The following is the list of intelligence types: visual and spatial, verbal and linguistic, music and rhythmic, logical and mathematical, interpersonal, intrapersonal, naturalistic, and bodily and kinaesthetic (Gardner 2011). For people who have linguistic intelligence, they are sensitive and comfortable at expressing themselves in words. These people could end up being journalists. As for the logical-mathematical intelligent people, they can reason, recognise patterns, and work with numbers effortlessly. A potential career for them could be computer programming. For the musically intelligent people, they are sensitive to music. As a result, they can pursue a career as a pianist or composer. Regarding spatially and visually intelligent individuals, they can visualise and transform spatial matters smoothly. These end up being architects. Concerning the bodily and kinaesthetic intelligent individuals, they have control over their actions and objects because of

their ability to use their body highly; they would excel in sports. As for the intrapersonal intelligent individuals, they are sensitive towards their own feelings; a career in philosophy might suit them. In contrast, interpersonal intelligent people are the ones who can feel and understand the feelings of others and interpret relationships. As this type of intelligence implies, a career would be in psychology. Finally, naturalistic intelligence is about connecting with races and nature so that archaeology could be a suitable field for this type of intelligence.

Thus, the number of potentially gifted children is set to increase, as it is not exclusive to the elite intellectually intelligent individuals. Furthermore, this theory was not strictly used to evaluate students' intelligences. Instead, it helped teachers in adapting their teaching to the learning styles of students based on their intelligence. Furthermore, it is used to orient students for the career path they are best suited to. However, Gardner's theory has been criticised for various reasons, such as its ambiguity and lack of empirical evidence (Furnham 2009; Waterhouse 2006). Gardner did not develop any tests to measure and assess these intelligences (Haier 2013).

IQ tests and Multiple Intelligence Theory have paved the way for the development of neuroscience. Researchers are interested in discovering whether there is a difference between the brain of a gifted person and a nontypical gifted person. Imaging of the brain through the functional Magnetic Resonance Imaging (fMRI) and Positron Emission Tomography (PET) show that there is a real difference in the functions of the brain of a gifted person. Furthermore, the metabolism system of glucose was studied to examine if there is a difference between gifted students and nongifted students (Haier 2013). Moreover, having a

bigger brain size for gifted people is a myth. However, regional brain volumes, related to different functions, such as creativity and memory, may vary between a gifted person and a nongifted person. The difference in regional volume is related to giftedness domains. Even the track of information seems to be busier for a gifted person than a nongifted person (Sternberg, Jarvin & Grigorenko 2011).

Even though neuroscience is recent, it is a promising field of studies supporting parents, educators, and economies in order to support children of various gifts and disabilities (Duncan et al. 2018; Gilger & Hynd 2008; Sparks 2012). Thus, neuroscience is a promising field to support the education of twice-exceptional learners that will be discussed later in the study.

2.3.3 Learning Disabilities Models

Coping with disabilities has always been problematic for different stakeholders, such as children, parents, schools, and the government. With humanity's progress, the right-based approach was born after the shift from the medical model to the social model of disabilities. However, it is essential to mention that the medical model of disability and the social model of disability are not dichotomous. A specific disability may be the consequence of social factors and health impairment and vice versa. Furthermore, the terms 'disability' and 'impairment' do not mean the same thing, and they are not dichotomous either. A person's impairment refers to the medical condition of the person. However, an impairment becomes a disability when the condition prevents the person from functioning and fitting in society (Terzi 2004).

2.3.3.1 Medical Model of Disabilities

The medical model of disabilities is an individual-centred model that explains disabilities, impairment, and differences in a person's disabilities. In other words, because of their physical and mental health condition, a person with a disability cannot be part of society. As its name implies, this model is derived from science as it distinguishes between the normal person and the abnormal person based on the norms of the body (Ronksley-Pavia 2015). Abnormality, accentuated as a medical problem, might be physical, mental, or both. An example of physical disability can be visual impairment, whereas a mental disability might be schizophrenia. Therefore, from the medical model perspective, an abnormal person should be "fixed" and treated medically in order to fit into society without being a burden to anyone else (Hornby 2015). In addition, such people with disabilities need to be treated in order to have a good quality of life (Ronksley-Pavia 2015). In other words, this model highlights the disabilities rather than responding to the support needed by this person.

The Age of Enlightenment was marked by the rise of medicine as a field. The medical model of disabilities specifies that only professionals of the medical field could cater for and treat disabilities. By curing and reducing the impact of the disability, a person would live in a better standard. Based on this model, the disabled people's voice was ignored by medicine-related professionals as they used to believe that only they have control of treating the affected individual. In 1980, the World Health Organization had a different classification of impairment, disability, and handicap (WHO 2018).

The model was severely criticised because it alienates the person with a disability as if his problem is only his. In simpler terms, disabled people are excluded from society. They were also oppressed by society because of their disabilities (Terzi 2004). Furthermore, the person's social wellbeing is not even considered, leading to demotivation and unproductivity of these concerned individuals (Baily et al. 2015).

Due to the notion of the associated abnormality, having a disability often leads to stereotypes, labelling, bullying, and prejudice. For children with disabilities, parents end up trying to cure them with medical treatment in order not to be a burden on society (Baily et al. 2015). Parents fear that their children would otherwise be oppressed and banned from joining mainstream schools. In simpler terms, schools would not accept the enrolment of any students with disabilities. On the one hand, schools were not ready to jeopardise their performance by catering to disabled students. On the other hand, such organisations were not equipped with qualified human capital and facilities to accept these students (Terzi 2004). Based on the medical model, a child with visual impairment needs a specialised centre to look after him, and he may require medical treatment or surgery to fix his impairment.

2.3.3.2 Social Model of Disabilities

As a reaction to the unfair medical model of disabilities and the efforts of disabled people, such as Michel Oliver, the social model emerged (Oliver 2010). The movement to change the social attitude towards disabilities resulted in the American Disability Act in 1980 (Bailey et al. 2015). According to this model, a person's disability is caused by the way society is constructed rather than his

physical impairment or difference. Thus, it became considered as socially constructed after being individually centred. In addition, the disability is not necessarily the result of the impairment, and it could vary from one society to another (Bailey et al. 2015; Galvin 2004). The disability is stigmatised based on its impact on accessing social resources, such as the workforce (Galvin 2004). In other words, it is the society that determines who is disabled by the barriers it sets to access these social resources. For example, in a country where buildings are only designed with escalators and stairs, paralysed people cannot access different floors because the infrastructure is not designed for people who use wheelchairs for mobility. Thus, society shapes the disability of its people by its infrastructure.

The medical model emerged as a consequence of the economic ideology of capitalism. Such an ideology emphasised the importance of developing a physically and mentally healthy workforce to operate machines and perform tasks during the first and second industrial revolutions (Terzi 2004). In contrast to the medical model, this model is inclusive as it attempts to embrace the needs of disabled people without any stereotypes or prejudice. The purpose of the social model is to dissect and resolve problems that relate to marginalisation, oppression, and discrimination that society has towards disabled people. The hegemony of different institutions, such as government, businesses, and schools, are responsible for the oppressing and discriminating against disability. Thus, the social model aims to remove all these imposed barriers on disabled people (Terzi 2004). At this stage, after figuring out the social, economic, and political forces that shape the disability, society will help the person with a disability limit the barriers in which his disability results. Furthermore, society should evolve in order to respect and

support disability. In contrast to the medical model, the social model grants the opportunity to disabled people to advocate for themselves and have their voices heard by the government and community (Terzi 2004).

Embedded in the social model of disability, inclusion is addressed today by schools and researchers in order to support the special needs derived from students' disabilities and differences. The USA "No Child Left Behind Act," and the UAE "School for All" schemes are examples of the social model being implemented in the education system. In other words, the world has reached a level where the diversity of students is welcomed as educators and other professionals are qualified to support the disability-related needs of students. Despite inclusion challenges, this philosophy should be the foundation of special education needs for schools (Hornby 2015).

2.3.3.3 Right-based Approach of Disabilities

The social model of disabilities developed into the right-based approach for disabilities. The core of the right-based approach is that people with disabilities and people without disabilities are equally valued. Thus, they all have the same rights in society (Lawson 2005). Unlike the social model and medical model, the right-based approach relies on ensuring that none of the human rights are violated. For example, in the context of this study, the right for education should not be violated regardless of the disability (Stubbs 2009).

Hence, to protect human rights, society should both adapt to the needs of the people with impairments and enable them. From the human rights perspective, governmental reforms should take place in order to ensure that people with disabilities' rights are protected. At this level, people with disabilities have the

right to express what they need, and the government should respond to their needs (Stubbs 2009).

As a result, policies should be released for this group of people (Lawson 2005). In other words, as a moral and legal obligation, government and related affiliations must guarantee that all the rights of people with impairments are fulfilled. Furthermore, these political reforms could improve welfare conditions by removing these artificial barriers (Galvin 2004).

In contrast to the medical and social models, any discrimination towards disability is considered as deviance leading to a crime (Stubbs 2009). For example, not hiring a qualified accountant because of his paralysis is considered a crime from a right-based approach. Being optimistic and despite all the struggles, Galvin considers that deleting disabilities is in the hands of the society as it is socially constructed (2004).

Consequently, the United Nations has released the convention protocol for the Rights of Persons with Disabilities. The main aim of this protocol is to ensure equal opportunities for all disabled people from birth through adulthood. Article 24 ensures that all disabled children have the right to education under the umbrella of inclusion (United Nations 2017). For example, children with disabilities have the right to adequate education to fulfil their potential with respect and dignity. Furthermore, they should be supported to develop their talents and creativity. By contributing to their social and physical development, the education system shall ensure that such children participate in society (United Nations 2017). Nevertheless, there is still a gap between the implementation of the right-based approach in developing countries and developed countries that needs to be

bridged. Thus, organisations such as the UN and non-governmental organisations are working on supporting the education of people with disabilities in developing countries by ensuring the allocation of required resources for that purpose (United Nations 2017; Lawson 2005).

In the context of this study, the right-based approach, rather than the medical or social models, is used to support the theoretical framework. As twice-exceptional students possess disabilities, they have the right to education that suits them. Thus, the education system must cater to their needs, especially in that the existence of disability and giftedness tend to be more complex than students with disabilities only.

2.3.4 Theories of Learning

2.3.4.1 Social Justice Theory in Education

This study is a transformative research as it aims to enhance the education of twice-exceptional students who are at risk of marginalisation and underachievement. Consequently, it relies on the social justice theory, and its methodology is founded on the transformative/social justice paradigm. Thus, this theory is fundamental to the theoretical framework of the thesis (Munger & Mertens 2011).

As an emerging education theory, the social justice theory emphasises the importance of fair education, aiming to achieve a better society. However, it is hard to define social justice as it has varied throughout history (Blackmore 2013). In this context, policymakers should build an education system that accommodates the individual needs of students, regardless of their socially constructed differences, such as social classes, origins, gender, race or learning differences,

and disabilities. Such a theory calls for human rights respect and reinforcement while educating marginalised students. Not only does this theory require a society to understand differences among its members, but also it mandates its members to resist any exploitations and marginalisation of students based on their differences. As a result, the utopian goal of social justice in education is to achieve societies free of discrimination (Blackmore 2013). With the support of the United Nations, governments, and related affiliations, social justice can be reinforced. In addition, parents, educators, and policymakers are in charge of ensuring social justice, whereby there is no discrepancy between education policies and economic policies. Thus, inclusion policies and school cultures should be aligned with citizenship rights and employment regulations (Shields 2013).

In addition, social justice theory was embedded in the theories of other philosophers and psychologists. For example, even though Dewey has developed pragmatism philosophy, his work relies on children's rights in education (Bruke 2007). Furthermore, Freire has long advocated for education as a medium to solve all problems, ranging from social, economic and political, to ensure social justice (Blackmore 2013).

Furthermore, according to the social justice theory, education should offer students the freedom to develop their various capabilities, regardless of their differences. In other words, students should have the choice to choose to develop the functions that they value and work towards achieving the profile they aim to be (Blackmore 2013). Due to globalisation, social justice became plural as countries, such as the UAE, became multicultural wherein there are different

racess, cultures, nationalities, religions, abilities, and diversity present in society (Cribb & Gewirtz 2007).

Consequently, by relying on the social justice theory, twice-exceptional learners' advocates, including researchers, should work towards achieving social justice so that these children have their educational needs satisfied and their capabilities developed (Blackmore 2013). These students' voices should be considered in their education so that they can attain the profile for which they aspire. In addition, they should have equity to access, which provides equal opportunities to grow regardless of their abilities or disabilities (Shields 2013). Furthermore, their differences should be respected through school cultures, employment regulations, and inclusion policies (Shields 2013). In other words, the economic system should offer twice-exceptional students' careers that match their capabilities. In addition, they need to acquire equitable resources that are necessary for their development. Through the support of stakeholders, such as parents, educators, and policymakers, twice-exceptional students' education should be optimised for mutual benefit, the society, and the individual (Shields 2013).

2.3.4.2 Maslow's Hierarchy of Needs and Humanism

Originated as a consequence of World War II in the 1960s, humanistic psychology is an approach that emphasises the following core factors: responsibility, free will, creativity, and self-actualisation. In other words, it relies on studying the person as a whole, his motivation, and his goals. The humanism paradigm, philosophy, and pedagogy of education are about having students

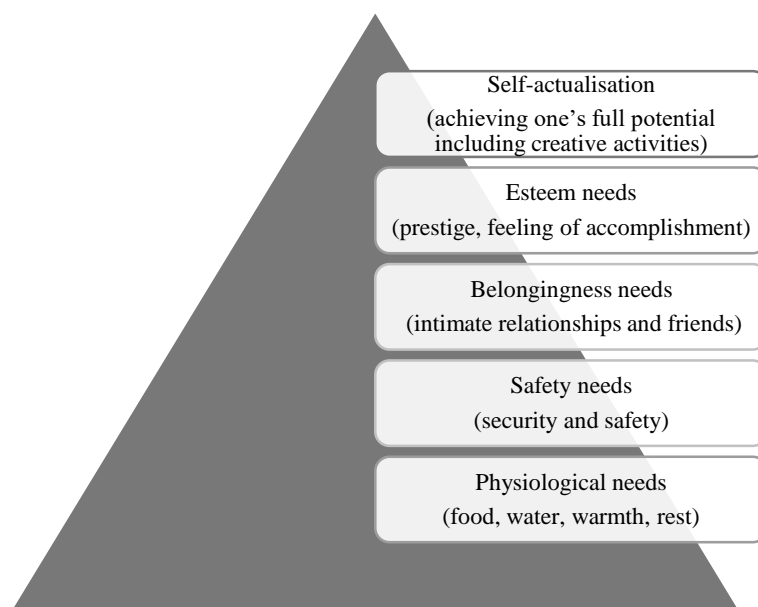
achieve their full potential (DeCarvalho 1991). Thus, education plays a significant role in shaping the human being.

Maslow's Hierarchy of Needs is one of the major humanist and motivation theories that explain how a person aims to achieve their full potential. This theory stressed the role that the environment plays in achieving a person's potential. As per Maslow's hierarchy, a person has six primary needs to be fulfilled, as shown in Figure 2.8 Maslow's Hierarchy of Needs. In this pyramid, there are three categories for these needs: a person has (1) basic needs, including physiological and safety needs, (2) psychological needs, such as belongingness, and (3) self-actualisation needs to achieve his full potential. As this pyramid implies, these needs are ranked in order of importance, and a person cannot satisfy a given need without having satisfied the previous one. In other words, aiming to achieve self-actualisation, a person should have satisfied all prior needs of the pyramid. Furthermore, self-actualisation's need is satisfied when someone is adequately nurtured by his surroundings (Maslow 2011). In simpler terms, the environment should ensure the satisfaction of physiological, safety, belongingness, and esteem needs (DeCarvalho 1991).

Through education, the humanistic approach of Maslow's hierarchy aims to develop self-actualised students. Accordingly, learning is student-centred with a facilitator instructor. Such a pedagogy contradicts all traditional pedagogy of teaching and learning (DeCarvalho 1991). Such a motivation theory highlights the intrinsic and extrinsic factors of motivation that influence students to become self-actualisers (Long et al. 2011).

Despite the acknowledgment of the value it brings to psychology, philosophy, and pedagogy, this theory was critiqued as it has some limitations. On the one hand, this theory is claimed to be culturally biased as these needs are derived from western culture; priorities would vary from a culture to another. On the other hand, the self-actualisation need is highlighted as an endpoint of development even though a person should keep on developing himself (Neher 1991).

Figure 2.8 Maslow's Hierarchy of Needs (Long et al. 2011)



Concerning twice-exceptionality, students of this category require an environment that develops their strengths in order to optimise their potential. Such an environment should ensure that all needs, such as self-confidence, are satisfied for the student to be self-actualised (Baum, Schader & Hébert 2014). Otherwise, with low self-esteem, twice-exceptional students cannot fulfil their potential. Moreover, these students tend to be more frustrated due to the manifestation of both their giftedness and disabilities. Thus, for them to develop their gifts, they

require an education system that supports them on both ends. Through an adequate education, students can grow, and with the support of policymakers and educators, these students can pursue a career that complements their self-actualisation (Baum 2019).

2.3.4.3 Theory of Sociocultural Learning

Even though the study is not underpinned by the constructive paradigm, the process, and factors that affect learning play an essential role in the education of twice-exceptional students. As a result, Vygotsky's Sociocultural Learning theory and the related Zone of Proximal Development constitute an essential pillar of the theoretical framework.

The Sociocultural Learning theory defines learning as a social process through which cognitive ability is developed based on social and cultural interaction (Torres-Velasquez 2000; McGlonn-Nelson 2005). Thus, children could learn from anyone around them through communication in particular cultural and social circumstances.

Concerning Sociocultural theory, Vygotsky explained the Zone of Proximal Development, which shows how human abilities are stimulated. The Zone of Proximal Development is the distance or difference between the independent ability of a student without any support and the ability that he can attain with guidance, help, and motivation from a knowledgeable and skilled person (Jaramillo 1996). With the support of this specialised person, a student can make additional progress relative to his normal abilities. In other words, a student can get closer to mastering a particular task with the help of parents or educators (McGlonn-Nelson 2005).

Vygotsky did not focus on giftedness and special needs education in the Sociocultural Theory, but his theory widely contributed to the education of gifted and special education students (Torres-Velasquez 2000; McGlonn-Nelson 2005). On the one hand, it highlights the importance of culture and social interaction in growing the children's cognitive abilities. On the other hand, for the same purpose as the latter, it emphasises the significance of social interaction among children and adults through different tools, such as language (Jaramillo 1996). In simpler terms, children learn from their environment, in this context, from schools in terms of culture, curriculum, peers, and educators (Jaramillo 1996; McGlonn-Nelson 2005). Thus, the schooling system influences the achievement and development of students. According to this theory, the teacher's role is to scaffold, which also encourages students to discover themselves and their environment without any didactic teaching. Instead, the guidance of the teacher is crucial for scaffolding to boost students' abilities within the Zone of Proximal Development of each child (Torres-Velasquez 2000).

For gifted education and special needs, Vygotsky's theory was essential to determine the Zone of Proximal Development of students. For instance, the Intelligent Quotient test and dynamic assessment were inspired and developed to measure both the abilities and potential of students with and without help. Comparing the Zone of Proximal Development among students can help establish who require more support than the other. However, standardised IQ tests are biased because of the cultural impact on students. Thus, multiple criteria should be considered, such as class observation (Jaramillo 1996; McGlonn-Nelson 2005). Moreover, gifted education adopted strategies based on the theory, such as

collaborative learning, reinforce social interaction (Mahn 1999). Based on the same theory, students who fail to interact with their environment, they tend to be deviant from the norms and have learning disabilities (Mahn 1999).

As for scaffolding, it is helpful for students of special needs as a strategy. Such a strategy provides support for educators to make these students, depending on their cases, achieve their potential (Jaramillo 1996). The role of the educator, whether class teacher or specialist, is crucial in defining the Zone of Proximal Development and working towards boosting the abilities of the students in need. Moreover, to ensure equal access, students with special needs must learn the skills and knowledge that their culture and society recognise as essential. As for the work environment, people with disabilities should work on having the capabilities that are valued by their cultures. Thus, the education system should bridge the gap between what is taught at school and what is expected from them at work (Torres-Velasquez 2000).

Therefore, it is implied that this theory plays an essential role in questioning twice-exceptionality because twice-exceptional learners are problematic due to their two extremes of exceptionality. On the one hand, the social and cultural interaction is crucial in the education of twice-exceptional students. On the other hand, defining and aiding to reach the potential of twice-exceptional students, based on the Zone of Proximal Development, is necessary yet challenging. Furthermore, recognising and bridging the gap between the valued skills and capabilities in the culture should be determined in order to prepare the twice-exceptional students for their future careers.

2.3.4.4 The Functionalist Theory

Functionalists believe that all members of society have their roles in society, and organisations, such as governments, enterprises, media, religion, and schools, should all work together towards stability and social welfare. In other words, each one of the economic and social institutions has its own function to satisfy the needs of the whole body of organs. Furthermore, the relationship among these institutions relies on social solidarity. From a macro-level, these institutions are related based on social consensus, and are also known to be structured without any contractual conditions of the contracts (Jackson & Muellenborn 2012).

Based on the functionalist theory of education, Durkheim (2014) discussed that education, as a secondary agency of socialisation, equips students to fit in society after school to pursue a career and find a job. Through this job, these citizens could pay taxes and support the whole system. The analogy of this theory with the body highlights the importance of each organ to the life of the whole complex body of society. If one of the institutions dies, the whole body is damaged. In other words, if one of these institutions faces problems, the whole social system is in trouble (Jackson & Muellenborn 2012; Hurn 1993).

However, this theory was criticised because it looked only at the positive side of education. There are many disadvantages to the education system that the theory did not tackle, such as meritocracy. Regardless of its limitations, this theory has played a significant role in studying social sciences as a scientific method, including economics and sociology (Jackson & Muellenborn 2012).

As an extension of this theory, societies would highly benefit from providing gifted children with enriching programmes so that their roles in society shall be more beneficial for their welfare (Hurn 1993). Specifically, education develops students' skills and accordingly provides them with relevant roles in society (Durkheim, Lukes & Halls 2014).

Therefore, this theory is vital for this thesis because building a robust education system is a necessity for the whole system. In the context of this thesis, supporting twice-exceptional learners would boost the education system and, as a result, the whole social system. If nurtured according to their needs through education, these students can contribute to social welfare. Through developing their strengths and catering to their deficits in schools, they could be productive members of the workforce. Otherwise, they would end up underachieving, as well as being marginalised and demotivated.

2.4 Literature Review

2.4.1 Evolution of Twice-exceptionality: A New Shared Vision

Originating in the mid of the 20th century, twice-exceptionality is a new field of research and education that incorporates special education and giftedness. Interest in this field began after the description of Asperger's Syndrome, where autistic children had high intelligence unlike other autistic children in 1944 (Lovecky 2004; Baldwin et al. 2015; Baum, Schader & Owen 2017). Other researchers in the field of psychology described some cases of bright children struggled with learning. After recognising disability and giftedness by the government in the USA, Renzulli began his journey in describing gifted students

who had many deficits in writing and reading in 1978. Thus, he encouraged many scholars, including his students, to examine these cases in detail, such as Sally Reis and Susan Baum (Baldwin et al. 2015).

However, due to various publications related to gifted students with disabilities, it was not until 2004 when the IDEA was issued, describing that gifted children could be disabled as well. As a result, some states issued policies and were offered grants to proceed with further research regarding identification and supporting programmes for twice-exceptional students. Despite the efforts of advocates and scholars, there is no law or policy till now that unifies the medium of identification or supporting system to develop and compensate twice-exceptionality needs. Aiming to achieve this goal, the National Twice-Exceptional Community of Practice was established in 2014 (Foley-Nicpon, Assouline & Colangelo 2013a; Baldwin et al. 2015; Pereira, Knotts & Roberts 2015).

Regardless of the various criticisms that bombarded twice-exceptional scholars, what is clear is that this field emerged in different areas of the world such as the USA, Germany, Singapore, and the Netherlands (Pereira, Knotts & Roberts 2015).

To move on with that field, scholars from different countries, along with their institutions and affiliations, realised that they should share one vision and a single language to communicate about twice-exceptionality. Furthermore, they recognised that stakeholders from various fields, not limited to education, must work together in order to ensure the growth and development of these students. In other words, businesses, governments, parents, and educators should work together while appreciating the diversity that twice-exceptional students present.

Such a change could be achieved through the advocacy and related initiatives run by twice-exceptional students, parents, and educators with the support of scholars (Pereira, Knotts & Roberts 2015; Roberts, Pereira & Knotts 2015; Roberts 2017; Baum 2019; Wiebe, Matranga & Baum 2019; Lin & Foley-Nicpon 2020).

Many institutions and affiliations as mentioned earlier such as the Belin–Blank Center for Gifted Education, Bridges Academy, University of Connecticut, the National Association of Gifted Children and the World Council for the Gifted and Talented are working with other stakeholders to develop awareness and practices to identify and support this category of students. The shared vision and language are illustrated and executed by (1) one definition of twice-exceptionality, (2) designated identification methods that considers comorbidity, (3) support that ensures concurrent academic achievement, social and emotional wellbeing, (4) enrichment opportunities to develop gifts and talents while compensating for deficits, and (5) constant professional development and training of practitioners (Baldwin et al. 2015). Furthermore, classroom teachers, subject teachers, special and gifted educators, counsellors, and psychologists should collaborate in order to best satisfy the needs of twice-exceptional students (Assouline, Nicpon & Huber 2006). Moreover, part of their education and professional development should be about the education of twice-exceptional students (Pereira, Knotts & Roberts 2015).

To conclude this section, “legislation leads to action” (Roberts, Pereira & Knotts 2015, p. 215). In other words, due to the lack of policy and law, twice-exceptional students are either supported on a case basis or neglected. Therefore, laws and policies suggesting adequate educational strategies shall reinforce the

identification and support of twice-exceptional students (Roberts, Pereira & Knotts 2015). Otherwise, schools shall not support these students without the presence of legislation and policies because they require teachers' efforts and preparations along with other resources obligatory to support these students in need (Reis, Baum & Burke 2014; Pereira, Knotts & Roberts 2015).

2.4.2 Twice-exceptional Learners Around the World

Awareness of twice-exceptionality in the world started when some teachers realised that their students with disabilities had some gifts such as writing and drawing (Baum 2018). However, it took a few years until Marker established a strategy-based book to support educators and parents who nurture twice-exceptional children in 1977 (Baum 2018). Other researchers continued this journey while sharing with other researchers, educators, and parents their experience and findings regarding twice-exceptionality. Today, in the United States of America, this category of students is recognised as part of the Gifted and Talented Education Act. Furthermore, advocacy organisations such as the National Association for Gifted Children also support their programmes. The abundance of the number of identified students led to the establishment of schools designed solely to educate twice-exceptionality (Baum 2018).

Baum has launched the strength-based approach to help these children through positive education. In other words, this approach accepts the child's deficits and works on enriching his gifts. These students require an environment that supports them socially and emotionally (Baum & Schader 2018; Baum et al. 2014; Baum et al. 2017). Furthermore, they require guidance to compensate for the impact of their deficits on their life (Baum et al. 2017; Baum 2018).

Other approaches emphasise project-based learning, interdisciplinary curricula, and link to a real-life situation (Bianco et al. 2009). In addition, for students to succeed in a given subject despite their learning differences, educators should teach them from the lens of their interest so that they get engaged in the lessons (Baum et al. 2018; Bianco et al. 2017). Other researchers found that these children have more similarities with students with disabilities than gifted students. The reason for that is that they tend to be underachievers, are more vulnerable to academic difficulties, and lack social skills (Barber & Mueller 2011). As for Reis et al., they suggest strategies that support both giftedness and disabilities, each one alone (1997). Furthermore, Schlutz validates the fact that advanced placement courses are also an approach to enrich twice-exceptional learners (2012).

Germany and Australia have gifted policies, but their practices vary from one state to another. Furthermore, even though the term twice-exceptionality is not recognised, researchers are attracted to investigating identification, self-actualisation, and intervention (Fischer & Müller 2014; Ronksley-Pavia 2015; Ronksley-Pavia & Townend 2017; Beckmann & Minnaert 2018). In other countries such as the Netherlands, educators and policymakers started to train some teachers to educate twice-exceptional learners (Van Gerven 2018). However, as stated earlier, this category of students is quite challenging due to the complex needs. Challenges remain diverse, including accomplishing curricula standards, meeting standardised test results, and customising the support for each one of these students (Baum et al. 2017).

Regarding the UK, it does not recognise twice-exceptionality as a separate category of high ability students. However, organisations such as 2eMPOWER are

working on conducting workshops for twice-exceptional students who are interested in science. With the collaboration of 2eMPower, the Imperial College offered a grant to equip its campus to cater for the needs of undergraduate twice-exceptional students (Evans 2017).

Moreover, Singapore is a country of high interest in research and education of twice-exceptional students. Even though there are no policies for twice-exceptionality in the country, research noticed that educators deal with twice-exceptional students by case. Furthermore, the relationship between twice-exceptional students, teachers, and parents motivated them and boosted their academic self-efficacy. In other words, Singaporean twice-exceptional learners' wellbeing was found to be better than the Americans'. However, educators' professional development is required to enhance the identification and supporting practices of twice-exceptional students (Neihart & Teo 2013; Wang & Neihart 2015).

Furthermore, in countries such as the Czech Republic, the term twice-exceptionality is recognised in the Czech legislation for gifted education. As a result, research about intervention and identification of twice-exceptional students with learning disabilities witnessed a development. In contrast, in Greece, in which the education system does not recognise twice-exceptionality, some researchers are examining what schools offer on a case basis while comparing them with other countries (Gari, Mylonas & Portešová 2015). Meanwhile, Al-Hroub, a scholar from Renzulli Center for Creativity, Talented Development and Gifted Education is putting some efforts to research twice-exceptionality in Jordan.

2.4.3 Overview of UAE Special Education

As part of the Ministry of Education, the Department of Special Education is an entity in charge of students who are gifted and who are disabled. Nevertheless, it is focusing more on providing support for students with disabilities than students with giftedness (Al Ghawi 2017). Not lagging from the right-based approach, the “School for All” initiative of the Department of Special Education highlights the country’s determination to include all students in the education system and not to reject them due to their disability.

However, the Department of Special Education and the federal education authorities does not reinforce giftedness education as it does for students with special needs and disabilities. The Federal Law 29/2006 for protecting the right of people with disabilities, the inclusion policy, and guidelines for private schools in Dubai are communicated through the following four official documents.

The first document is the General Rules for the Provision of Special Education Programs and Services used for public and private schools. In this document, there are nine categories of special needs, unlike the IDEA classification of the USA: (1) intellectual disabilities, (2) emotional and behavioural disorders, (3) Autism Spectrum Disorder, (4) speech and language disorders, (5) hearing impairment and deafness, (6) visual impairment, (7) physical and health-related disability, (8) special learning disabilities, and (9) gifted and talented.

Furthermore, the second document is the United Arab Emirates School Inspection Framework that all private schools in the UAE must follow. However, the categories of disabilities are distributed differently from the first document. In

addition, there is a difference in the definition of gifted and talented students between the documents. Moreover, schools should have the following list of personnel in the Inclusion Department to develop a strategic improvement plan for inclusion. The responsibility of the inclusion champion is to motivate and engage the school with inclusive approaches to build an inclusive culture. As for the governor of inclusive education, they should manage, lead and control the inclusive education and culture of the school. Furthermore, the inclusion champion, governor should work with educators, parents and other stakeholders to execute and follow-up on the strategic improvement plan for inclusion. They should be part of the board of governors in order to coordinate with them the inclusion efforts of the school. Finally, the learning support assistant should help students and teachers in class and outside to achieve the objectives of the special education students (KHDA 2017a). However, schools are still using other older positions, such as Head of Inclusion and Head of Special Needs Education and Disabilities Department. Furthermore, the country decided to reduce the negative connotation of the special needs students label by replacing the term with students of determination. According to the rulers of the country, this label seems to be more positive.

Furthermore, the third document is the supplement that is released by the KHDA and is specific to Dubai. The KHDA supplement shows the priorities of Dubai as an emirate, apart from the compulsory framework of the UAE. The priorities according to the last supplement are the UAE moral education subject, the UAE social studies subject, the education of Emirati students and the education of students of determination.

Lastly, the fourth document released in 2019 is the Directives and Guidelines for Inclusive Education issued by the KHDA for Dubai to support the inclusion of students. In this document, the Response to Intervention is explained for practitioners in order to support students with disabilities.

As these documents show, the inclusion of students with disabilities is the priority. Thus, as there are no policies for gifted students, gifted education is not evaluated or addressed by itself as a separate component by policymakers.

Moreover, as mentioned in chapter one, the Hamdan Foundation is an organisation established to support gifted students in the country. The National Plan set by the Hamdan Foundation, which caters only for the needs of Emirati gifted students and practitioners, consists of seven objectives: (1) to develop an identification process for the gifted students; (2) to develop and implement provision programmes for the gifted students; (3) to establish teams in the domain of giftedness education; (4) to raise awareness and publish scientific research related to creativity and giftedness; (5) to form partnership relationships with giftedness related organisations; (6) to establish Hamdan bin Rashid Al Maktoum Center for Giftedness and Creativity; and (7) to form Hamdan schools for gifted students (Hamdan Foundation 2019). Furthermore, the Foundation is training teachers and offering diplomas in gifted education with the collaboration of the Ministry of Education. Even though the Foundation offers support for gifted students, the number of admitted children is limited (Al Ghawi 2017). Some schools proactively provide provision programmes for gifted students, such as Dubai English Speaking School (Younis 2018).

Not only does the UAE want to be of a first-rate education, but also it is determined to be of a first-rate economy. Thus, to stimulate its economy, the country should focus on developing gifted education and twice-exceptionality education as well as students with special needs. These students can serve the country in innovation, which is one of the pillars of the country's vision. According to the country, innovation is one of the drivers to boost the economy.

Furthermore, the Ministry of Possibilities could benefit from their superior abilities. Such a ministry only exists in the UAE and was launched in 2019. Its objective is to solve impossible challenges successfully through innovation. Thus, the standards of living and quality of life of the citizens are improved (United Arab Emirates Government 2020e).

However, these gems tend to be hidden because the education system does not shed light on them. In other words, policymakers do not recognise their needs in education. Therefore, the economy of the country is not benefiting from their potential yet.

2.5 Situating the Current Study

The UAE, in specific Dubai, is aware of the rights for education of the students with special needs and is reinforcing their inclusion. Relative to its age as a country, the UAE has executed efforts to build an education system that supports special needs students and gifted students. Furthermore, Dubai appreciates the benefit of gifted education even though it did not set and reinforce a giftedness framework as it did for inclusive education. Among the different documents released by policymakers, a discrepancy in the definitions of gifted and talented

definitions is shown. Furthermore, no clear identification process for gifted students is specified. In addition, schools were advised to use the DMGT by Gagne without training and explanation. As for provision programmes, such as enrichment and acceleration, they were defined without any clarification on how to implement them. Unlike the inclusion department, these documents did not set specific standards for gifted personnel. As for the school giftedness policy and Advanced Learning Plan, these documents did not reveal how they should be prepared.

Nevertheless, establishing the Hamdan Foundation and including gifted education in the official documents show that gifted education is significant for the country even if not yet consolidated and reinforced. As giftedness education and research are essential for Dubai, the biannual World Council for Gifted and Talented Children conference is hosted in Dubai in 2021. This accomplishment was achieved due to the efforts of the federal government of Dubai and the Hamdan Foundation. However, twice-exceptionality is one of the critical topics of such a conference. As a marginalised population stem from giftedness, there is no research about twice-exceptionality in Dubai to be presented in the conference.⁵

Moreover, the government should fully implement its inclusion philosophy by aiding the twice-exceptional children. In this context, not only are the official documents lacking any definition of twice-exceptionally but also, they do not provide any guidelines to support gifted students. Furthermore, Dubai should

⁵ The researcher attended and participated in the World Council for the Gifted and Talented in Nashville 2019. She presented a case study of a twice-exceptional student with Asperger's Syndrome. She was the only one to tackle twice-exceptionality from the UAE.

nurture all its students based on their needs. As a result, it could benefit from all their strengths to contribute to achieving the first-rate economy.

For now, the UAE finds itself similar to countries without any official directions to support such students. Nevertheless, without laws and guidelines, countries such as the UAE will not cater to the needs of twice-exceptional students because policymakers are not obliging educators to do that (Roberts, Pereira & Knotts 2015).

Even though this field is new, it is plausible for the emirate to take the lead in enhancing its education system by catering twice-exceptionality just like Singapore and the Netherlands. Other countries list this category of students under the special needs umbrella or as a type of gifted students (Newman & Sternberg 2005). Regardless, identifying and supporting their needs are crucial for their wellbeing as students and their achievement.

Due to the absence of literature about this field in the whole country, this research shall pave the way by assessing the awareness and perceptions of stakeholders about twice-exceptional children. Furthermore, through exploring what outstanding and very good rated schools offer and practices suggested by experts, the researcher aims to determine and discuss twice-exceptional education strategies for the emirate of Dubai. Consequently, this transformative research aims to create an impact on the education of these students.

From an equity and ethical standpoint, these students have the right to optimal education (Leggett, Shea & Wilson 2010). Furthermore, these students need advocates who are experts and knowledgeable of their cases, in order to develop effective educational objectives, goals, accommodation, help, and

guidance, through Individual Educational Plans (Weinfeld 2018). Once they have advocates, twice-exceptional learners can be self-advocates, advocates for themselves, protecting their educational rights, and demanding the needed support to optimise their education (Weinfeld 2018). Furthermore, as a win-win situation, the country shall benefit from these masked potential geniuses' contribution to the economy. In other words, the development of their giftedness would enhance the economy as per the UAE vision.

Chapter Three: Methodology

3.1 Overview

The researcher pursues to explore educators and policymakers' awareness and perceptions of twice-exceptionality in Dubai private schools, rated as very good and outstanding by the KHDA. In addition, the identification and provision programmes offered to these students of these schools are traced. Finally, based on experts, literature, and this study's findings, the researcher aims to develop strategies that Dubai could implement in order to serve this marginalised category of learners. The following are the research questions derived from the purpose of the study:

Overarching Research Question: How could the educational practices offered to twice-exceptional students be improved in Dubai based on the current educators and policymakers' awareness, perceptions and provisions?

Research Question 1: To what extent are educators and policymakers aware of twice-exceptional learners in Dubai?

Research Question 2: What perceptions do educators and policymakers have of twice-exceptional learners in Dubai?

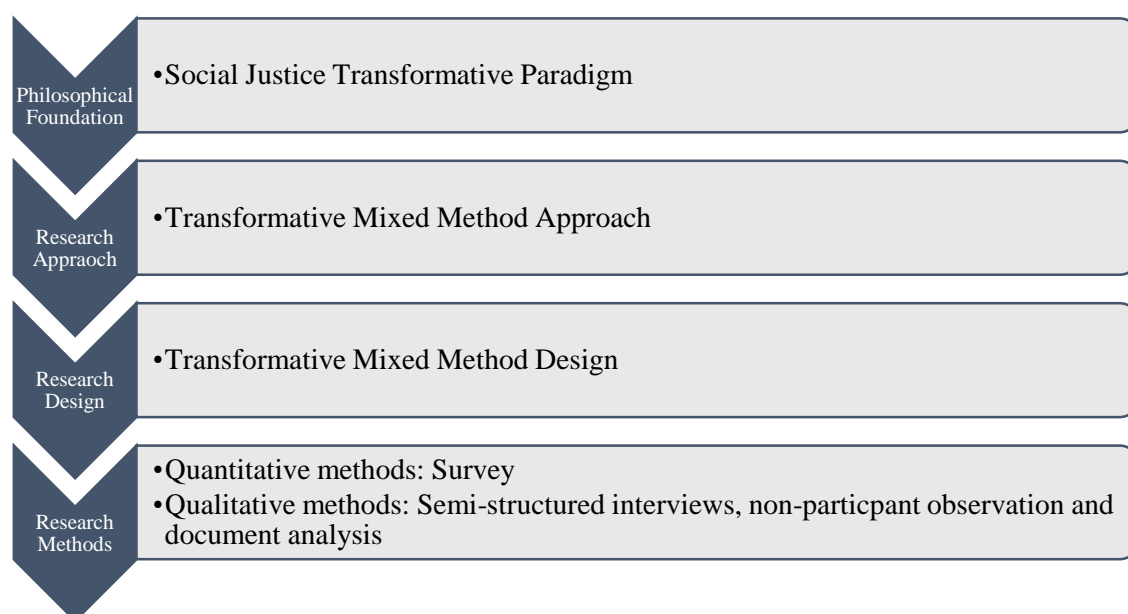
Research Question 3: What are the identification processes used to recognise twice-exceptional learners in Dubai?

Research Question 4: What are the provision programmes offered to twice-exceptional learners in Dubai?

Research Question 5: What are the suggested best practices recommended to support the education of twice-exceptional learners in Dubai?

As the theoretical framework is transdisciplinary, this research is transformative (Augsburg 2014). In the methodology chapter, the research philosophical foundation, approach, design and methods are discussed based on the purpose of the study and research questions as shown in Figure 3.1 Research Methodology. Afterwards, the ethical considerations, along with methodological challenges and issues are discoursed.

Figure 3.1 Research Methodology



3.2 Research Philosophical Foundation

Social sciences research inquiries, such as this study, are founded on paradigms. Of Greek origin, the term paradigm means model or pattern. However, Thomas Kuhn has used this term to change the way normal sciences and social sciences are perceived. In his book *The Structure of Scientific Revolutions* written in 1962, he defined paradigm as a set of universally accepted patterns and principles, along with relevant methods to measure them while influenced by the culture of the scientists in a particular period of history or era. In normal science,

his breakthrough has been that different scientists can describe the same phenomena in various ways (Orman 2016). In addition, Kuhn influenced significantly social science research as he believed that any inquiry is based on disciplinary beliefs, values, assumptions and norms about the nature of reality and the methods to provide knowledge about it. According to Biddle and Schafft, a paradigm in social science is defined as:

“Paradigms, in the broadest Kuhnian sense, are collections of disciplinary assumptions and norms that scientists working in a field share. They therefore constitute a set of professional commitments and agreed-on understandings and assumptions regarding the questions that may be legitimately posed within a field of inquiry, and the methods most appropriate for addressing those questions.” (2015, p.325)

To understand any research, it is important to recognise the philosophies behind it. According to Guba and Lincoln, a paradigm is a system of beliefs built on epistemology, axiology, ontology and methodology (1994). According to Guba and Lincoln, there is an interrelated relationship among axiology, epistemology, ontology and methodology as they shape each other. For example, the methodology chosen for any inquiry is derived from the researcher's values and ethics, his way of looking the nature of reality and his relationship with knowledge (Guba & Lincoln 1994).

In this research, a paradigm is the philosophy underpinning the studied inquiry. The philosophy underpinning the mixed method approach is mainly the transformative also known as social justice mixed methods paradigm. In this context, the social justice theoretical framework (emancipatory) is the lens

employed because the target is to advocate for equity in the education of twice-exceptional learners (Creswell 2015; Mertens 2007). Based on the transformative paradigm, the study is based on the following axiological, epistemological, ontological and methodological inquiry assumptions.

From the axiological perspective, the researcher believes in the need of social justice and equity in terms of education. Moreover, the researcher values, such as equity, are indispensable for the study. In the context of this research, each student has the right to learn based on his needs and if education needs are satisfied, twice-exceptional students could contribute more efficiently to the social welfare.

From epistemological perspective, the role of the researcher in this field is to understand, explain and seek for change for twice-exceptional students who are suffering from inequality and injustice in education (Mertens 2007). The researcher has to interact with twice-exceptional students, and stakeholders influencing them such as educators and policymakers, in order to explore the reality that these students live in.

From the ontological perspective, the researcher believes that reality is socially constructed based on social, economic and political factors and that power is in the hand of education system which still does not recognise the various needs of all students, in this case twice-exceptional students. In other words, there are different realities affected by how the education system supports students who follow the mainstream flow of education regardless of their deficits or strengths (Plano Clark & Ivankova 2016).

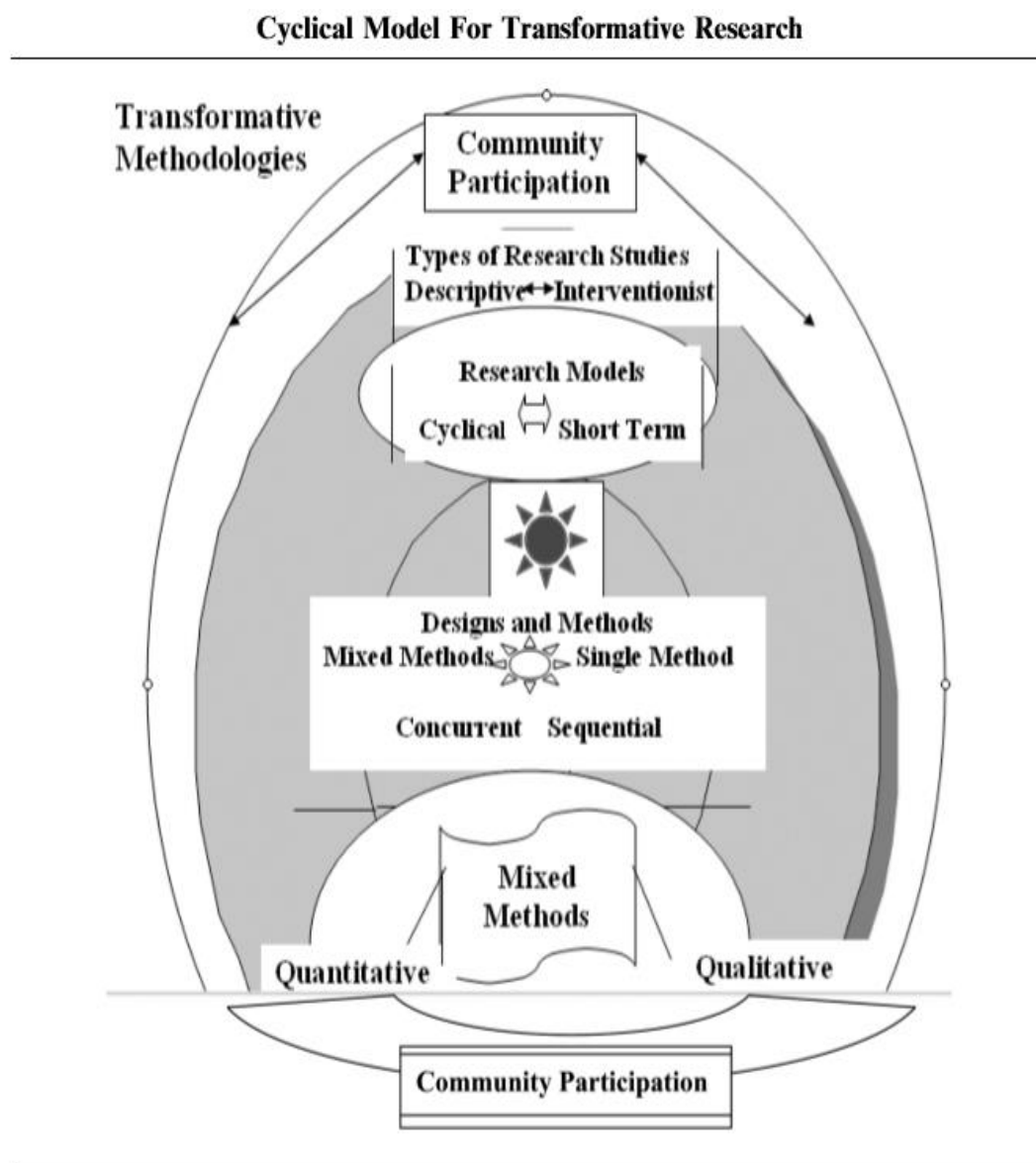
According to Mertens, epistemological assumptions related to the transformative paradigm leads to cyclical model, whereby the researcher builds a relationship with participants and other members of the community in order to bring a change to the community (2007). In this setting, the researcher should build a relationship of trust with twice-exceptional students and surrounding stakeholders in order to obtain data, analyse it, recommend changes and seek for action to enhance their education.⁶

“The role of the researcher in this context is reframed as one who recognizes inequalities and injustices in society and strives to challenge the status quo”(Mertens 2007, p. 212).

Therefore, the researcher is involved and participates with the different stakeholders to achieve their common goal which is the social justice of twice-exceptional education. The following Figure 3.1 shows the Cyclical Model of Transformative Research (Mertens 2007a, p. 219). This dissertation is the beginning of the cyclical model with mixed method to pave the way for further research. Aiming to create an impact, this transformative research would keep on going with the cycle until transformation and social justice is established in the education of twice-exceptional students.

⁶ The Cyclical Model for Transformative Research is explained in 3.5 Research Methods and in Chapter 5 section 5.2.6.

Figure 3.2 Cyclical Model for Transformative Research (Mertens 2007, p. 219)



Therefore, the methodology should be derived from all these previously discussed dimensions of the transformative paradigm and must be designed in the optimal way to serve the inquiry of the study. With the use of the transformative mixed method approach and design, the researcher believes that the research questions could be adequately answered. The balance between the two approaches

could help reveal the reality of twice-exceptional education in Dubai and recommend accordingly supporting strategies.

Based on Mertens, from a right-based approach, the transformative paradigm serves the cause of students who cannot follow the mainstream education system (2007b). In other words, students such as twice-exceptional students cannot follow and learn the same as other mainstream students can. For instance, the twice-exceptional students' curriculum design and implementation, assessment, and evaluation need to be different from other students. Education needs to be designed from students to achieve their full human potential (Romm 2015). The transformative paradigm serves such students as they make their voices heard through this research (Romm 2015).

Even though the researcher is aware of the guidelines of other basic philosophies underpinning mixed methods such as post-positivism, pragmatism and constructivism, she decided to establish the research on the novice transformative paradigm philosophy, without causing an imbalance in research. The following Table 3.1 Language associated with Paradigms shows the different types of paradigms and how they are used. This table is adapted from MacKenzie & Knipe 2006 who combined the literature work of Mertens (2005) and Creswell (2003).

Table 3.1 Language associated with Paradigms

Positivist/ Postpositivist	Interpretivist/ Constructivist	Transformative	Pragmatic
Experimental	Naturalistic	Critical theory	Consequences of
Quasi-experimental	Phenomenological	Neo-Marxist	actions
Correlational	Hermeneutic	Feminist	Problem-centred
Reductionism	Interpretivist	Critical Race Theory	Pluralistic
Theory verification	Ethnographic	Freirean	Real-world practice
Causal comparative	Multiple participant	Participatory	oriented
Determination	meanings	Emancipatory	Mixed models
Normative	Social and historical	Advocacy	
	construction	Grand Narrative	
	Theory generation	Empowerment issue	
	Symbolic interaction	oriented	
		Change-oriented	
		Interventionist	
		Queer theory	
		Race specific	
		Political	

For example, pragmatism, as a paradigm used in mixed method studies, is used when the researcher, focused on the research problem, does not know whether the qualitative or the quantitative data would be more important for answering the research questions; thus sometimes, due to its flexibility, such a paradigm is considered loose (MacKenzie & Knipe 2006; Plano Clark & Ivankova

2016). In addition, in this research inquiry, pragmatism lacks the emphasis on the contribution to the social welfare, also known as the social good (MacKenzie & Knipe 2006; Biddle & Schafft 2015). However, in this condition, the researcher has defined the role of each type of data collected from the used instruments in achieving the purpose of the study, after having conducted thorough review literature. Other paradigms lack the emphasis on sociological and psychological theories lying behind social sciences research (MacKenzie & Knipe 2006).

Therefore, this advanced philosophy, which sheds light on socially constructed realities, provides a solid foundation for research related to social justice (Biddle & Schafft 2015; MacKenzie & Knipe 2006; Mertens 2007). Thus, the choice of this philosophy is to support the purpose of the study and to align the approach with the theoretical framework of the study; in this study the social justice theoretical framework (Romm 2015). Furthermore, its implementation is expected to offer broader and more thorough findings which serve best the dissemination of knowledge (Mertens 2007a). Finally, such a paradigm seeks for social action for the students who are less heard and marginalised (Mertens 2007a; Romm 2015). Even though the transformative paradigm is oriented by social justice in this case, its limitation is that embedding the cause in the research design, findings, recommendation and conclusion is complicated (Sweetman, Badiee & Creswell 2010).

According to Mertens, there are ten criteria to guarantee an effective transformative research (2003). The researcher's operationalization of these criteria in this research is discussed as follows:

(1) The researcher should openly position the problem in the community while showing how it affects its different stakeholders: The researcher explained in chapter one the significance of this problem for the twice-exceptional students, educators, and policymakers.

(2) The researcher should transparently declare the theoretical lens and perspective of the study: The theoretical framework of this study was founded on social justice and the right-based approach for twice-exceptionality education.

(3) The research questions should be written from an advocacy perspective: The aims of this research articulate advocacy. However, the relationship between the five research questions indicates that the researcher advocates the enhancement of twice-exceptionality education by suggesting strategies derived from data originated from different stakeholders.

(4) The literature review should contain and emphasise diversity and oppression discussion: The literature review of the study was structured to show the evolution, the needs, and the problems faced by twice-exceptional students in the world. Furthermore, it revealed what countries around the world did to ensure that the rights of twice-exceptional students to adequate education that satisfies their needs are fulfilled.

(5) The researcher should discourse labelling of the participants: Labelling of twice-exceptional students was not intensely discussed due to the limited literature. However, mislabelling derived from misdiagnosis and bullying complications were examined. Furthermore, through data collection and analysis, the labelling concern is debated with different stakeholders.

(6) The data collection and results should be beneficial to society: In every chapter of this thesis, the benefits of ensuring adequate education for twice-exceptional are deeply examined. Moreover, the impact of this study on each one of the stakeholders is emphasised.

(7) The participants should start the research or get involved in it: Even though the research focuses on students, the researcher ensured that twice-exceptional students get involved in the study. Nevertheless, due to their cases and to protect their wellbeing, their involvement was limited.

(8) The results should explain power-based relationships: The education of twice-exceptional students is under the control of the education system. In other words, policymakers and educators. The different types of power relationships are dissected throughout this thesis.

(9) The results should enable social change: Apart from disseminating knowledge, this study aims to create a change in the education of twice-exceptional students. The strategies, recommendations, and suggestions should initiate social change as this is the first study about twice-exceptionality in Dubai. As a result, it aims to pave the way for social change.

(10) The research should be explicit in stating the usage of a transformative framework: Throughout the chapters, the researcher emphasised the implementation of the transformative framework. The framework is the foundation of each of the chapters.

However, two main challenges confronted the researcher in fulfilling these ten criteria. On the one hand, she faced some restrictions by schools and parents in dealing with twice-exceptional students from an ethical and safety perspective. On

the other one, she is the first researcher pursuing the transformation of twice-exceptionality education in Dubai. Regardless of these challenges, she did her best to ensure the fulfilment of these ten criteria.

3.3 Research Approach

Research of twice-exceptionality in the UAE is novice as previously mentioned. As a result, this study aims to call for equity and justice in the education of twice-exceptional students and recommends further research in this field. Thus, to explore this field, the qualitative research approach could have been used. According to Creswell, a qualitative research approach could be used to obtain a deep and thorough understanding of a specific population, in a flexible manner (2015). For example, in this case of twice-exceptional learners, perceptions tend to be studied through a qualitative approach. However, the results of such a research approach are limited due to the inability of generalization and tend to be biased (Patton 2008).

In contrast, another potential approach used in research is the quantitative one. At this level, the researcher could test a hypothesis to study relations among variables. Then, data would be collected in numbers. For instance, methods used to identify twice-exceptional learners could be based on surveys. Thus, results are reliable and objective. Nevertheless, the researcher struggles with the rigidity of this structured research approach in social sciences (Creswell 2015).

For this study, none of these two approaches, as stand-alone, fulfils the research questions. Thus, the mixed methods approach, whereby researchers integrate both quantitative and qualitative data collection and analysis, is used

(Plano Clark & Ivankova 2016). For this study, to serve twice-exceptional students, the rationale of the mixed methods approach study is social justice rationale. The social justice rationale is an argument to implement both quantitative and qualitative approaches to reveal and face inequality and injustice through the social justice philosophy. From equity perspective, the social justice rationale serves to uncover the potential marginalization of twice-exceptional students (Creswell 2015; Plano Clark & Ivankova 2016). In other words, mixed method approach would discover the problems that twice-exceptional students are facing to call for action through strategies enhancing their education system in Dubai. The mix of quantitative and qualitative approach is dictated by involving the participants affecting the education of the twice-exceptional students such as educators, heads of inclusion and international twice-exceptionality experts to support their education and raise awareness about them.

Therefore, the most suitable approach is the mixed methods research approach. In other words, the use of both qualitative and quantitative research approaches tends to present a more complete image of the problem studied (Creswell 2015; Creswell 2012; Fraenkel & Wallen 2009). The mixed method approach could be used for various reasons. First, the use of mix of quantitative and qualitative approach could be offsetting the drawbacks between each one the methods as standalone, or for one method to complete the other (Bryman 2006). Second, the mixed method approach provides the opportunity of triangulation aiming to obtain valid outcomes, especially that the social justice paradigm is criticised to be bias (Mertens 2007b). Third, it offers the chance for one approach to complement the other because each approach may show one perspective of

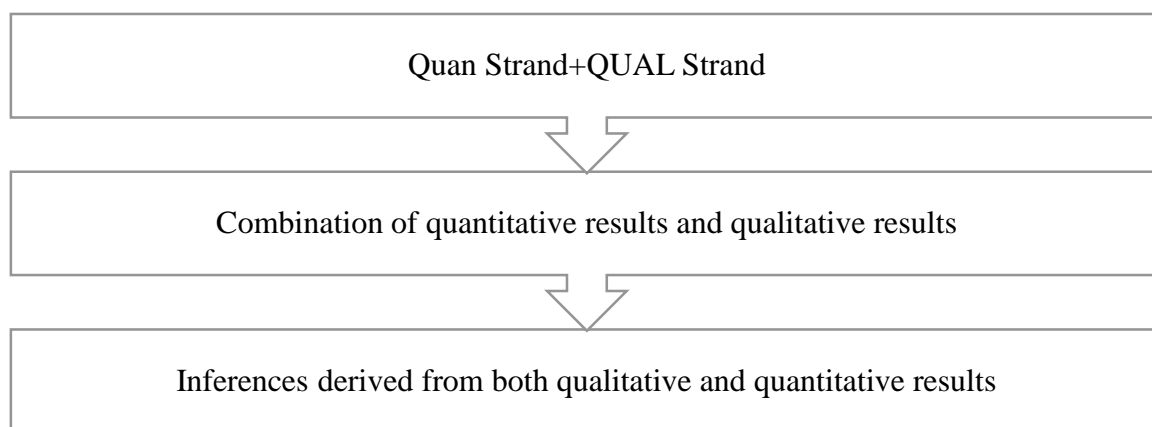
reality. Finally, this approach is advantageous because of researchers can develop more solid conclusions from different findings obtained through the two mixed approaches (Plano Clark & Ivankova 2016). Nevertheless, such an approach requires more time and more expertise in the two other approaches to balance between them (Creswell 2015).

3.4 Research Design

3.4.1 Mixed Method Research Design

A mixed method research design is the system researchers refer to in order to mix both the quantitative and qualitative methods seeking for an answer to their inquiry. For the study, the researcher adopted a social justice, also known as transformative, concurrent mixed method design in which the researcher integrates simultaneously the process of collecting quantitative data through surveys and with qualitative data through semi-structured interviews, observation and document analysis as shown in Figure 3.3 Transformative Concurrent Mixed Method Design. Dictated by the social justice theory of the theoretical framework, and due to the novice research field, the researcher prioritised the qualitative methods while employing a quantitative method (Creswell & Plano Clark 2011; Mertens 2007a; Plano Clark & Ivankova 2016). Even though this study relies on an advanced design of research, it is initially grounded in phenomenology and descriptive design of statistics as it studies the current condition of twice-exceptional students in Dubai, in the UAE (Creswell 2012).

Figure 3.3 Transformative Concurrent Mixed Method Design



Thus, after screening outstanding and very good rated schools in Dubai and reviewing the literature of twice-exceptionality research, the researcher is supposed to conduct the quantitative surveys with educators about their awareness and perceptions of twice-exceptional students. In contrast, the qualitative strand includes semi-structured interviews about perceptions, awareness, and practices of inclusion specialists and policymakers regarding twice-exceptional students. Furthermore, the researcher designed semi-structured interviews, observation checklist and studied a sample of students' work to examine how schools identify and support these children. Finally, questions for experts' semi-structured interviews are designed and conducted to suggest potential strategies to support these students with the support of literature.

The justification of the employment of such a composition of methods is the study of twice-exceptionality, a novice field to the UAE. Qualitative method is more used in this study to provide a detailed snapshot of the condition of twice-exceptional learners in the emirate of Dubai. Furthermore, the qualitative methodology could aim more the formulation of a strategy to support these children, while suiting the context of the country. Even though qualitative data

lacks generalization, this study is to examine the education of twice-exceptional learners through the lens of educators and policymakers (Creswell 2012; Fraenkel & Wallen 2009). Even though the transformative design is criticised for being subjective because the researcher may have more personal thoughts and voice in the research, the use of different instruments or tools for the research questions relying on qualitative method, trustworthiness could be enhanced, and subjectivity could be less evident (Mertens 2007b). Specifically, the use of the semi-structured interviews, document analysis and non-participant observation would ensure the trustworthiness of the data, rather than relying on one instrument for each research question. Besides, as stated before, the use of the mixed quantitative and qualitative approach is used to minimise any limitation of the research.

3.4.2 Triangulation

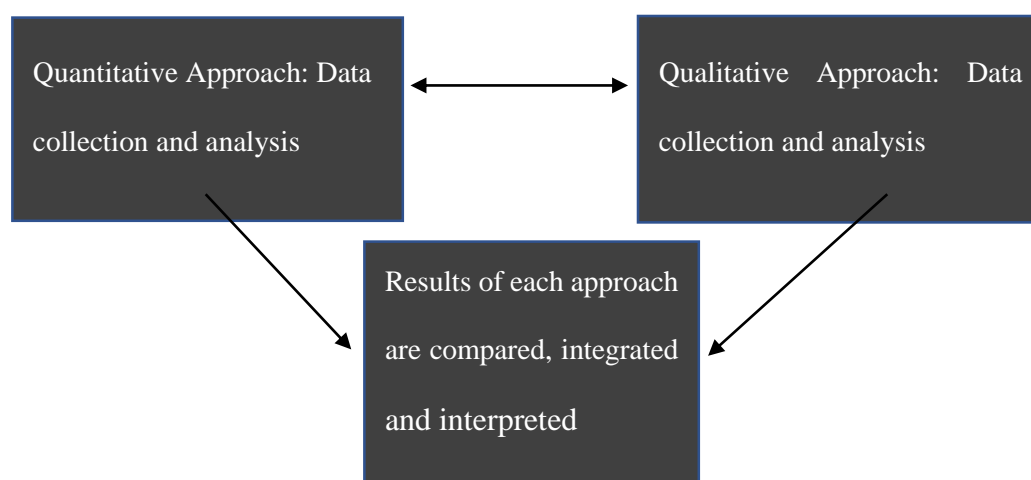
Unlike standalone quantitative approach and qualitative approach, the mixed methods research approach offers the benefit of triangulation. As shown in Figure 3.4 Triangulation Model, triangulation is the combined use of different approaches and different methods in order to study an inquiry. Theory triangulation, methodological triangulation, data triangulation and researcher triangulation are the four types of triangulation. In this study, employing the mixed method research approach provides the researcher with methodological triangulation and data triangulation (Denzin 2010).

As stated before, the social justice or transformative paradigm guiding the mixed methods research approach is criticised to be bias due to the values of the researcher and his involvement with the cause. However, the mixed methods research approach provides the chance to obtain and analyse data through both

quantitative approach and qualitative approach. Thus, triangulation minimises the measurement bias. For example, through survey and semi-structured interviews the researcher can measure the awareness of educators while balancing the control he has over the tool used. Besides, triangulation reduces the sampling bias because the researcher is not having control of the educators, students and policymakers who are participating in the research. Furthermore, it ensures less of procedural bias because participants are contributing to the research in different settings, whether through an interview, observation or questionnaire (Guba & Lincoln; Thurmond 2001).

Triangulation offers a higher level of accuracy of the data collected and findings because of the different methods used relatively to using one approach (Guba & Lincoln 2000). However, triangulation cannot strengthen a study if the researcher does not recognise and articulate the purpose and type of triangulation he is using. (Thurmond 2001). In addition, the researcher needs to be aware that due to triangulation he has to deal with different methods and data which takes a lot of time and effort (Thurmond 2001).

Figure 3.4 Triangulation Model



3.5 Research Methods

3.5.1 Context and Site

To build a solid study, the researcher must be able to determine the research context. The research context is defined as the conditions that constitute the setting of the problem or inquiry. The researcher should fully understand the context of his researcher. By tracing the research context accurately, the researcher can choose the methods used to answer the research questions and achieve the research objectives (Fraenkel & Wallen 2009). In addition, the researcher should identify the site or the place in which the study is taking place. Thus, in this section, and before proceeding with the methods, the researcher context and site are discussed as the latter shape the research (Fraenkel & Wallen 2009).

The context of the research is highlighted in the purpose of the study, aims and research questions. This transformative study aims to investigate the awareness, perceptions, and practices used for twice-exceptional students in private schools of the emirate of Dubai. As a result, through literature review and experts' suggestions, the researcher recommends strategies to enhance the education of twice-exceptional students in Dubai. However, even though the study is focusing on the emirate of Dubai, such recommendations could be applicable to the UAE because the whole country aims for a first-rate education system. At the level of policymakers, interviewing representatives from Hamdan Foundation and Knowledge and Human Development Authority was accessible. The researcher could not reach the Ministry of Education as she had initially aimed for which limited the understanding of the whole context of the study.

Regarding the site of the study, only outstanding and very good rated private schools by KHDA of the academic year 2018/2019 were studied for four main reasons. The first reason is that, based on their inspection report released by the KHDA, private schools in Dubai have internationally accredited education systems embracing educators and students of various nationalities, unlike public schools of Dubai.

The second reason is that not only do these schools include expatriate educators and students, but they also have Emirati students and educators. Such a demographic composition is closer to the demographical structure of the residents, expatriates and Emirati, than the one of the public schools in the emirate of Dubai. The third reason is that, rated as very good or outstanding by the KHDA, they should have the best practices of supporting special education needs, which should include twice-exceptional students' needs in the emirate of Dubai. The last reason is some private schools tend to be more aware of twice-exceptionality than other private schools and public schools, due to the western origin of many of their educators.

3.5.2 Population, Sampling and Participant Selection

3.5.2.1 Population

In any research, a population is considered the total group of either objects or persons, sharing the same features that the research aims to study (Creswell 2015). At this level, the population is constituted of twice-exceptional students, and other stakeholders shaping their education such as educators working in outstanding and very good rated private schools in the emirate of Dubai, along with related policymakers.

According to Dole, identification age of twice-exceptional learners tends to vary based on cases; thus, this research is not limited to a specific age level (2000). Thus, the age of these students could vary based on their case and age of identification. As a result, the grade level of these students is not limited, as long as the students are in school.

Based on the inspection reports released by the KHDA for the academic year 2018-2019, there are 44 schools with very good and outstanding rate. Even though the research aims to explore twice-exceptionality in Dubai, the role that educators and policymakers play in their education is investigated as well. As this study is examining the level of awareness and perceptions of educators about twice-exceptional students, it is important to emphasise that participating educators in this study may not be teaching twice-exceptional students. As per the purpose of the study, international twice-exceptional experts are also stakeholders influencing the education of twice-exceptional students. International experts contribute intensely to the education of these students because of their contribution to their twice-exceptionality research and their advocacy for catering for the education needs of twice-exceptional students.

3.5.2.2 Sampling and Participant Selection

As the whole population is not accessible, researchers select a subgroup representing the population for them to study (Creswell 2015). The sample of schools is purposeful, only seeking the ones of very good and outstanding ranking. In other words, the selection process is done based on the research questions and purpose of the study, taking into consideration some restrictions that the researcher may encounter. In this study, the primary challenge is the non-

recognition of twice-exceptionality by the Ministry of Education. Thus, the number of schools supporting these children is limited as mentioned, in the literature review. However, despite this barrier and due to the research aim to pave the way for further studies in this field in the UAE, the researcher managed to access only 50 educators of very good and outstanding rating schools to contribute to the research.

Besides, only 6 private schools of very good and outstanding rating agreed to have their inclusion specialists participate in the study.⁷ Even though not all participants are of the inclusion specialization such as School C, they hold the responsibility to follow up on the inclusion framework of the school. However, even though the study targeted to cover all curricula covered in private schools in Dubai, the list of very good and outstanding did not cover all the curricula present in the country. Thus, not all the curricula were considered in this study. Moreover, none of outstanding and very good Indian schools responded to the researcher's invitation request to have their inclusion specialist interviewed. As an attempt to make up for this gap, the researcher accessed educators in these schools to participate through LinkedIn.⁸ Thus, it is a purposeful type of sampling. Despite the sample size limitations, the data potentially collected ought to be beneficial for this novice field research.

⁷ Inability to access a bigger sample of schools is explained in the methodological challenges of Chapter 3 section 3.9.

⁸ Inability to have schools of Indian education system has been discussed in the limitation of the study in Chapter 5 section 5.4.

Table 3.2 Profile of the Schools Participants

School	Position of the Interviewee	Curriculum	Name of Twice-exceptional Students Interviewed	Case of the Twice-exceptional Students Interviewed	Grade Level of Students
School A	Head of Students Services and SENCO	British	None	None	
School B	Head of Inclusion	American	Student A	Turner's Syndrome +Arts	12
			Student K	-Asperger's Syndrome +Math and Physics	10
School C	Head of Primary Section	French	None	None	
School D	Head of Inclusion	British	Student L	-Asperger's Syndrome +Math	10
School E	Secondary Head of Inclusion	IB	None	None	
School F	Head of Inclusion and Wellbeing	IB	Student E	-Emotional and behavioral disorder +Math	3

As for the twice-exceptional students, only four students were able to take part of the research. Apart from parents' unacceptance to have their children participate in this study, the small sample size is justified by the low number of identified twice-exceptional students in the schools participating in the study. Through the twice-exceptional sample selection, the researcher aimed to cover various age, gender and nationalities along with different types of twice-exceptionality. Such diversification would reflect of twice-exceptional students

education needs and challenges. Aligned with one of the priorities of the KHDA supplements, two of the four students are Emirati. Thus, despite its small size, the sample represents the Emirati education and international expatriates' education. Furthermore, the gender was considered also as one girl and three boys participated in the study.

The first twice-exceptional student is Student A who is Grade 12 in School B. She has been struggling with Turner's Syndrome. Turner's Syndrome is genetical syndrome that affects girls only and it is the result of a missing part of chromosome X. Such a syndrome leads to developmental and medical complications. Student A is relatively short and had problems in the development of her ovaries. As a result, she has always been on heavy medication including hormonal treatment making her sleeping and tired all of the time. Apart from the medical issues, Student A, is an Emirati girl who has learning disabilities such as dyscalculia and dysgraphia due to the Turner's Syndrome (Mayo Clinic 2020). However, she is gifted in arts and literature. The second twice-exceptional student is Student K who is an Emirati boy in Grade 10 in School B. He is gifted in physics and math while his deficit is related to Asperger's Syndrome⁹. The third twice-exceptional student is Student L who is a German and Italian boy in Grade 10 in School D. Similar to Student K, his deficit is related to Asperger's Syndrome, while he is gifted in math. Finally, the fourth twice-exceptional student is Student E who is a Filipino boy in Grade 3 in School F. He is gifted in math though he struggles with emotional and behavioural disorder¹⁰.

⁹ Asperger's Syndrome is explained in Chapter 2 in section 2.2.2.

¹⁰ Emotional and behavioural disorder is explained in Chapter 2 in section 2.2.2.

Regarding policymakers, despite the follow up with the Ministry of Education, no one accepted to participate in this study¹¹. Only one representative each one of Hamdan Foundation and the KHDA approved to contribute to this doctoral thesis. However, the researcher tried to trace the role and involvement of the Ministry of Education indirectly through documents released by the Ministry of Education, along with schools and the representatives of Hamdan Foundation and KHDA.

Unlike other stakeholders, all contacted international experts approved to participate the study. However, some could not make it on time due their other commitments. An expert is someone who has deep knowledge and expertise either in practice or in research of a certain field, in this case twice- exceptionality(Libakova & Sertakova 2015).

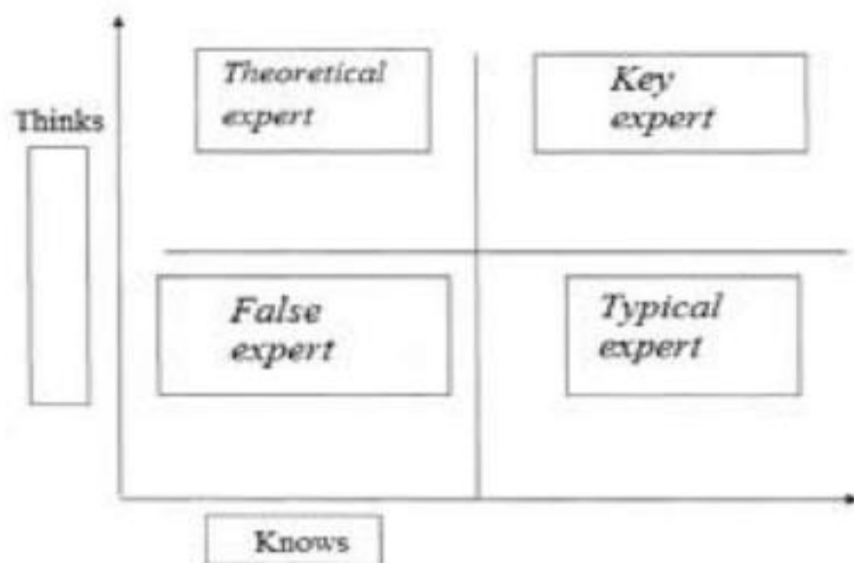
According to Steinberg's Eight-Window Model Figure 3.5 Eight Window Model of Experts, there are four types of experts that a researcher may encounter: key experts, typical experts, theoretical experts and false experts. A key expert is someone who is reflective, possesses knowledge and analytical thinking while the typical expert is someone who has the practice and knowledge. In contrast, a theoretical expert is a person who does not have practical experience but speaks based on his thoughts. The false expert is someone that should not be referred to in any research because he does not have the practice or the knowledge. For this study, the researcher ensured not to have any false expert taking part of the study

¹¹ Inability to access the Ministry of Education has been discussed in the limitation and the challenges of the study in Chapter 3 section 3.8 and Chapter 5 section 5.4.

through a thorough research about the profile of the experts, apart from the published research articles.

Regardless of the difference in their background and years of experience, Renzulli, Baum, Assouline, Al-Hroub and Van Gerven are key experts of twice-exceptionality as shown in Table 3.4 (Profile of Twice-exceptional Experts). However, Rankin is a typical expert who is more into practical knowledge. Thus, such experts can build a robust research through the validity they bring to the study as shown in Table 3.4 (Libakova & Sertakova 2015).

Figure 3.5 Eight Window Model of Experts based on Steinberg from Libakova & Sertakova (2015)



The researcher attempted to have international experts representing all the countries that conduct research on twice-exceptionality. Even though it is important to determine a correct number of experts (Libakova & Sertakova 2015), the researcher could not access more than the following experts especially because the field of study is still novice as previously mentioned. Despite their interest to

enhance the education of twice-exceptional students, each one of them studies twice-exceptionality from different lens or perspective. This resulted in a holistic selection of experts to boost the suggested strategies of this study.

International expert 1: Professor Joseph Renzulli is an educational psychologist initially and is a pioneer of gifted education in the University of Connecticut, USA. He is a founder of Renzulli Center for Creativity, Talented Development and Gifted Education (University of Connecticut 2020). Many of his theories and models are implemented by schools to support gifted education, such as the UAE. Throughout the 20th century and the 21st century, he has published plenty of books and articles related to gifted education and twice-exceptionality.

International expert 2: Susan Baum PhD is initially a primary teacher interested in gifted students who have disabilities. She has been a PhD student at the University of Connecticut whose advisor was Professor Joseph Renzulli. In addition, she is considered as a pioneer in the twice-exceptional education field. Currently, she is the Director of the 2e Center for Research and Professional Development, and she is the founder of Bridges Academy for Twice-exceptional students. Recently, Bridges Academy has launched a graduate programme for educators interested in pursuing their studies in twice-exceptionality (Bridges Academy 2019). Over this century and the previous one, she has published many articles and books related to twice-exceptionality.

International expert 3: From the University of IOWA, Professor Susan Assouline is originally an educational psychologist who got intrigued with twice-exceptional students. Thus, she became one of the pioneers of the field. Today, she is the Director of the University of Iowa Belin-Blank Center for Gifted

Education and Talent Development (University of Iowa 2020). As Baum, Assouline has published various articles and books to enrich research about twice-exceptionality, used in this thesis. Apart from the articles used for the literature and discussion of this study, Assouline has supported this thesis through a consultation about the questionnaire used to examine the awareness and perceptions of teachers about twice-exceptionality.

International expert 4: From the Netherlands, Eleonoor Van Gerven began her career as a primary teacher like Baum. However, throughout her experience as a teacher she became interested in gifted education. At a later stage, she decided to support twice-exceptional students. Van Gerven is the Director of Slim!Educatif which is a private teacher education institute for gifted and twice-exceptional education. In addition, she is from the Board of the World Council for the Gifted and Talented (Slim!Educatif 2020). Till now, she has published many research articles about twice-exceptionality that are used in this doctoral thesis.

International expert 5: Of Jordanian origin, Professor Anies Al- Hroub is an Associate Professor of Education Psychology and Special Education at the American University in Beirut. He is a visiting scholar at Renzulli Center for Creativity, Talent Development and Gifted Education. He is also from the World Council for the Gifted and Talented. Through his research, he is considered to be a pioneer of twice-exceptionality in the Arab Middle East (American University of Beirut 2019).

International expert 6: Professor Sara Rankin is a faculty member of Imperial College Faculty of Medicine. Activist of dyspraxia and dyslexia, Rankin has founded 2eMPOWER for twice-exceptional students training. Based on STEM

education, Rankin is providing workshops for twice-exceptional students and teachers in science (Imperial College London 2020). Rankin is also supporting faculty members at the Imperial College to support neurodiversity of twice-exceptional students.

Table 3.3 Profile of the International Twice-exceptional Experts

<i>Twice-exceptional Experts</i>					
<i>Professor Joseph Renzulli</i> USA	<i>Susan Baum PhD</i> USA	<i>Professor Susan Assouline</i> USA	<i>Eleonoor Van Gerven PhD</i> Netherlands	<i>Professor Anies Al-Hroub</i> Jordan/ Lebanon/ USA	<i>Professor Sara Rankin</i> UK
-Pioneer of gifted education - Education Psychologist - Founder of Renzulli Center for Creativity, Talented Development and Gifted Education	- Pioneer in Twice-exceptionality - Director of the 2e Center for Research and Professional Development -Founder of Bridges Academy for Twice-exceptional students	- Pioneer in Twice-exceptionality - Educational Psychologist - Director of the UI Belin-Blank Center for Gifted Education and Talent Development	- Director of Slim!Educatif, a private teacher education institute for gifted and twice-exceptional education	- Scholar at Renzulli Center for Creativity, Talented Development and Gifted Education - Scholar of twice-exceptionality in the Arab Middle East	- Faculty of the National Heart and Lung Institute part of Imperial College -Twice-exceptional activist with dyspraxia and dyslexia - Founder of 2eMPower for twice-exceptional students

3.5.2.3 Research Questions and Participants

In order to explore awareness and perceptions of twice-exceptionality for research questions 1 and 2, educators and inclusion specialists of very good and outstanding schools are participating in the study. The sample of educators is

limited because twice-exceptionality is novice in the UAE. For the same research questions, policymakers constituted of a representative from each one of the following organizations Hamdan Foundation and KHDA are contributing to the study. These latter policymakers are selected because of their direct involvement with developing giftedness education (Hamdan Foundation) and building a holistic private education (KHDA) in the emirate of Dubai.

For research questions 3 and 4, the participants are twice-exceptional students, inclusion specialists and educators. Furthermore, the input of the policymakers from Hamdan Foundation and KHDA is also provided to answer the research questions 3 and 4. Those participants explained the identification and support provided to twice-exceptional students. to examine what they already do for these students.

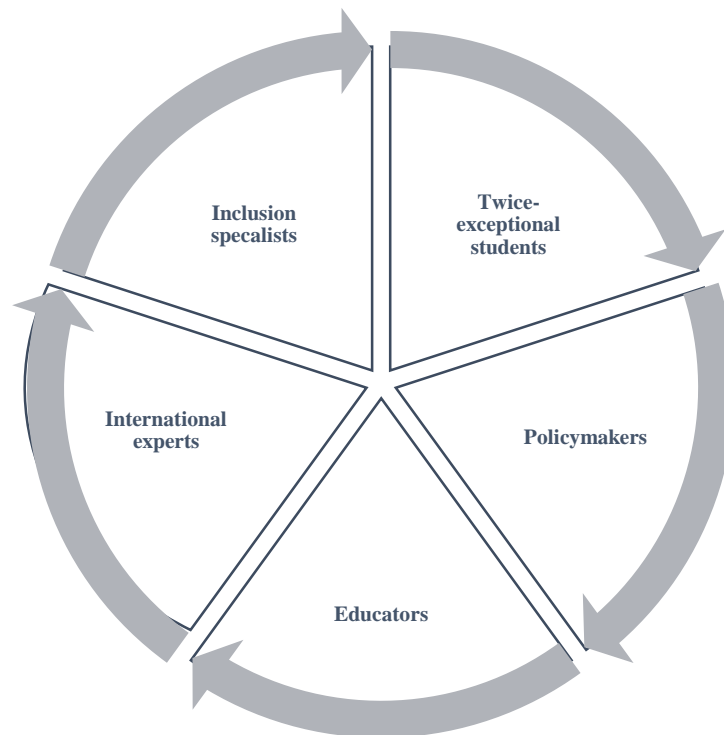
Founded on the transformative/social justice concurrent design, the study's last research question is based on document analysis of various countries experiences in teaching twice-exceptional learners. The researcher aims to use documents embracing all the continents even though the vast majority is centred in the United States of America.

As for the experts' suggestions, the researcher asked for support from pioneers in the field of twice-exceptionality giftedness education and neuroscience such as Ph.D. Suzan Baum and Professor Joseph Renzulli (Bogner et al. 2016). Due to the transdisciplinary nature of this research, experts in twice-exceptionality shared with the researcher twice-exceptional education from an educational, neuroscience, psychological, economic, medical and social perspectives in order to ensure the formulation of a set of optimal strategies suiting the country

(Bargerhuff et al. 2012; Belcher et al. 2015; Hirsch Hadorn 2008; Kemp & Nurius 2015).

To sum up, through this study major stakeholders involved in the education of twice-exceptional students were involved in this study. The inquirer did not require parents to participate directly in this study because the field is novice in the country. However, through their approval to have their children observed and interviewed, the researcher understood their engagement in the education of their children. Even though the researcher did not get directly involved, the approach to pave the way for twice-exceptional education is by itself a form of action or involvement of hers. The contribution of all these stakeholders, regardless of the size and the absence of the Ministry of Education, is aligned with the transformative research as displayed Figure 3.2 Cyclical Model for Transformative Research (Mertens 2007a p. 219). The following Figure 3.6 Stakeholders Affecting Twice-exceptional Education shows the complete image of all the stakeholders participating in the study.

Figure 3.6 Stakeholders Affecting Twice-exceptional Education



3.5.3 Data Collection Tools or Instruments

Based on the mixed method research design, the researcher used different instruments for each one the research questions for the purpose of triangulation as previously explained. This way data analysis, findings, and recommendations are ensured to be more valid and trustworthy.

While studying a certain group of people, social science data collection is the process of gathering information through different instruments and protocols (Walliman 2016; Creswell 2015). Data collection process should be executed in a systematic way to enable the inquirer to answer the research questions, such as this study, or validate a hypothesis (Northern Illinois University 2020). As a result, the choice and development of collection instruments or tools is crucial in order to ensure the integrity of the research (Northern Illinois University 2020).

For this study, the data collected was composed of primary data and secondary data. Primary data is information directly collected by the researcher through different instruments and protocols to observe, and measure their thoughts and activities of the population studied (Walliman 2016; Creswell 2015). The researcher relied on surveys, semi-structured interviews, non-participant observation as primary source of data. Primary source of data was used for all the research questions. For each one of the research questions, more than one instrument has been used for triangulation purpose.

In contrast, secondary form of data is data collected and used by someone other than the inquirer. It is necessary for the researcher to refer to the secondary data to have a background about the research topic. For this thesis, the researcher used document analysis to answer research questions. Literature review articles, KHDA inspection reports, Dubai School Inspection Bureau framework, Ministry of Education publication and students' work are secondary data used for the research. On the one hand, some of these secondary data were used to support the research indirectly with background information such as Ministry of Education publication based on which the researcher learned that the Ministry does not provide any provision guidelines for twice-exceptional students. On the other one, other secondary data documents such as students' sample of work were used to address the research questions.

The following Table 3.4 Research Questions Methods summarises the different approach, instruments, participants and types of sampling used for the research questions.

Table 3.4 Research Questions Methods

Research Questions	Approach	Instrument	Participants	Sampling
1- To what extent are educators and policymakers aware of twice-exceptional learners in Dubai?	Qualitative and Quantitative	Survey with closed ended and open-ended questionnaire	Educators of both twice-exceptional students and non-twice-exceptional students	Purposeful sampling: Educators of in very good and outstanding schools
		Semi-structured interviews	Inclusion specialists	
		Semi-structured interviews	Representatives from: 1-Hamdan Foundation 2- KHDA	Purposeful sampling: Educational policymakers
2- What are the perceptions that educators and policymakers have about twice-exceptional learners in Dubai?	Qualitative and Quantitative	Survey with closed ended and open-ended questionnaire	Educators of both twice-exceptional students and non-twice-exceptional students	Purposeful sampling: Educators of in very good and outstanding schools
		Semi-structured interviews	Inclusion specialists	
		Semi-structured interviews	Representatives from: 1-Hamdan Foundation 2- KHDA	Purposeful sampling: Educational policymakers
3- What are the processes used to identify twice-exceptional learners in Dubai?	Qualitative	Semi-structured interviews	Inclusion specialists	Purposeful sampling: Educators of in very good and outstanding schools
		Survey open-ended questions	Educators of twice-exceptional learners	

		Semi-structured interviews	Representatives from: 1-Hamdan Foundation 2- KHDA	Purposeful sampling: Educational policymakers
<i>4- What are the provision programmes offered to twice- exceptional learners in Dubai?</i>	Qualitative	Semi-structured interviews	Inclusion specialists	Purposeful sampling: Educators of in very good and outstanding schools
		Survey open-ended questions	Educators of both twice-exceptional students and non-twice-exceptional students	
		Non-participant observation	Twice-exceptional students in class	Purposeful sampling: Twice-exceptional students
		Document analysis of students' work		
<i>5- What are the suggested best practices recommended to support the education of twice- exceptional learners in Dubai?</i>	Qualitative	Semi-structured interviews	Experts in twice-exceptional	Purposeful sampling: key and typical experts
			Policymakers	KHDA and Hamdan Foundation
		Document Analysis	Literature covering different countries of the world	Purposeful sampling

As previously mentioned, this research is of a mixed method approach. For the study, different qualitative and quantitative data collection tools and instruments were used.

3.5.3.1 Survey

A survey design is a procedure in which the inquirer uses a questionnaire to collect information from a sample of a certain population. The aim is to show

trends and patterns in a population' attitudes, perceptions and awareness in relation to a certain topic (Creswell 2015). The survey design has several advantages such as their flexibility, convenience and low cost. However, some of its limitations is ensuring a big sample representing a certain population and its construction and structure (Walliman 2016). The survey with structured questions and open-ended questions is was shared with educators via email through SurveyMonkey (Lavrakas 2008). The use of both quantitative aspect and qualitative aspect provides the researcher with the opportunity to balance between the subjectivity of perception as a non-factual concept and objectivity of the data collection.

As Table 3.4 Research Questions Methods shows, the researcher has used the survey design to answer research questions 1, 2, 3 and 4. The survey is composed of 40 questions adapted from a previous survey “Twice-Exceptional Needs Assessment Survey” about perceptions and awareness (Foley et al. 2013), as shown in Appendix 3.8. Based on Assouline, one of the interviewed international experts¹², this survey is key to assess educators' awareness and perceptions about twice-exceptional students. She, who has worked on its initial design with Foley, was consulted by the researcher about the amended form of the survey to ensure its reliability and validity. It is important to note that some questions were deleted, other were added while few other ones were modified. For example, open-ended were added, and demographic questions required some

¹² Assouline's profile is described in Chapter 3 section 3.5.2.2.

changes to suit the context of the study. Appendix 3.10 shows how the survey is shown to the participants on their laptop platforms.

The following Table 3.5 (Part I- Background Questions) about participants shows the demographical questions needed to situate the context of this study. Furthermore, they were used to make sure that they match the filters of school rating and education system.

Table 3.5 Part I- Background Questions of Participants (demographics and school)

1. What is the rating of your school as per the last KHDA report?
2. What is the curriculum of the school you are currently working in?
3. What is your nationality?
4. What is your age?
5. What is your gender?
6. Please indicate the licensures you currently have based on your education: (Please check all that apply.)
7. What best describes the population of students with whom you work? Check all that apply.
8. How many years of experience as an educator do you have in Dubai?
9. How many years of experience as an educator do you have, apart from Dubai?
10. What describes your main professional responsibilities?

For Research Questions 1, in order to explore awareness of educators about twice-exceptional students, questions 11 to 20 are used. In the context of Dubai, the researcher amended questions about policies related to the country. The following Table 3.6 Part II- Awareness Questions about Twice-exceptionality shows the different questions used by the researcher to answer Research Question 1. In question 11, the researcher can evaluate if educators are aware or know the meaning of twice-exceptional students. In contrast, the questions 12 to 20 about awareness were dichotomous questions given three nominal choices: Yes, No and I don't know. The reason for the YNIDK scale is because the researcher aims to

assess what participants know and are aware of when it comes to twice-exceptionality (Creswell 2015). It is not an opinion that is sought in this context so no need for any in-between answers.

Table 3.6 Part II- Awareness Questions about Twice-exceptionality

11. How would you define the twice-exceptional (gifted with disabilities) student? Select only one.
12. Does your school have an identification process for twice-exceptional (gifted with disabilities) students?
13. Does your school provide support for the needs of the twice-exceptional (gifted with disabilities) students?
14. Does your school have policies for twice-exceptional (gifted with disabilities) students?
15. Twice-exceptional (gifted with disabilities) students have the same needs as the population of gifted students who do not present any difficulties.
16. Twice-exceptional (gifted with disabilities) students have the same needs as special education students.
17. Twice-exceptional (gifted with disabilities) students are all the same.
18. Twice-exceptional (gifted with disabilities) students vary in school performance from very high to very low.
19. Identifying twice-exceptional (gifted with disabilities) students is the same as identifying any other type of special needs students.
20. Twice-exceptional (gifted with disabilities) students require the same supporting programmes as gifted students.

For Research Question 2, aiming to explore the perceptions of educators about twice-exceptional students, questions 35 to 39 were set. They are shown in Table 3.7 Part III- Perceptions Questions about Twice-exceptionality. All these questions were adapted from the initial survey as mentioned in “Twice-Exceptional Needs Assessment Survey”. These questions are designed either based on ranking or different answers that vary based on educators’ perceptions.

Table 3.7 Part III- Perceptions Questions about Twice-exceptionality.

35. Please RANK order from 1 to 6 the following factors you think should be considered to make appropriate referrals for evaluation of twice-exceptionality (gifted students with disabilities). Let 1 be the most important and 6 be the least important.
36. Who, in your opinion, is usually the best choice to provide primary support for the twice-exceptional (gifted with disabilities) student?
37. What are the areas of difficulty that you observe for twice-exceptional (gifted with disabilities) students? Check all that apply.
38. How confident are you that your current understanding of and experience with twice-exceptional (gifted with disabilities) students enables you to offer adequate support for them?
39. Please indicate where the majority of your knowledge and experience pertaining to twice-exceptional (gifted with disabilities) education has been obtained.

However, based on Foley et al. in order to determine the source of awareness and perceptions of educators, the researcher used questions about educators' experience and familiarity with twice-exceptionality in terms of types, policies and practices (2013). Questions 21 to 30 are questions related to familiarity of educators about twice-exceptional education as shown in Table 3.8 Part III- Familiarity with Twice-exceptional Education. Such questions are designed based on a Likert scale as per the original study: Extremely familiar, Somewhat familiar, Little familiar and Not familiar. As for questions 31 to 34, they show the level of experience of educators with twice-exceptional students based on Table 3.9 Part V- Experience with Twice-exceptional Education. Answers to these questions are also based on a Likert scale of the original survey: Extensive experience, Moderate experience, Little experience and No experience.

Experience and familiarity questions were used to explain the answers of Table 3.6 Part II- Awareness Questions about Twice-exceptionality and Table 3.7 Part III- Perceptions Questions about Twice-exceptionality. In other words, the

perceptions and awareness of educators about twice-exceptionality was analysed in the light of their experience and familiarity with the education of such students (Foley et al. 2013). The relationship between experience and familiarity on one side and perceptions and awareness on the other side is discussed in chapter 3.6 in discussing the findings of the pilot study and the overall study.

Table 3.8 Part IV- Familiarity with Twice-exceptional Education

21. How familiar are you with UAE and Dubai guidelines for special education services?
22. How familiar are you with UAE and Dubai guidelines for gifted education?
23. How familiar are you with your school guidelines for special education services?
24. How familiar are you with your school guidelines for gifted students' services?
25. How familiar are you with your school guidelines for twice-exceptional (gifted with disabilities) students' services?
26. How familiar are you with Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?
27. How familiar are with Gifted students with Autism Spectrum Disorder (ASD)?
28. How familiar are you with Gifted students with emotional difficulties (anxiety, depression, etc.)?
29. How familiar are you with Gifted students with learning disabilities (math, reading, etc.)?
30. How familiar are you with twice-exceptional (gifted with disabilities) students' needs and types?

Table 3.9 Part V- Experience with Twice-exceptional Education

31. How much experience do you have with students who are Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?
32. How much experience do you have with students who are Gifted with Autism Spectrum Disorder (ASD)?
33. How much experience do you have with students who are Gifted with emotional difficulties (anxiety, depression, etc.)?
34. How much experience do you have with students who are Gifted students with learning disabilities (math, reading, etc.)?

Even though this survey served to answer mainly Research Questions 1 and 2, they also helped from educators' perspective to answer Research Question 3. The latter question as shown in Table 3.4 Research Questions Methods is to

find what identification system outstanding and very good rated school use for twice-exceptional students. Specifically, question “12. Does your school have an identification process for twice-exceptional (gifted with disabilities) students?” becomes an open-ended question “If yes, what?” when the participants choose Yes as an option. At that point, participants shall specify how twice-exceptional students are identified in their school.

This survey also provides answer to Research Question 4 designed to learn about the support that outstanding and very good schools offer to twice-exceptional students. Through question 13. “Does your school provide support for the needs of the twice-exceptional (gifted with disabilities) students?”, the researcher could explain how twice-exceptional students are supported if they choose Yes as an answer. Similar to question 12, the structure of this survey is the advantageous due to the open-ended question “If yes, what?”.

At the end, question 40. “Is there any other information relevant to twice-exceptional (gifted with disabilities) students that we should know?” provides the chance to gather additional information related to any of the previously discussed 4 research question. It could also add data that could help in responding to Research Question 5 that consists of suggesting strategies to enhance twice-exceptional education.

In conclusion, the survey was used to cover all research questions due its structure. Even though surveys are claimed to be narrow in scope, the use of open-ended questions was attempted to create a balance by widening the scope of answers (Walliman 2016). In addition, it was a convenient tool to access respondents who do not only work in the 6 studied schools through LinkedIn.

3.5.3.2 Semi-structured Interviews

The interview protocol has also been used in this thesis to collect data with different stakeholders involved with twice-exceptionality: twice-exceptional students, inclusion specialists, policymakers from KHDA and Hamdan Foundation and international experts. However, each one of these stakeholders had a different setting of preset questions. In specific, semi-structured interviews were used, which contain both structured and unstructured questions with probes. This protocol has many advantages and disadvantages that the inquirer needs to be aware of. While focused on certain targeted information, such a protocol provides the chance to the interviewee to describe in detail and in his own words a certain concept or practice (Creswell 2015). Moreover, he can widen the scope of answers through probes throughout the conversation. Nevertheless, such interviews require emotional, technical and practical skills for the interviewee to listen and handle the conversation (Creswell 2015). Furthermore, they are claimed to be interpreted through the lens of the interviewer as they are qualitative (Walliman 2016). Furthermore, a researcher may feel deceived due to the interviewee's answers if they are not as per his expectations or he may not fully understand the answers of the interviewee (Creswell 2015).

Policymakers' Interviews

For policymakers' representatives from Hamdan Foundation and KHDA, the researcher has developed distinct set of questions derived from literature review related to twice-exceptionality, the role of the policymakers and the education system of Dubai. The questions were derived from the variables that the researcher aims to measure and assess through all of the five research questions.

For KHDA representative, 20 questions were set and the interview was conducted and recorded over the phone as the researcher was not in the UAE during that period of time. During the interview, the researcher had a hard copy of the questions to take notes. The duration of the interviews was approximately 45 minutes. Appendix 3.7 shows the set of questions. As the UAE does not have any guidelines for twice-exceptionality education, the researcher divided the interview into three main parts. The first part consisted of setting the background about gifted education and special education in Dubai before addressing twice-exceptionality as shown in Table 3.11 (Part I- KHDA Background Questions) about Special Education in Dubai. This part would help explain other interviews from other participants and results from survey and observation because the KHDA sets the guidelines for the education system in Dubai. This section could be a foundation to build strategies for twice-exceptionality. As a result, these questions could contribute to the answers of the five Research Questions.

Table 3.10 Part I- KHDA Background Questions about Special Education in Dubai

1. What is the role that KHDA plays in gifted education in Dubai?
2. What is the role that KHDA plays in special needs education in Dubai?
3. How often does the KHDA review its framework? Would it be possible to explain the process?
4. Do you rely on international experts for gifted education?
5. Do you rely on international experts for special needs education?
10. On what basis do you evaluate the plan for gifted education in schools as inspectors?
11. How does the KHDA work on developing gifted education?
12. How do interact with the Ministry of Education and other policymakers such as Ministry of Community Development and Ministry of the Future to develop education of gifted students?
13. Do you work with all these stakeholders on an individual basis or cooperatively?

14. Do parents and teachers contribute to the KHDA inspection framework standards? If yes how?

The second part of the interview questions with the KHDA representative consisted of questions related to awareness, perceptions and practices related to twice-exceptional students. Throughout these questions in Table 3.11 Part II- KHDA Twice-exceptionality Awareness, Perceptions and Practices, the researcher can obtain answers related to Research Questions 1, 2, 3 and 4. As twice-exceptionality is not recognised by the KHDA, the researcher should operate the interview based on these questions to obtain input to answer the Research Questions even if indirectly.

Table 3.11 Part II- KHDA Twice-exceptionality Awareness, Perceptions and Practices

6. How do you explain the absence of the term twice-exceptionality or any of its synonyms in the KHDA inspection framework?
7. As per my visits to schools, I observed twice-exceptional students. When I asked about KHDA visits to their school and if they recognise these cases, I get told that they put it in the self-evaluation. However, no specific attention for them. How would this be explained?
8. Are there any policies, procedures or practices that are offered specifically for twice-exceptional students by the KHDA through programmes like Rahhal or others?
9. 5% of students is the percentage of twice-exceptionality occurrence. How do you explain that schools from the ones I interviewed do not have such identified students?

Finally, with the support of the policymakers, the researcher aims to enhance the education of twice-exceptional students. As a result, questions displayed in Table 3.12 Part III-KHDA Basis for Twice-exceptional Education Strategies are used by the inquirer to answer Research Question 5.

Table 3.12 Part III- KHDA Basis for Twice-exceptional Education Strategies

15. What are the factors that are hindering the awareness of twice-exceptionality in the UAE?
16. What are the factors that the UAE have in order to enhance the awareness of twice-exceptionality?
17. What do you advise the UAE to do in order to start the development of twice-exceptionality education?
18. In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?
19. What would the KHDA need from resources (human and capital) in order to start supporting twice-exceptional students through raising awareness?
20. How could education policies be changed to adapt to twice-exceptional education? Elaborate the process.

Regarding Hamdan Foundation, the interview was divided also into three parts and is composed of 24 questions as shown in Appendix 3.6. The first part consisted of the background of Hamdan Foundation and its vision. The background is essential to contextualise any suggested strategies and to understand the current practices of Hamdan Foundation. Table 3.13 Part I- Hamdan Foundation Background shows the set of questions needed for the researcher to understand further answers.

Table 3.13 Part I- Hamdan Foundation Background

3. What are the nationalities of the students that the Foundation supports?
4. Are the students that the Foundation supports from the public schools or private schools?
8. Does the Giftedness and Creativity Center have a department relating to giftedness R&D as other parts of the world?
9. If not, does the Foundation have a plan for establishing a future research centre about gifted education?
11. How would you describe the relationship that you have with parents of students at the Foundation?
12. How would you describe the relationship with schools of students at the Foundation?
13. How do interact with the Ministry of Education and other policymakers?
14. Do you work with all these stakeholders on an individual basis or cooperatively?
16. What is the impact that the Foundation has attained till now?
17. Are you satisfied with the impact that you achieved?

As for the Research questions 1, 2, 3 and 4, the following questions contribute with the Hamdan Foundation input to determine awareness, perceptions and practices of such a reputable organization supporting gifted students. Table 3.14 Part II- Hamdan Foundation Twice-exceptionality Awareness, Perceptions and Practices shows the related questions.

Table 3.14 Part II- Hamdan Foundation Twice-exceptionality Awareness, Perceptions and Practices

1. Do you have any twice exceptional enrolled in Hamdan Bin Rashid Al Maktoum Foundation for Distinguished Academic Performance?
2. If yes, what are the types of twice-exceptional students that Hamdan Bin Rashid Al Maktoum Foundation has?
5. Does the National Plan for Gifted Programme in the UAE offer any services to twice exceptional students?
6. Are there any policies, procedures or practices that are offered specifically for twice-exceptional students?
7. Apart from the services you offer to identify and develop giftedness, do you cater their disabilities?
10. Based on screening of outstanding and very good rated schools in Dubai, I found out that only 3 schools out of 10 do not have any identified twice-exceptional students. How could you interpret that?
15. Do you have any experts you work with who helps you with twice-exceptional students? If yes, how do they assist you?
18. What supporting services do you offer to gifted students?
19. Is the support that you offer only related to the students' area of exceptional ability?

For the last part of the interview, Table 3.15 Hamdan Foundation Basis for Twice-exceptional Education Strategies shows the questions that the inquirer designed to ask the representative about how to enhance the education of twice-exceptional students in Dubai. Thus, these questions are to add value to Research Question 5.

Table 3.15 Hamdan Foundation Basis for Twice-exceptional Education Strategies

20. What are the factors that are hindering the awareness of twice-exceptionality in the UAE?
21. What are the factors that the UAE have in order to enhance the awareness of twice-exceptionality?
22. What do you advise the UAE to do in order to start the development of twice-exceptionality education?
23. In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?
24. What would the Foundation need in order to start supporting twice-exceptional students through raising awareness?

Inclusion Specialists' Interviews

The inquirer designed two sets of questions for the inclusion specialists as shown in Appendix 3.3 and 3.4. The first set was constructed for schools which have identified twice-exceptional students whereas the second set was structured for schools which do not have any identified twice-exceptional students. Based on these two sets of questions, the researcher aims to compare the input of schools with twice-exceptional students with school with no identified twice-exceptional students. All these questions are based on literature review. Moreover, the interviews were conducted face-to-face in the office of the inclusion specialists or meeting room of the school. A voice-recording machine was used while the researcher had a hard copy of the questions to take further notes. Interviews extended between 30 to 45 minutes.

The following Table 3.16a Alignment of Research Questions with Inclusion Specialists Questions shows how each one of the planned questions is expected to provide the answer to the different research questions. This protocol was used with School B, School D, School E and School F. These 30 questions

are as shown used with schools that have identified twice-exceptional students. Such questions would clarify also the answers of the educators who filled in the survey.

Table 3.16a Alignment of Research Questions with Inclusion Specialists Questions

Research Questions	Interview Questions
1	1. Do you have any twice exceptional enrolled in your school?
1,2,3,4	2. How many students do you have?
1,2,3,4	3. If yes, what are the types of twice-exceptional students that your school has?
1,2,3,4	4. What is their age?
1,2,3,4	5. What is their nationality?
3	6. How have these students been identified as twice-exceptional ones?
3,4	7. Do you have a school policy for twice-exceptional education?
3	8. Do you have an identification system to recognise twice-exceptional students?
4	9. Are there any procedures or practices that are offered specifically for twice-exceptional students?
4	10. How do you cater for students' disabilities or deficits? (early intervention, technology, curriculum, activities, consultation)
4	11. How do you support the areas of giftedness? (curriculum, activities, consultation, technology)
4	12. Do you support each one of the exceptionalities as stand-alone or both in the same time?
1,2	13. How do assess and monitor the progress of twice-exceptional students in your school?
1,2,3	14. 5% of population is the range of twice-exceptionality occurrence. How could you interpret that many of the schools I screened in Dubai claim not to have twice-exceptional students?
3	15. How would you describe the relationship that you have with parents of the twice-exceptional students? Elaborate how you communicate with them.
1,2,3	16. How would you describe the relationship that twice-exceptional students have with their teachers?
1,2,3,4	17. Who from the school personnel is directly involved with twice-exceptional students? (from your department to any other departments)

1,2,3,4	18. How do interact with the Ministry of Education and KHDA in relationship to twice-exceptional learners as the concept is not mentioned in any of their official documents?
1,2,3,4	19. Do you work with all these stakeholders on an individual basis or cooperatively for the wellbeing of your twice-exceptional students?
1,2,3,4	20. Have you taken any professional development about twice-exceptionality? If yes, who offered it?
1,2,3,4	21. Do you run professional development about twice-exceptionality to your teachers?
3	22. What strategies do you use with your twice-exceptional students (in class or outside)?
3,4	23. What challenges are you facing with twice-exceptional students at your school?
1,2,3,4	24. Are you satisfied with the impact that you achieved with twice-exceptional students at your school? Elaborate.
1,2,3,4,5	25. What areas can you improve in your school twice-exceptional education? How?
5	26. What does a school need from resources (human and capital) to support twice-exceptional students?
1,5	27. In your opinion, are educators in the UAE aware of twice-exceptionality? Why?
5	28. In your opinion, what are the factors that are hindering the awareness of twice-exceptionality in Dubai?
5	29. What do you advise Dubai to do in order to start the development of twice-exceptionality education?
1,5	30. In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?

In contrast, the survey used for schools with no identified twice-exceptional students aimed to investigate the reasons for not having such students. Even though answers to such questions help understand survey responses, not all of them are directly related to the research questions as the previous survey is. Questions related to gifted education or special education are examples of such questions. Table 3.16b Alignment of Research Questions with Inclusion Specialists Questions shows the 24 questions to be asked to the inclusion specialists for School A and School C with no twice-exceptional students identified.

Table 3.16b Alignment of Research Questions with Inclusion Specialists Questions

Research Questions	Interview Questions
1	1. Do you have any twice exceptional enrolled in your school?
1,2,3,4	2. Do you have a school policy for twice-exceptional education?
3	3. Do you have an identification system to recognise twice-exceptional students?
4	4. Are there any procedures or practices that are offered specifically for twice-exceptional students?
3	5. How do you usually identify gifted students in your school?
4	6. What programmes do you offer them? (curriculum, activities, consultation, technology)
1,2	7. How do you assess and monitor the progress of gifted students in your school?
1,2,3	8. How do you usually identify students with special needs in your school?
1,2,4	9. What programmes do you offer them?
1,2,4	10. How do you assess and monitor the progress of the special needs' students in your school?
1,2,3	11. 5% of population is the range of twice-exceptionality occurrence. How could you interpret that many of the schools I screened in Dubai claim not to have twice-exceptional students such as your school?
1,2,3,4	12. Do your gifted students have any learning, social, emotional or behavioural difficulties?
1,2,3,4	13. Who from the school personnel is directly involved with twice-exceptional students? (from your department to any other departments)
5	14. How do you think you could raise awareness about twice-exceptionality at school and in the country?
5	15. How do you interpret that twice-exceptionality is not mentioned in any of the Ministry of Education and KHDA official documents?
5	16. Do you work with all these stakeholders on an individual basis or cooperatively for the wellbeing of your twice-exceptional students?
1,2,3,4	17. Have you taken any professional development about twice-exceptionality? If yes, who offered it?
5	18. What strategies do you think should be used with twice-exceptional students (in class or outside)?
1,2,3,4,5	19. What areas can you improve in order to identify your school twice-exceptional education? How?

3,4,5	20. What does a school need from resources (human and capital) to support twice-exceptional students?
1,5	21. In your opinion, are educators in the UAE aware of twice-exceptionality? Why?
5	22. In your opinion, what are the factors that are hindering the awareness of twice-exceptionality in Dubai?
5	23. What do you advise Dubai to do in order to start the development of twice-exceptionality education?
1,5	24. In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?

As it is a qualitative form of protocol, interview questions give the opportunity for the interviewee to speak in detail about certain concepts. Even though the researcher suggested how each one of the questions could contribute to the Research Questions, it is expected that some answers overlap, or some answers provided by the interviewee could answer Research Questions that they were not planned for. This concern is discussed in the 3.5.5 Data Analysis section.

International Experts' Interviews

Finally, for Research Question 5, semi-structured interviews with international experts in giftedness, twice-exceptionality, neuroscience, and psychology are used as a protocol to develop the strategies to improve the education of twice-exceptional students as shown in Appendix 3.2. As the research is designed based on the transformative social justice paradigm, the inquirer prepared questions related to the advocacy movement led by these experts and the impact they had made in the education of twice-exceptional students. The journey of such experts can influence the strategies that the researcher targets to build. Even though the interview questions are planned based on their relevant literature, interviewees are offered flexibility while making sure that they serve the purpose of the study. It is essential for the researcher to be knowledgeable of

the work and field of each one of the experts to keep track of the interview and to optimise the benefit of the data collected. The researcher expects that some experts may not be able to answer all the questions because of their specialization.

However, the same 17 questions are used as a basis to design the strategies while setting the limitations of stimulating the education of twice-exceptional students. Interviews were conducted and recorded over the phone with Renzulli, Baum, Assouline and Van Gerven. As for the interviews with Rankin and Al-Hroub, they were conducted face-to-face in the cafeteria or their office. The duration of the interview lasted between 30 minutes to 40 minutes. The list of the questions is presented in Table 3.17 Twice-exceptionality Experts Interview Protocol. Even though such an expert's interview protocol is perceived to be easy due to the expertise of the interviewees, this data collection method is enriching for the researcher. For sure, the researcher needs to make sure he is not interviewing a false expert as discussed before.

Table 3.17 Twice-exceptionality Experts Interview Protocol

1. What triggered your interest in twice-exceptionality research?
2. How did you start your advocacy movement of twice-exceptionality support in education?
3. What change or impact have you attained, through your research, in educating twice-exceptional learners?
4. What challenges you have faced at the beginning of your research and advocacy path of twice-exceptionality?
5. What are the challenges that still exist in your own country, and other countries in order to provide an educational system suitable for twice-exceptional learners?
6. How do you advise a novel researcher to pave the way for twice-exceptionality in a new, yet fast-developing country such as the United Arab Emirates?
7. As a novice field in the United Arab Emirates, and in Dubai, how do you advise policymakers such as the Ministry of Education to address best the needs of twice-exceptional learners?

8. What factors affect the perceptions and attitudes of policymakers and educators towards twice-exceptional learners?
9. How could the perceptions and attitudes of policymakers towards twice-exceptional learners be enhanced in Dubai?
10. How could the perceptions and attitudes of educators towards twice-exceptional learners be enhanced in Dubai?
11. Based on your experience and research, at what age are twice-exceptional children identified?
12. What do you recommend for the Ministry of Education in order to raise awareness of twice-exceptional students in classrooms?
13. What type of provision programmes should be implemented in Dubai for twice-exceptional learners?
14. How do you advise policymakers to raise awareness of educators about twice-exceptionality in Dubai?
15. Is there any plan or process that you advise policymakers and educators to follow in Dubai, in order to enhance the support of twice-exceptional learners? If yes, would you please outline your answer.
16. Do you think the model(s) or strategy (ies) you have developed as an expert in twice-exceptionality could be implemented in Dubai? If yes, would you please elaborate on your answer.
17. Out of your experience and research, what factors could hinder the development of twice-exceptionality awareness and education in Dubai?

At the end of the interview section, it is important to state that some questions asked to different stakeholders are the same. These questions are the ones which directly relate to Research Question 5. International experts' suggestions are a necessity for this study. Nevertheless, without setting the stage based on the feedback of policymakers, inclusion specialists and twice-exceptional students, suggested strategies may not be suitable for the context of Dubai. In other words, interviews with these stakeholders would help customise the suggested strategies to fit in the education context of Dubai. Furthermore, some questions involve the researcher such as 7. "How do you advise a novel researcher to pave the way for twice-exceptionality in a new, yet fast-developing country such as the United Arab Emirates?" based on Figure 3.2 Cyclical Model

for Transformative Research (Mertens 2007 p. 219). Such questions ensure the implementation of the transformative research across all the study.

Twice-exceptional Students' Interviews

As a transformative research, it is crucial to have the voice of twice-exceptional students heard. Of the most challenging protocols that the researcher used was the interview protocol with twice-exceptional students. Even though the researcher is licensed to teach twice-exceptional students by Bridges Academy in USA, and after 12 years of teaching and leading experience, the researcher struggled at designing and conducting the interview protocol for the twice-exceptional students. Therefore, the inquirer decided to set 5 questions out of which she could get more information about their cases as shown in Table 3.18 Twice-exceptional Students' Interview Protocol. These questions were similar to a roadmap for the researcher rather than a formal interview protocol to follow. To make these students feel better and to ensure their wellbeing, students were asked if they need the inclusion specialist to be around. This applied for Student E who has emotional and behavioural disorder. Interviews with Student A, Student K and Student E lasted 10 minutes whereas it lasted for 30 minutes with Student L who is twice-exceptional with Asperger's Syndrome.

However, children have the right to participate in research, especially that this study concerns their education. Despite the perception that twice-exceptional students are vulnerable, the researcher believes that these students are "social actors" (Powell & Smith 2009 p.124). Their participation in research can boost their self-esteem as they feel they are in control of decision making (Powell & Smith 2009). In this context, they would have a higher self-esteem as their input is

taking into consideration in a study examining their education as twice-exceptional students. Even though the output of this study is expected to be executed through other stakeholders such as educators, these students will be directly affected.

The purpose of this interview protocol is to validate and confirm what inclusion specialist stated about the school's identification and support system for twice-exceptional students. In addition, such a protocol offers the opportunity to explore more the interests and challenges of twice-exceptional students in school.

Table 3.18 Twice-exceptional Students' Interview Protocol

1. What are the subjects that you like and enjoy in class? Why?
2. What does the school do to help you improve the subject?
3. What are the subjects you do not like or struggle with? Why?
4. What does the school help you to improve the subject?
5. What do you aim to be in the future?

3.5.3.3 Non-Participant Observation

For triangulation purpose, a non-participant observation protocol was used. Observation is a when a researcher collects data directly from the field based on observing a certain sample of population. In specific, a non-participant observation is based on monitoring the sample without being involved in the activities (Creswell 2015). This type of protocol could be structured through a checklist or unstructured where the researcher just writes down field notes about what he sees in the field in relation to the research problem. Non-participant observation provides the opportunity to learn how participants act in a certain field. However, accessing such sites can be hard for the researcher and the researcher may be bias. Furthermore, observed participants may change their

behaviour and attitude as they realised they are getting observed (Creswell 2015). In this study, non-participant observation provides the opportunity for the researcher to have a deep understanding of how the selected schools in Dubai support twice-exceptional learners in class and at school (Creswell 2015; Creswell 2012; Fraenkel & Wallen 2009). The use of a non-participant type of observation is justified by the sensitivity of twice-exceptionality (Fraenkel & Wallen 2009). Due to the sensitivity, only 4 students were observed, and the observation was over only 1 period. Furthermore, the lesson was chosen by the school and not by the observer.

Based on literature related to the characteristics of twice-exceptional students, regardless of their type, the researcher prepared a checklist that describes the environment in which the participant is. As shown in Appendix 3.1 ,the characteristics of twice-exceptional students checklist is adapted from the study of Reis et al. (Reis, Baum & Burke 2014). In addition, factors such as time, lesson, seating, support, interaction with peers, interaction with teacher's behaviour are outlined in the observation checklist as shown in sections A, B and C of the Twice-exceptional Student Observation Checklist.

Table 3.19a Twice-exceptional Student Observation Checklist (A, B, and C sections)

Observation of _____
Observer: _____ Position: _____ Date: _____

A. Subject observed		B. Learning Situation	
___ Language Arts	___ Social Studies	___ One-to-one	___ Small group
___ Math	___ Science	___ Whole group	___ Small group
___ Music	___ Art	___ Independent	
___ Free time	___ PE		
___ Other: _____			

C. Student Behavior

___ Attentive	___ Difficulty copying	___ Neat appearance
___ Sits quietly	___ from board	___ Demands excessive attention
___ Talks out of turn	___ Careless, doesn't complete tasks	___ Perseverates (repeats behavior)
___ Easily distracted	___ Constantly out of seat	___ Daydreams
___ Overactive, restless	___ Contributes to class discussion	___ Tries to control others
___ Talks excessively	___ Short attention span	___ Avoids groups
___ Works well independently	___ Friendly	___ Cooperative
___ Disruptive	___ Displays leadership ability	___ Doesn't follow directions
___ Slow to follow directions	___ Easily frustrated	___ Unusual language
___ Disorganized work habits	___ Aggressive toward children	___ Speech problem
___ Avoids eye contact	___ Obscene language	___ Withdrawn
___ Defiant	___ Other: _____	

In addition, the researcher should tick the deficits and strengths witnessed during the observation as twice-exceptional students have areas of deficits and areas of strengths. This is displayed in section D of the Twice-exceptional Student Observation Checklist. This section has been prepared based on twice-exceptional types.

Table 3.19b Twice-exceptional Student Observation Checklist (D section)

D. Areas of strengths and deficit observed in class:

<i>Strengths</i>	<i>Deficits</i>
Superior vocabulary	Poor social skills
Advanced ideas and opinions	High sensitivity to criticism
High levels of creativity	Lack of organizational and study skills
Extremely curious, imaginative and inquisitive	Discrepant verbal and performance skills
Wide range of interests not related to school	Poor performance in one or more academic areas
Penetrating insight to complex issues	Difficulty with written expression
Specific talent or consuming interest	Stubborn, opinionated demeanor
Sophisticated sense of humor	High impulsivity
Excellent visual memory	Does not do well on timed tests
Other:	Other:

In addition, some open-ended questions were added by the researcher to enrich the information collected. In section E and F, the observer can gather data about the strategies used in class to cater for the needs of the observed twice-exceptional student. Moreover, the observant can write down any additional comment about the twice-exceptional student that was not covered by the previous sections.

Table 3.19c Twice-exceptional Student Observation Checklist (E and F sections)

E. Strategies used in class:

1. Is solid relationship built with teacher?
2. Are instructions differentiated?
3. Is it a homogenous or heterogeneous grouping?
4. Are there any other staff members supporting the teacher in class?
5. Is remediation used in class for the twice-exceptional student?
6. Are critical and creative thinking taught to the twice-exceptional student?
7. Is there clear communication between the teacher, student and parents?
8. Is technology used to modify the lesson for the student?
9. Is the teacher teaching organizational skills to the twice-exceptional?
10. Is the teacher flexible with the twice-exceptional student?

F. Other Comments:

3.5.3.4 Document Analysis

Document analysis is the study of any document that is either public such as governmental publications or private such as students' work. These documents are important source of qualitative data. They support other sources of tools and protocol in the study. However, some documents may not be easily reachable or accessible. In this study, the researcher was able to reach a limited sample of students work. However, they backup the observations and interviews. The

researcher struggled to obtain documents such as IEP, lesson plans, copies of worksheets and policies from all the studied schools as they are confidential.

As for the literature related to twice-exceptionality, it is essential at this stage to shape and consolidate the potential strategies in order to match the requirements of this country. Furthermore, there is no literature about twice-exceptionality related to the UAE which complicates the analysis of the study. Despite its expected challenges, it is the responsibility of the researcher to formulate a strategy that is contextually relevant because experts do not have adequate knowledge of the UAE.

3.5.4 Pilot Study

Even though the perceptions and awareness survey to be designed is adapted from a previous one “Twice-Exceptional Needs Assessment Survey” about perceptions and awareness (Foley et al. 2013), it requires a pilot study, as shown in Appendix 3.9. A pilot study intends to test the validity of the survey on a small scale before using it for the research (Creswell 2015; Creswell 2012; Fraenkel & Wallen 2009). In other words, it targets to verify if the questionnaire serves the purpose of the study. A questionnaire must be of internal and external validity, ensuring that it measures what it intends to measure before generalising it to the sample selected (Creswell 2012). As for reliability, a pilot study aims to assess if the questionnaire is consistent if repeated (Creswell 2012). In case the questionnaire is invalid or unreliable, it could be rectified before starting the data collection.

Furthermore, such a pretesting of the questionnaire serves to improve the research protocol, enhance the efficiency of the research and could offer a first

glimpse at the data analysis for the researcher. However, in this case of the survey, the researcher should check how previous researchers have analysed the data in order to be able to make any changes to it (Creswell 2012).

Moreover, the pilot study is required in this context because the researcher added some questions and modified some other questions. These changes were crucial to match the education system of Dubai. The pilot study results and changes are discussed in chapter 4¹³.

3.5.5 Data Analysis

3.5.5.1 Quantitative Data Analysis

This thesis is a transformative social justice study designed to improve the education of twice-exceptional students. Quantitative data is integrated with qualitative data in order to answer the research questions. The only instrument used is the survey to collect data from educators about their perceptions and awareness about twice-exceptional students. For the survey of Research Questions 1 and 2, data is expected to be collected from educators through SurveyMonkey, then to transfer it to Microsoft Excel. As a result, through the support of a statistician with SPSS expertise, it shall be easy to extract the result to SPSS in order to organise and code the data. Then, descriptive statistics analysis shall begin such as frequencies, standard deviation and means (Creswell 2015). The use of descriptive statistics as the researcher aims to explore the perceptions and the awareness of educators in relation to twice-exceptionality. For example, descriptive statistics could tell the frequency of educators who know the exact

¹³ Pilot Study findings are discussed in Chapter 3 section 3.6.

meaning of twice-exceptional students. Based on the survey addressed to educators, the inquirer can describe the current conditions of educators regarding twice-exceptional students. Even though only 50 educators filled in the survey, all the questions were answered.

At another level, the reliability of some variables was tested through Cronbach Alpha coefficient in the pilot study and after the amendment resulting from the pilot study (Creswell 2015). For example, it is important to check the reliability of the experience and familiarity of educators with twice-exceptional students. For questions related to experience, summed scores comparison was used as all these questions represent one variable which is experience (Creswell).

Even though the researcher did not intend use inferential statistics as she was aiming to snapshot the reality of twice-exceptional education in Dubai, she attempted to examine if factors such as demographics affect awareness or perception. Examples of inferential statistics is correlation and Chi-square that were used to predict or examine relationships among variables (Fraenkel & Wallen 2009). Thus, through Chi-square, the researcher shall determine if demographics affect awareness and perceptions of educators (Creswell 2015). Besides, through ANOVA, the impact of experience on familiarity is tested.

3.5.5.2 Qualitative Data Analysis

As a transformative concurrent study, qualitative data needs to be integrated with quantitative data. Through qualitative data, the researcher was able to involve major stakeholders related to twice-exceptional education. However, analysing all the protocols used is not an easy task. To be able to analyse adequately and efficiently the qualitative data collected, the researcher took a

training course to develop her skills in NVivo 12 software. For the interviews and observation regarding Research Questions 1,2, 3, 4 and 5 data were transcribed through an application called Trint. In contrast, the observation and students' sample of work is transcribed manually. Through NVivo, analysis was divided into each of the stakeholders separately. Then, thematic analysis, known as nodes in the NVivo 12 language, was used to obtain answers for each one of the Research Questions. Some of the themes are advocacy, identification, business, and deficit. These are layered themes meaning that there are major themes out of which are derived minor themes (Creswell 2015). The role of the research is to recognise the relationship among the themes, codes or nodes originated from the qualitative data analysis.

As the theoretical framework of this study is transdisciplinary, the thematical coding of the content analysis and the survey should be derived from it. In other words, the data analysis should embed the Right-based approach for disabilities, giftedness equity, the Functionalist Theory of, Humanism Theory and the Sociocultural Learning Theory and neuroscience. As the theoretical framework represents different disciplines, not strictly education, the researcher aims to formulate a strategy that could trespass education in the UAE, while overlooking other disciplines such as economics, sociology, and sciences, blooming from education (Bargerhuff et al. 2012; Belcher et al. 2015).

3.6 Pilot Study Findings

To study awareness and perceptions of educators about twice-exceptional students, the researcher employed an online questionnaire through SurveyMonkey. Shown in Appendix 3.8, this survey was adopted from the

research Foley-Nicpon et al. (2013). Due to its validity, it was recommended by Assouline and it was used by scholars and doctoral students (Sexton 2016; Fugate 2018). Based on research, awareness and perceptions of educators are shaped by knowledge acquired through experience and education of the teachers (Foley-Nicpon et al. 2013). Thus, the used survey includes questions that are not directly related to awareness and perceptions. In other words, questions related to experience, familiarity, and education are part of this survey as per Foley-Nicpon et al. (2013).

When designing the pilot questionnaire based on the initial survey of Foley-Nicpon et al., changes in demographic questions had to be made to suit the social, economic, and educational context of Dubai. Moreover, the questionnaire was modified to contain questions about educators' awareness and perceptions of the inclusion system in Dubai, instead of the American education system. Furthermore, the questions related to the education of the American federal system were omitted and substituted by their alternatives concerning the education system of Dubai. The purpose is to benchmark the level of educators' knowledge and perceptions of the KHDA, DSIB, and their school's policies.

Accordingly, the researcher aims also to find out how much educators know about special education and gifted education frameworks in comparison to their awareness and perceptions of twice-exceptionality. Furthermore, question 10, which relates to the percentage of twice-exceptionality occurrence, has been omitted. As it is a new topic of research in Dubai, it may be a pure guess by participants if answered correctly. Hence, the results have a high probability of being unreliable. Finally, questions to determine educators' knowledge about

twice-exceptionality were added to the survey. Such questions would verify what participants know about twice-exceptional learners.

Before using the questionnaire over the whole sample, especially that twice-exceptional is novice in Dubai, the researcher conducted a pilot study on 11 educators from schools of different rating as it appears in Appendix 3.9. Even though the designed perceptions and awareness survey is adapted from a previous one, as mentioned earlier, it requires a pilot study. A pilot study intends to test the validity of the survey on a small scale before using it for the research (Creswell 2015; Creswell 2012; Fraenkel and Wallen 2009). In other words, it targets to verify if the questionnaire serves the purpose of the study. A questionnaire must be of internal and external validity, ensuring that it measures what it intends to measure before generalising it to the sample selected (Creswell 2012). As for reliability, a pilot study aims to assess if the questionnaire is consistent if repeated (Creswell 2012). In case the questionnaire is invalid or unreliable, it could be rectified before starting the data collection. Pilot studies could aid the researcher in detecting issues related to the wording of the survey, the order of questions, and adequacy of the sampling frame. Such a technique tests the reliability of the survey and allows the researcher to consider the ambiguity of the terms used, and the structure of the questions (van Teijlingen & Hundley 2002). Besides, even though a pilot study is considered as time-consuming, it is advantageous because it provides the opportunity of data screening and enhances the success rate of the study (Van Teijlingen & Hundley 2002). Furthermore, such a pretesting of the questionnaire serves to improve the research protocol, enhance the efficiency of the research, and could offer a first glimpse at the data analysis for the researcher.

However, in this case of the survey, the researcher should check how previous researchers have analysed the data in order to be able to make any changes to it (Creswell 2012).

In the context of this study, to check that the survey is user-friendly, not only did educators from very good and outstanding schools take part in the pilot, but also educators from good and acceptable rated schools participated. It is essential to mention that none of these participants took part in the final study to make sure that none of the collected data is flawed (van Teijlingen & Hundley 2002). Also, Some changes occurred from the piloting outcomes. After the pilot study, the question about the name of the school has been removed because participants did not feel comfortable to name it, even though the survey is anonymous. The researcher wanted to use the name of the school to compare schools' results with each other. As a result of the pilot study, the term twice-exceptionality was found hard for participants to attempt and fill the survey. Therefore, the researcher used the term "twice-exceptional (gifted with disabilities)" at least to give a hint about the topic of research. Furthermore, participants complained about the numerous options of question 41; 13 alternatives were given for this question in the pilot study. Therefore, in the post-pilot survey, the researcher maintained only five alternatives, which are considered to be common based on literature.

Additionally, to reduce the survey length, the question about the experience place apart from the UAE was removed. This question was not in the initial survey and it was added by the researcher. The total of the survey questions decreased from 43 to 40. Finally, Assouline, who is key expert in twice-

exceptionality, approved the use of the survey after the changes derived from the pilot study.

To test the reliability of the survey as it was used in Dubai and not in the USA where it was designed, the relationship between familiarity and experience was tested through the use of Cronbach alpha calculation in part A of Table 3.20 Reliability Test of Familiarity and Experience. The Cronbach's alpha value shown in the reliability statistics table is 0.881, suggesting very good internal consistency and reliability for the scale with the sample. Similarly, the Cronbach's alpha value shown in the reliability statistics table is 0.840, suggesting good internal consistency reliability for the scale with the sample, as shown in part B of the same table.

Table 3.20 Reliability Test of Familiarity and Experience

A- Scale: Familiarity			
<i>Case Processing Summary</i>			
		N	%
Cases	Valid	11	100.0
	Excluded ^a	0	.0
	Total	11	100.0
a. Listwise deletion based on all variables in the procedure.			
<i>Reliability Statistics</i>			
Cronbach's Alpha	N of Items		
.881	10		
<i>Item-Total Statistics</i>			

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
How familiar are you with UAE and Dubai guidelines for special education services?	22.36	30.855	.737	.859
How familiar are you with UAE and Dubai guidelines for gifted education?	22.73	29.618	.805	.853
How familiar are you with your school guidelines for special education services?	22.27	30.218	.768	.856
How familiar are you with your school guidelines for giftedness education services?	22.55	30.473	.778	.856
How familiar are you with your school guidelines for twice-exceptional students services?	23.82	36.364	.252	.892
How familiar are you with Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?	22.82	35.564	.277	.893
How familiar are with Gifted students with Autism Spectrum Disorder (ASD)?	23.00	31.000	.731	.860
How familiar are you with Gifted students with emotional difficulties (anxiety, depression)?	23.00	32.200	.709	.863
How familiar are you with Gifted students with learning disabilities (math, reading, etc.)?	23.00	35.200	.370	.885
How familiar are you with twice-exceptional students' needs and types?	23.55	32.473	.666	.865

B- Scale: Experience

Case Processing Summary

		N	%
Cases	Valid	11	100.0
	Excluded ^a	0	.0
	Total	11	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.840	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
How much experience do you have with students who are Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?	6.73	4.018	.599	.828
How much experience do you have with students who are Gifted with Autism Spectrum Disorder (ASD)?	6.82	2.964	.741	.773
How much experience do you have with students who are Gifted with emotional difficulties (anxiety, depression)?	6.82	3.564	.864	.727
How much experience do you have with students who are Gifted students with	6.91	3.891	.552	.848

learning disabilities (math, reading, etc.)?

After the pilot study, the topics of the questions of the survey became as shown in Appendix 3.10. The table below, Table 3.21 Topics of Survey Questions, displays how questions are divided into eight topics such as demographics, themes as awareness and sub-themes such as awareness of types of twice-exceptionality. Such a division organises the data analysis, findings, discussion and for sure the recommendations of the study.

Table 3.21 Topics of Survey Questions

Topics	Question Numbers
Profile of the school	1-2
Demographics	3-10
Awareness of characteristics of twice-exceptionality	11-15-16-17-18-19-20
Awareness of school practices of twice-exceptionality (identification and support)	12-13-14
Awareness of the types of twice-exceptionality	21-22-23-24-25-26-27-28-29-30
Perceptions of twice-exceptionality	35-36-37-38-39
Experience with twice-exceptionality	31-32-33-34
Additional comments	40

To wrap up, the pilot study helped in both tailoring the survey to suit the context of Dubai and minimising many risks that the researcher might have gone through without it. Even though it was costly and timely, the survey proved to

serve the purpose of the study by examining the awareness and perceptions of educators in Dubai about twice-exceptional students.

3.7 Quality of Transformative Mixed Method Research Design

As mixed method research design combines qualitative and quantitative data, it needs to have the quality of each one of these data. In addition, as a specific design, it has its own qualities that need to be maintained for solid inferences and conclusion. According to Teddie & Tashakkori, it is hard to assess and maintain quality of a mixed method design because of its two types strands (2009). In this section, despite the challenge, the researcher explained how she maintained these qualities.

For the quantitative strand of data, the inquirer ensured the validity of the questionnaire through the consultation of an expert. Validity is defined as the level the inferences made out of the tool are true (Walliman 2016). In other words, this instrument was able to provide answers to Research Questions 1 and 2 as planned (Creswell 2015). In addition, for reliability purpose, a pilot study has been conducted even though the same questionnaire was used in many previous studies. Reliability in this context means that if the questionnaire is repeated, it shall provide the same results (Walliman 2016). As for generalization, it is limited in this study because 50 educators do not represent all the educators of outstanding and very good schools in Dubai.

As for the qualitative strand of data, the researcher worked on using different sources of data for the same research questions. Such a practice enhances the trustworthiness of the study, one of the major indicators of the quality of

qualitative strand. Trustworthiness is defined as “the criteria that guide researchers in producing findings that can be accepted as persuasive and credible by others.” (Plano Clark & Ivankova 2016 p.163). In simpler terms, the results of the study are trusted by the audience due to their credibility. When for the same research question, the inquirer used observation and interview or interview with two different stakeholders, the study inferences tend to be more credible and thus trustworthy. Moreover, even though the researcher is conducting a transformative research which is claimed to be bias, the researcher’s tendency to be bias is minimised through the use of different protocols. Such a triangulation is one of the supporting strategies to maintain trustworthiness and credibility (Plano Clark & Ivankova 2016). Another indicator of the quality of a qualitative strand is transferability which means that what applies to the studied sample apply to the whole population (Plano Clark & Ivankova 2016). Even though the sample size is small, thus possibility of transferability is limited, the researcher is aware that the studied schools, experts and policymakers marks the beginning of research about twice-exceptionality in Dubai in terms of current situation and suggested strategies.

Moreover, for the mixed method research design, the following indicators should be there to have a good quality of study. Firstly, the design should be suitable to answer the research questions. Secondly, the design should be adequate to all the procedures of the study. Thirdly, there should be a consistency of the components and strands built within the design. Lastly, the data analysis procedures should be adequate to answer the research questions (Plano Clark &

Ivankova 2016). These are the indicators that the researcher of this study needs to maintain in order to have a research of high quality.

Finally, the transformative research should have ten criteria for its success as discussed in chapter 2¹⁴ (Mertens 2003; Sweetman et al. 2010). However, three of these criteria are related to the data collection and analysis. The first criterion is that data collection and analysis should aim to be beneficial to the community. In this context, the community is not only limited to twice-exceptional students, it is about the whole education and economic and social welfare of Dubai. This is because the study is transdisciplinary as explained previously. The second criterion is the involvement and the engagement of participants, in this condition twice-exceptional students and their educators. Through interviews, twice-exceptional students had their voice heard in this study. The last criterion is that through the data collected and analysed, the power relationship should be discussed and clarified. At this level, policymakers and educators have the power of controlling the education of twice-exceptional students. Thus, this power relationship should be elucidated in order to bring a change to the education and career of these learners.

3.8 Ethical Considerations

In research with humans such as this study, the researcher must adhere to ethical standards to protect all participants from any risks endangering their wellbeing (Plano Clark & Ivankova 2016). Based on the British University in Dubai guidelines for ethics in research, the following measures are to be ensured.

¹⁴ Criteria of successful transformation research are discussed in Chapter 3 section 3.2.

Before proceeding with research, the researcher had to submit and sign the Research Ethics Form to the Research Ethics Form for approval. In this form, she determined the level of risk, in this case, “low-risk research,” and the study’s main ethical considerations. By signing such a form, the researcher is committed to the British University in Dubai Research Policy, part 9.3 of the Policies and Procedures Manual, as shown in the Appendix.

Moreover, she had to submit different consent forms for schools, educators, parents, students, and experts as shown in Appendixes 3.11a, 3.11b and 3.12. These forms need to be signed and submitted before processing with the data collection. Furthermore, the researcher was asked to draft the interview questions with experts and justify access to such international experts. All the data collected are strictly used for research purpose.

Along with the consent form, a detailed description of all the research procedures, benefits, and potential risks was shared with all participants. It is their right to choose whether to participate or not. Some schools asked for either further documents or additional clarification because they are not familiar with the topic, so the researcher made sure to share with them all the required information and documents. One of the schools asked for further forms to be jointly signed by the researcher and Director of Study to ensure the anonymity of the data about the school and students. The researcher maintained the names of these participants anonymous and kept the collected information confidential.

Furthermore, using mixed methods of research requires more complicated ethical considerations because the researcher must comply with the different restrictions involved with each one of the quantitative procedures and the

qualitative procedures (Brewer & Hunter 1989; Plano Clark & Ivankova 2016). Each one of these procedures necessitates different considerations related to the context and setting.

On the one hand, at the level of quantitative procedures, in this case, the survey participants filled in the survey anonymously. To extend the sample size, the researcher reached out to some participants from the LinkedIn profile to make sure that educators from Indian schools of CBSE were represented. In the case of the online survey, just by clicking on the “start” button of the survey, the participants would agree to take part in it. For sure, participants can drop out any time, and no data could be submitted without clicking on the “submit” button. As the primary concern of the study is to explore outstanding and very good rated schools, names of participants and schools are not revealed in the research. Moreover, the researcher clearly claimed that the survey was adapted from a previously published article about twice-exceptionality. The same survey has been used by other researchers priorly.

On the other hand, at the level of qualitative data, interviews were conducted after reminding participants of its protocol. Whether policymakers, experts, students, and inclusion specialists, all participants were reminded that the interview is recorded, whether with the voice recorder or phone application. Besides, they could stop at any moment or refrain from answering any questions. With twice-exceptional students, the researcher did not maintain the structure of the interview to keep them at ease. As for the class observation, all teachers and twice-exceptional students were informed about the observation. The researcher did not participate or interact with anyone in the classroom, not to affect the class

environment. In other words, the researcher is non-participant, so there is no risk of harm to observed twice-exceptional students. Only information related to twice-exceptionality was recorded. Apart, in the case of Student E, the researcher had the Head of Inclusion and Wellbeing with her all the time, in observation and interview. Due to his sensitive case, questions were mainly asked by the Head of Inclusion and Wellbeing with some researcher's intervention.

Besides, interviewees were asked if they would revise the transcribed interviews and the outcomes of the research. All experts, policymakers, and inclusion specialists were interested to learn about the outcomes of the research. Some parents and inclusion specialists sought help and consultation from the researcher, but she did not accept it as she is not entitled to do that at the moment. As for document analysis of students' work, they remained anonymous. Other documents and articles published literature will be cited in the text and the reference part of the study.

Finally, the researcher's primary goal is to recommend strategies to enhance the education of twice-exceptional students in Dubai and the UAE, apart from disseminating knowledge about educators' awareness, perceptions, and current practices. As the researcher was strict in following ethical standards throughout the stages of data collection, analysis, interpretation, and reporting of findings, policymakers and educators should trust the findings and strategies of the study. Consequently, they could apply these recommended strategies with impunity.

3.9 Methodological Issues and Challenges

The researcher had different challenges and issues throughout her dissertation. Some of these challenges and issues are discussed in this section. To begin with, the research topic on such a niche and novice field has been by itself challenging. On the one hand, the researcher struggled in screening schools to participate in this study because none of the official documents in the UAE recognises the concept of twice-exceptionality. Thus, the number of participants was limited. Furthermore, the researcher felt that schools were reluctant to participate because they did know about this concept. Despite the use of “gifted with disabilities” as a hint to twice-exceptionality after the pilot study, the participation remained limited. On the other one, as mentioned throughout the research, there is no theoretical framework previously used for twice-exceptionality research. Moreover, the literature review is still relatively limited in the world, mostly focused on the USA, Germany, and the Netherlands. However, no research has been published in the United Arab Emirates yet.

Apart from that, data collection has been complicated for various reasons. Even though 44 outstanding and very good rated schools had been contacted, only seven schools responded and agreed to participate. However, one of the schools apologised at the end because it had a KHDA inspection. Attempting to increase the sample size, the researcher followed up with the nonresponding schools. It turned out that they did not respond either because they had no twice-exceptional students or did not know what twice-exceptionality is about, or they had no time to participate in research.

Even though the schools agreed to participate through interviews with the inclusion specialists, they did not agree to share any confidential data about students or samples of their department work. Furthermore, each participating school was supposed to have educators fill

in the survey. However, many educators refrained from participating for various reasons, such as topic unfamiliarity or overloaded schedules. Not only schools did not accept to participate in the study, but also parents did not approve of having their children interviewed or observed.

At another level, the researcher tried to contact policymakers from the Ministry of Education and the Ministry of Community Development. However, after having accepted initially, they refrained from taking part in the research. Furthermore, three experts from the United States of America, Netherlands, and Germany, who had accepted to participate, could not make it at the set time of the interview due to other commitments. Rescheduling was not convenient for the researcher due to the set cutoff date of the data collection. Additionally, all interviews with policymakers and many interviews with international experts were run over the phone, which has limited direct contact with the researcher.

As for the data analysis, formulating strategies to serve these children based on experts' advised practices, literature, and results of the previous research questions are challenging. Relying on a transdisciplinary approach of this study has been complicated. The researcher must adopt the outcomes of the different economic, political, social, and cultural factors of the private education in the emirate of Dubai (Bargerhuff et al. 2012; Belcher et al. 2015; Hirsch Hadorn 2008; Kemp & Nurius 2015).

Moreover, employing the social justice transformative paradigm is a responsibility for the researcher. In other words, this study examines, for the first time, twice-exceptional students in the UAE. Based on worldwide literature, these students are vulnerable to marginalization and are not recognised in the country by any documents. Thus, even though it is stimulation for the researcher to make their voices heard, baring the responsibility of reflecting their voices adequately is tough.

Adhering to the timeline that the researcher was committed to has been tough. As the research is based on mixed method, various instruments were used, such as survey, policymakers' interview, experts' interview, students' interview, and document analysis of students' work. This process was time-consuming for the researcher in terms of designing, data collection, and data analysis. For example, obtaining approvals from all parties such as the schools, parents, and experts took extensive time. Furthermore, schools were busy with their KHDA inspection, teachers with their workload, and experts with their workload.

Furthermore, for personal reasons, the researcher had to move to her home country Lebanon before starting the data collection. Thus, the researcher had to work on the data collection remotely far from the field and population studied. For example, the pilot study, the survey, and policymakers' interviews were held from a distance. However, for twice-exceptional students' observation and interviews along with the inclusion specialists' interview, the researcher had to visit Dubai three times, from September 2019 to January 2020. In order to follow the set timeline, the researcher had to schedule meetings with schools efficiently. These meetings were scheduled to be both convenient from schools and the researcher, and they include inclusion specialists' interviews, twice-exceptional students' interviews, and twice-exceptional students' class observation. Thus, the researcher, despite her frustration, had to be alert and cautious about all the information observed and stated.

In addition, the researcher had to pay the cost for both the pilot study statistical analysis and for the final survey statistical analysis. Furthermore, the researcher revised with the statistician the analysis outcomes to make sure that the data is accurate before using it in the thesis.

Finally, the researcher had difficulties writing the thesis for various personal and environmental circumstances. During her Ph.D. journey, she was diagnosed with cancer in

two organs of her body. Thus, she had to go through surgery and regular treatment sessions so that she preferred to move to Lebanon to be surrounded by her family. During her stay in Lebanon, a severe economic and political crisis exploded in the country, endangering the country from a civil war. Consequently, the researcher was frustrated as her medication was running out of stock during her writing period, and safety was at risk. Finally, during her last trip to Dubai in January 2020, COVID-19 appeared in the UAE and Lebanon. Thus, despite her medical history, she compromised her virus vulnerability to complete her thesis and returned to Lebanon with extreme precaution measures. However, the borders between Lebanon and the UAE got closed until further notice.

Chapter Four: Findings

4.1 Overview

Throughout this chapter, the results of each one of the research questions are examined in order to provide an answer to the overarching research question. To begin with, the findings, achieved based on the different instruments and protocols, are displayed in the light of the transformative mixed method research. Furthermore, according to Mertens, and Sweetman et al., one of the ten criteria of successful transformative research is that its results should illuminate the power relationships¹⁵ (2003; 2010). In this study, the power relationship is the control that policymakers and educators have over the education of twice-exceptional students. In other words, these students' education is in the hands of policymakers and schools. Hence, the findings clarify the power relationship exerted on twice-exceptional students by policymakers and overall educators in Dubai. Aligned with the thesis theoretical framework and founded on the transformative paradigm, this chapter is aimed to show how these students are currently supported and what change could enhance their education.

4.2 Research Questions Findings:

Research Question 1: To what extent are educators and policymakers aware of twice- exceptional learners in Dubai?

The purpose of Research Question 1 is to examine how much educators and policymakers are aware of twice-exceptional students. On the one hand, the

¹⁵ The ten characteristics of a successful transformative research are explained in the Chapter 3 section 3.2.

survey and semi-structured interviews with inclusion specialists show the awareness of educators. On the other one, semi-structured interviews with representatives from KHDA and Hamdan Foundation demonstrate the level of awareness of some of the policymakers in Dubai.

4.2.1 Awareness of Educators

As shown in Table 4.1.1 about the topics of the survey, questions 11 to 20 cover the awareness of educators about their twice-exceptionality characteristics and related school practices.

Even though 62% defined twice-exceptional correctly, 38% either did not get the correct answer or claimed that they did not know the meaning. This implies that they did not know how to define it. Thus, these educators do not know what this category of students is. Such a percentage is significant relative to the numbers and the schools' rating of these educators. If this percentage of educators did not know the meaning of twice-exceptionality, it is crucial to question how teachers could cater for twice-exceptional students' needs. For example, educators who do not know the meaning of twice-exceptional students can fail in identifying such students.

Table 4.1.1 Answers of Question 11

11- How would you define the twice-exceptional (gifted with disabilities) student?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A pupil who is identified as gifted and talented in two or more areas of exceptionality.	3	6.0	6.0	6.0

A pupil who is identified in two or more categories of identification under special education criteria.	4	8.0	8.0	14.0
A pupil who is identified as gifted and talented in two or more areas of exceptionality regardless of disability.	7	14.0	14.0	28.0
A pupil as gifted and talented in one or more areas of exceptionality and is also identified with a disability.	31	62.0	62.0	90.0
I don't know	5	10.0	10.0	100.0
Total	50	100.0	100.0	

As for their awareness of their school identification process in Table 4.1.2, there is a clear split among the respondents. Approximately the 50 respondents were distributed equally among the three alternatives. On the one hand, the results show that educators are not sure of their school policies and practices, and on the other one, such results imply that schools do not have an identification process for twice-exceptional students. Consequently, twice-exceptional students are at risk of not being identified. This finding is associated with the risks derived from question 11 results, showing that teachers do not know the meaning of twice-exceptionality.

Additionally, 9 respondents from the 18, who stated that their school had an identification process for twice-exceptional students, explained how such students are identified. However, some answers are not supposed to be used for twice-exceptional students' identification such as "When always try to identify the

origin of the difficulty, the origin of the difficulty of some kids might be because they are gifted”. Other answers are not complete or not enough to identify the profile of such students such as “Disabled students with music talents or math calculation talents”.¹⁶ Thus, based on the latter answers, educators participating are not aware of their school identification system or do not know how to identify twice-exceptional learners.

Table 4.1.2 Answers of Question 12

12- Does your school have an identification process for twice-exceptional (gifted with disabilities) students?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	15	30.0	30.0	30.0
	Yes	18	36.0	36.0	66.0
	I don't know	17	34.0	34.0	100.0
	Total	50	100.0	100.0	
If yes, what?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		41	82.0	82.0	82.0
	CAT 4 assessment	1	2.0	2.0	84.0
	Disabled students with music talents or math calculation talents	1	2.0	2.0	86.0

¹⁶ The correct identification process is explained in Chapter 2 section 2.2.3.

	In light of question 11 we would separately identify someone as having a disability. That said, we do not have the need for that classification at the moment.	1	2.0	2.0	88.0
	process based on south California department of education based on American standards	1	2.0	2.0	90.0
	Referral system	1	2.0	2.0	92.0
	SEN route and G&T route both managed by myself therefore I marry up	1	2.0	2.0	94.0
	Separate identification for Gifted and then also for disabilities	1	2.0	2.0	96.0
	True recommendation of the teacher. The teacher fills out a form that is then given to the SEN department who then undergoes a series of meetings with the parents. The child is then placed accordingly.	1	2.0	2.0	98.0
	When always try to identify the origin of the difficulty, the origin of the difficulty of some kids might be because they are gifted.	1	2.0	2.0	100.0
	Total	50	100.0	100.0	
	Yes, it's more up to the discernment of the teacher how to accommodate these students And to Challenge and support them.	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Regarding the support provided to twice-exceptional students in Table 4.1.3, 60% stated that their school offered provision to twice-exceptional students. However, there is a discrepancy between the presence of the identification system and provision programme as per questions 11 and 12. In other words, on what basis these programmes would be offered if as per the results of question 12, only 30% of the participants confirmed offering an identification process for these students. Provision programmes should be based on the needs identified for the students. Only 12 participants of the 30 participants, who claimed that their school provided support for twice-exceptional students, did provide an explanation of their school support system. Some educators focused on the deficit programme such as “IEP forms” and other ones focused on the giftedness programme “Highly Able passports, identification, and guidance for teacher planning.” None offered a complete image of the programme to support both the deficit and the strength of twice-exceptional students. Hence, educators are not aware of how to support twice-exceptional students, or they do not provide the required support.

Table 4.1.3 Answers of Question 13

13- Does your school provide support for the needs of the twice-exceptional (gifted with disabilities) students?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	8	16.0	16.0	16.0
	Yes	30	60.0	60.0	76.0
	I don't know	12	24.0	24.0	100.0
	Total	50	100.0	100.0	
If yes, what?					

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		37	74.0	74.0	74.0
	Highly Able passports, identification and guidance for teacher planning	1	2.0	2.0	76.0
	IEP forms	1	2.0	2.0	78.0
	My school has special needs departments for each section and students with any academic needs are seen to. So, I presume students in this category is also seen to.	1	2.0	2.0	80.0
	Normal support route with Head of Inclusion monitoring progress for G&T with SEN	1	2.0	2.0	82.0
	Support is not specifically focused on twice-exceptional. We focus instead on barriers and providing support and extension as possible.	1	2.0	2.0	84.0
	Support is provided for all students with disabilities to allow them to reach their potential	1	2.0	2.0	86.0
	The get the support as gifted as well as SEND	1	2.0	2.0	88.0
	Using	1	2.0	2.0	90.0
	varied - depends on needs	1	2.0	2.0	92.0
	Various forms of support depending on needs of the child	1	2.0	2.0	94.0
	We have LSAs, a G&T faculty head	1	2.0	2.0	96.0

	We put in place a “PAP” which is a special personal plan that allow us to better follow kids with difficulties	1	2.0	2.0	98.0
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Furthermore, in Table 4.1.4 only 30% of educators confirmed having a policy for twice-exceptional students at school. The rest either did not know whether they have one or not or do not have any policy for that. Such a percentage reveals that these students are at risk of being marginalised. However, schools should follow a policy for them to identify twice-exceptional students and then help these students with the required support.

Table 4.1.4 Answers of Question 14

14- Does your school have policies for twice-exceptional (gifted with disabilities) students?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	40.0	40.0	40.0
	Yes	15	30.0	30.0	70.0
	I don't know	15	30.0	30.0	100.0
	Total	50	100.0	100.0	

From questions 15 to 20, awareness about the characteristics of twice-exceptionality is assessed. The importance of these questions is to verify whether educators recognise the different characteristics or attributes of twice-exceptional students. Such characteristics are the foundation of setting appropriate identification and support. In question 15 in Table 4.1.5, less than half provided

the correct answer while the rest failed to answer or did not know the answer. So, the difference between the needs of gifted students and twice-exceptional students is not clear for the educators taking part in the survey. As a result, educators cannot cater to the needs of such students if they do not know the difference between the needs of gifted and twice-exceptional students.

Table 4.1.5 Answers of Question 15

15- Twice-exceptional (gifted with disabilities) students have the same needs as the population of gifted students who do not.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	48.0	48.0	48.0
	Yes	17	34.0	34.0	82.0
	I don't know	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

In Table 4.1.6, question 16 illustrates the same confusion between the needs of twice-exceptional students and special education students. Only 40% of respondents were able to provide the correct answer, while the rest did not answer correctly or did not know the correct answer. Similar to question 15, educators are unable to support twice-exceptional students if they do not recognise the difference between their needs and other special needs students.

Table 4.1.6 Answers of Question 16

16- Twice-exceptional (gifted with disabilities) students have the same needs as special education students.				
		Frequency	Percent	Cumulative Percent

Valid	No	20	40.0	40.0	40.0
	Yes	21	42.0	42.0	82.0
	I don't know	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

In Table 4.1.7, question 17 shows better results than questions 15, 16, and 17, as 80% of the participants are aware that this group of students is not homogenous. Still, 12% did not know the answer or chose the wrong answer. As an attempt to explain such a high percentage, educators may be aware of the existence of different categories of special needs students on the one hand and the different types of giftedness on the other one. As a result, they assimilated that twice-exceptional students are not all the same.

Table 4.1.7 Answers of Question 17

17- Twice-exceptional (gifted with disabilities) students are all the same.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	40	80.0	80.0	80.0
	Yes	4	8.0	8.0	88.0
	I don't know	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

For question 18 in Table 4.1.8, 64% of participants answered correctly, but 24% did know the answer, and 12% did not answer correctly. This shows that a significant group of educators are not aware of the performance of twice-exceptional students. Consequently, for such educators, they are not aware that

twice-exceptional students may underperform, perform as per the average of their classmates, or excel in class.

Table 4.1.8 Answers of Question 18

18- Twice-exceptional (gifted with disabilities) students vary in school performance from very high to very low.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	12.0	12.0	12.0
	Yes	32	64.0	64.0	76.0
	I don't know	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

For question 19 in Table 4.1.9, less than half of the participants answered correctly. The results of this question also indicate that educators are not aware of the difference between identifying special needs students and twice-exceptional students. As a result, these students are at risk of not being identified correctly or not identified.

Table 4.1.9 Answers of Question 19

19- Identifying twice-exceptional (gifted with disabilities) students is the same as identifying any other type of special needs students.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	48.0	48.0	48.0
	Yes	14	28.0	28.0	76.0
	I don't know	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

For question 20 in Table 4.1.10, 62% of the participants answered correctly, but the rest failed to answer correctly. Even if identified correctly, these students are at risk of not being offered the needed provision to develop their giftedness while catering to their deficit.

Table 4.1.10 Answers of Question 20

20- Twice-exceptional (gifted with disabilities) students require the same supporting programmes as gifted students.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	31	62.0	62.0	62.0
	Yes	12	24.0	24.0	86.0
	I don't know	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

In conclusion, relying on descriptive statistics, participants show that more than half (with a range of 60%) of the educators recognise the definition of twice-exceptional students and a few of their characteristics. However, a substantial percentage of educators are unaware of the difference between twice-exceptional students and other groups of students, such as gifted students and special needs students. Furthermore, a noteworthy problem has been highlighted. Educators are unaware of their school policies, identification system, and provision programme for twice-exceptional students as well as some schools do not have any of the latter.

As shown in Table 4.1.11 and Table 4.1.12, questions 21 to 30 demonstrate educators' level of familiarity with the special education system guidelines of Dubai and their school and the types of twice-exceptionality. Based

on Table 4.1.11, ranging from questions 21 to 24, educators seem to be more familiar with their school special education services and gifted students' services than the UAE and Dubai guidelines for special education and gifted students' services. However, a significant percentage is not familiar with the school guidelines for twice-exceptional students, as shown in question 25.

Table 4.1.11 Answers of Questions 21 to 25

21- How familiar are you with UAE and Dubai guidelines for special education services?		
	Frequency	Percentage
Not familiar	4	8.0 %
Little familiar	11	22.0
Somewhat familiar	23	46.0
Extremely familiar	12	24.0
22- How familiar are you with UAE and Dubai guidelines for gifted education?		
	Frequency	Percentage
Not familiar	6	12.0%
Little familiar	11	22.0
Somewhat familiar	23	46.0
Extremely familiar	10	22.0
23- How familiar are you with your school guidelines for special education services?		
	Frequency	Percentage
Not familiar	2	4.0%
Little familiar	5	10.0
Somewhat familiar	23	46.0
Extremely familiar	20	40.0
24- How familiar are you with your school guidelines for gifted students' services?		

	Frequency	Percentage
Not familiar	4	8.0%
Little familiar	4	8.0
Somewhat familiar	24	48.0
Extremely familiar	18	36.0
25- How familiar are you with your school guidelines for twice-exceptional (gifted with disabilities) students services?		
	Frequency	Percentage
Not familiar	19	38.0%
Little familiar	8	16.0
Somewhat familiar	16	32.0
Extremely familiar	7	14.0

In Table 4.1.12, results show that educators are familiar with some types of twice-exceptional students more than the other. However, for each type, there is around 20% of participants who are not familiar, except for the type of students with learning disabilities related to math and reading. In contrast, the least recognised type by educators is gifted students with emotional difficulties.

Table 4.1.12 Answers of Questions 26 to 30

26- How familiar are you with Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?		
	Frequency	Percentage
Not familiar	9	18.0%
Little familiar	8	16.0
Somewhat familiar	19	38.0
Extremely familiar	14	28.0
27- How familiar are with Gifted students with Autism Spectrum Disorder (ASD)?		
	Frequency	Percentage

Not familiar	8	16.0%
Little familiar	9	18.0
Somewhat familiar	24	48.0
Extremely familiar	9	18.0
28- How familiar are you with Gifted students with emotional difficulties (anxiety, depression, etc.)?		
	Frequency	Percentages
Not familiar	6	12.0%
Little familiar	17	34.0
Somewhat familiar	18	36.0
Extremely familiar	9	18.0
29- How familiar are you with Gifted students with learning disabilities (math, reading, etc.)?		
	Frequency	Percentage
Not familiar	4	8.0%
Little familiar	11	22.0
Somewhat familiar	21	42.0
Extremely familiar	14	28.0
30- How familiar are you with twice-exceptional (gifted with disabilities) students' needs and types?		
	Frequency	Percentage
Not familiar	11	22.0%
Little familiar	12	24.0
Somewhat familiar	21	42.0
Extremely familiar	6	12.0

In Table 4.1.13, those results are related to their experience with the different types of twice-exceptional students. Again around 20% of the participants seem not to have any experience with any of the following types. In parallel to the familiarity question about gifted with math and reading difficulties,

educators seem to have the most experience so, this may confirm their familiarity with it.

Table 4.1.13 Answers of Questions 31 to 34

31- How much experience do you have with students who are Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?		
	Frequency	Percentage
No experience	9	18.0
Little experience	16	32.0
Moderate experience	19	38.0
Extensive experience	6	12.0
32- How much experience do you have with students who are Gifted with Autism Spectrum Disorder (ASD)?		
	Frequency	Percentage
No experience	13	26.0
Little experience	19	38.0
Moderate experience	14	28.0
Extensive experience	4	8.0
33- How much experience do you have with students who are Gifted with emotional difficulties (anxiety, depression, etc.)?		
	Frequency	Percentage
No experience	9	18.0
Little experience	24	48.0
Moderate experience	12	24.0
Extensive experience	5	10.0
34- How much experience do you have with students who are Gifted students with learning disabilities (math, reading, etc.)?		
	Frequency	Percentage
No experience	7	14.0
Little experience	17	34.0
Moderate experience	20	40.0

Extensive experience	6	12.0
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In the research, through inferential statistics, the relationship between familiarity and experience was examined through assessing the correlation between the two variables scores. In Table 4.1.14, based on the Pearson coefficient for correlation calculation, there is a significant strong positive correlation between familiarity and experience ($r=0.806$, $\text{Sig}<0.05$) as presented with the results of questions 21 to 30 on the one hand and questions 31 to 34 on the other one. Such results confirm the results of other studies relying on this survey to study the awareness of educators about twice-exceptional students (Sexton 2016; Fugate 2018). In other words, if educators are familiar with twice-exceptional students with problems in reading and math, it is because they have experience with such students.

Table 4.1.14 Correlation between Familiarity and Experience with Twice-exceptionality

Correlations			
		Familiarity	Experience
Pearson Correlation	Familiarity		.806
	Experience		
Sig. (1-tailed)	Familiarity	.	.000
	Experience	.000	.
N	Familiarity	50	
	Experience	50	

In Table 4.1.15, in question 39, 42% of educators indicated that they learned about twice-exceptional students through on-the-job teaching, while the second-highest percentage was that they did not know the topic.

Table 4.1.15 Answers of Question 39

39- Please indicate where the majority of your knowledge and experience pertaining to twice-exceptional (gifted with disabilities).					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor degree program	3	6.0	6.0	6.0
	Master degree program	6	12.0	12.0	18.0
	Other graduate school program/ certification	2	4.0	4.0	22.0
	School and/ or Dubai offered professional development	5	10.0	10.0	32.0
	Attending a conference	3	6.0	6.0	38.0
	On-the-job teaching (by teaching twice-exceptional students)	21	42.0	42.0	80.0
	None knowledge	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

Table 4.1.16 Common Variance Analysis between Familiarity and Experience of Twice-exceptionality

Model Summary				
Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.806 ^a	.649	.642	4.460

a. Predictors: (Constant), Experience

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	1765.706	1	1765.706	88.774	.000 ^b
	Residual	954.714	48	19.890		
	Total	2720.420	49			

a. Dependent Variable: Familiarity

b. Predictors: (Constant), Experience

In the model summary Table 4.1.16, the R-square value shows us how much of the variance in the dependent variable, in this case familiarity, is explained by the model. In this context, the value is 0.649; this means that our model explains 64.9% of the variance in the level of familiarity score.

It is essential to mention that based on the study, there was no relationship between the awareness of the educators and other variables such as the curriculum, the position, the age group, the nationality, the years of experience, and the rating of the school and. The Chi-Square value was calculated at the level of 95% of significance for all previously mentioned variables in relation to awareness.

From the extract of tables below, we conclude that many variables such as ratings, curriculum, and age do not affect educators' awareness because all p-value were above 0.05 as an overall score of awareness questions. These results are shown from Table 4.1.17 to 4.1.22.

Table 4.1.17 Rating with Awareness shows that the rating of the school, whether outstanding or very good, has no effect on the awareness score of the educators about twice-exceptional students because the p-value is above 0.05 for each one of the designated questions.

Table 4.1.17 Rating with Awareness

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Rating	Q11	1.200	4	0.902		Not supported
Rating	Q12	0.825	2	0.736		Not supported
Rating	Q13	1.944	2	0.394		Not supported
Rating	Q14	0.159	2	1.000		Not supported
Rating	Q15	1.183	2	0.554		Not supported
Rating	Q16	3.998	2	0.135		Not supported
Rating	Q17	0.079	2	1.000		Not supported
Rating	Q18	2.381	2	0.342		Not supported
Rating	Q19	0.680	2	0.725		Not supported
Rating	Q20	5.214	2	0.080		Not supported

As for Table 4.1.18 Curriculum with Awareness, it indicates that there is no impact of curriculum whether British, IB, French or American, on the awareness of educators as the p-value is above 0.05.

Table 4.1.18 Curriculum with Awareness

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Curriculum	Q11	21.146	16	0.166		Not supported
Curriculum	Q12	14.410	8	0.066		Not supported
Curriculum	Q13	4.795	8	0.818		Not supported
Curriculum	Q14	10.556	8	0.235		Not supported
Curriculum	Q15	3.605	8	0.913		Not supported
Curriculum	Q16	6.230	8	0.659		Not supported
Curriculum	Q17	10.529	8	0.220		Not supported

Curriculum	Q18	12.100	8	0.142		Not supported
Curriculum	Q19	8.883	8	0.371		Not supported
Curriculum	Q20	3.759	8	0.912		Not supported

The following Table 4.1.19 Nationality with Awareness indicates that educators' nationality has no impact on their awareness of twice-exceptional students. Statistically, the p-value for each one of the questions is more than 0.05 for all the questions.

Table 4.1.19 Nationality with Awareness

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Nationality	Q11	71.057	56	0.135		Not supported
Nationality	Q12	40.814	28	0.056		Not supported
Nationality	Q13	21.926	28	0.872		Not supported
Nationality	Q14	29.560	28	0.384		Not supported
Nationality	Q15	30.442	28	0.337		Not supported
Nationality	Q16	25.412	28	0.710		Not supported
Nationality	Q17	11.745	28	0.984		Not supported
Nationality	Q18	23.750	28	0.748		Not supported
Nationality	Q19	33.717	28	0.147		Not supported
Nationality	Q20	16.566	28	0.985		Not supported

Similar to the previous variable, the age of the educators does not have an effect on their awareness about twice-exceptional students. As Table 4.1.20 shows, the p-value for each one of the questions is more than 0.05 for all the questions.

Table 4.1.20 Age with Awareness

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Age	Q11	15.065	12	0.297		Not supported
Age	Q12	6.449	6	0.376		Not supported
Age	Q13	4.751	6	0.625		Not supported
Age	Q14	5.284	6	0.564		Not supported
Age	Q15	5.009	6	0.580		Not supported
Age	Q16	6.582	6	0.363		Not supported
Age	Q17	5.546	6	0.406		Not supported
Age	Q18	2.691	6	0.834		Not supported
Age	Q19	3.669	6	0.818		Not supported
Age	Q20	5.628	6	0.478		Not supported

Regardless of minor difference between gender and the previous variables, gender seems not to affect educators' awareness about twice-exceptional students. All questions, exception 12, show a p-value more than 0.05 as Table 4.1.21 Gender with Awareness indicates.

Table 4.1.21 Gender with Awareness

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Gender	Q11	3.275	4	0.552		Not supported
Gender	Q12	7.876	2	0.019	0.397 (medium effect)	supported
Gender	Q13	1.430	2	0.506		Not supported

Gender	Q14	4.282	2	0.151		Not supported
Gender	Q15	2.225	2	0.317		Not supported
Gender	Q16	1.846	2	0.397		Not supported
Gender	Q17	1.637	2	0.539		Not supported
Gender	Q18	0.552	2	0.818		Not supported
Gender	Q19	4.944	2	0.079		Not supported
Gender	Q20	3.027	2	0.302		Not supported

As for the last variable with no effect on awareness, the years of experience that educators have do not affect how much educators are aware of twice-exceptionality. For the same statistical reason as the previous one, the p-value is above 0.05 for each one of the questions leading to such conclusion as per Table 4.1.22 Years of Experience with Awareness.

Table 4.1.22 Years of Experience with Awareness

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
How many years of experience as an educator do you have, apart from Dubai?	Q11	17.349	12	0.127		Not supported
How many years of experience as an educator do you have?	Q12	7.962	6	0.251		Not supported
How many years of experience as	Q13	3.369	6	0.810		Not supported

an educator do you have?						
How many years of experience as an educator do you have?	Q14	3.732	6	0.735		Not supported
How many years of experience as an educator do you have?	Q15	1.405	6	0.979		Not supported
How many years of experience as an educator do you have?	Q16	11.650	6	0.068		Not supported
How many years of experience as an educator do you have?	Q17	4.076	6	0.713		Not supported
How many years of experience as an educator do you have?	Q18	8.843	6	0.181		Not supported
How many years of experience as an educator do you have?	Q19	7.639	6	0.279		Not supported
How many years of experience as an educator do you have?	Q20	6.172	6	0.424		Not supported

In Table 4.1.23, in question 40, the level of educators' awareness was also revealed. Only 9 of the 50 participants wrote a comment as the remaining 41 answered "No" or a full stop. The given answers show that one educator still does not know how to define gifted students, and two of the participants admitted that they did not know about the "twice-exceptionality" terminology before.

Furthermore, one of them tried to redefine it based on what was understood from the questionnaire. Moreover, two educators shared the challenges and approaches when catering for these students urging for a proper plan to support these students. Furthermore, one educator suggested a way to start supporting these students at school. As for the last educator's note, it was about the impact of disability on giftedness stating that it depends on its severity.

Even though those comments were a few relative to the number of participants, they reflect the discrepancy in the different levels of awareness of educators in Dubai. Still, some struggle with giftedness as a concept. Furthermore, educators do not even know the term or are trying to learn what it means or implies. Some others try and struggle to help twice-exceptional students. Other ones asked for a plan to guide educators' effort. Lastly, a group of educators reached a level of recommending how a plan should be in order to support twice-exceptional students.

Based on the survey results, educators show limited awareness about twice-exceptional education. In other words, different questions proved that they do not know the twice-exceptional students' types and characteristics. Furthermore, those data show that educators do not have a solid knowledge to identify and support these students. Moreover, schools do not have adequate policies to guide educators in that concern. Even educators demonstrated an evident confusion among twice-exceptional students, gifted students, and special education students.

Table 4.1.23 Answers of Question 40

Q40- Is there any other information relevant to twice-exceptional (gifted with disabilities) students that we should know?
1- I found the best support and challenging and supporting the specific needs of these specific students is to engage the issue as a team of parents, teachers and support teachers who are aiming to best support the child in their specific needs
2- I need to learn more about, as it's a new terminology for me. Gifted and talented are one side and SEN students are the other party. However, gifted with disabilities I should read more about!
3- It is hard to teach these students especially with autism.
4- Disability has no major impact on the gifted students if community are aware and educated how to deal with them as normal people and give them all the support they need to engage with others with no trauma. It depends on the severity of the disability but in general we need more sessions how to be able to help those students and prepare them in schools for their future.
5- I have never heard of this term before.
6- How we define gifted?
7- Twice exceptional kids are often misunderstood. They can suffer at school if they are not diagnosed. A proper plan should be implemented at school asap to avoid social, psychological and academic difficulty.
8- As you have mentioned every student is different and requires different support. Even if there were better definitions shared and more strategies on how to support, there needs to be specific training for school providers on how to be flexible and eliminate individual barriers and create individual plans. I also think with twice-exceptional students there is also a large responsibility placed on parents and that things become very difficult in terms of supporting students in school when we do not have this support.
9- A summary line: your child is gifted and needs special education.
N=9 out of 50

Similar to the questionnaire results, the semi-structured interviews with six inclusion specialists showed that educators do not have low level of awareness

about twice-exceptionality in terms of concept, characteristics, types, and practices. Firstly, two out of the six schools, School A and School C, claimed not to have any twice-exceptional students. School A interviewee stated that it is not a term that they use, and she continued saying that:

“We would use our special educational needs, and we would use gifted and talented.”

It is essential to mention that School A is an elite school in Dubai that accepts only students of high performance. During the interview, she highlighted with pride and arrogance the level of enrolled students in School A:

“We are a selective school, so all our children would be gifted and talented.”

As for School C interviewee, she stated that it was the first time she heard about the concept.

However, in the other schools, regardless of the number of students within the school, the number of identified twice-exceptional students is still low. Even School B interviewee admitted that there is a lack of knowledge about twice-exceptionality and sought help from the researcher. Regarding schools that have twice-exceptional students, their reported types of twice-exceptional students are gifted students with the following: dyslexia, ASD, Asperger’s Syndrome, dysgraphia, or dyscalculia. In addition, School F treats students with the English language barrier as twice-exceptional students if they are gifted in other domains; she was even confused about considering these students as twice-exceptional. All the interviewees reported that they have never taken any professional development about twice-exceptional students, and School F stated that she learned about the

concept while having her Masters courses. They all related the unawareness or limited awareness of the schools in Dubai to the absence of the term in KHDA and DSIB framework.

4.2.2 Awareness of Policymakers

Based on document analysis of laws and guidelines released and issued by the Ministry of Education, the Ministry of Community Development, and the KHDA, nothing is mentioned about twice-exceptional students. In other words, there are no definitions of the term, whereas there are rules to be followed to support students with special needs and different rules to be followed for gifted students. For the thesis, a representative from the KHDA and another from Hamdan Foundation were interviewed for this research.

The KHDA representative, who is working on the giftedness framework, explained that the common language for gifted and talented education is still not acquired by schools, so this could be a reason for not having policymakers aware of the concept. In other words, building an understanding of giftedness is required to build awareness of twice-exceptionality. She even stated that:

“The understanding of schools of gifted and talented is still not developed. They find it hard to identify gifted students. So, they will get stuck in twice-exceptional.”

When asked by the interviewer if she is aware of twice-exceptional cases at Dubai schools, she said that usually, schools report such cases in self-evaluation. As a result, the inspection team looks at the cases in-depth to evaluate what is provided to that student. To confirm with what she said, some of the inclusion specialists having twice-exceptional students stated that they report

twice-exceptional cases through the self-evaluation to the KHDA. At her level, she also mentioned that she would not have known about this category of students if she had not gone through it in her Masters. She even claimed that twice-exceptional students are the most challenging students to work with.

As for Hamdan Foundation, the representative confirmed the enrolment of twice-exceptional students in the program. However, they are not recorded as twice-exceptional in the registrar. She also stated that there are no policies or supporting system for students who are gifted with disabilities. For the program, students are enrolled based on their abilities regardless if they have disabilities. However, they do not have any students with severe disabilities because they do not have specialists to cater to their needs.

“We just cater to students based on their abilities. We might have some cases with no clear disabilities. We have students with dyslexia or emotional disturbance but clearly twice-exceptional students. We don’t even have tests to identify disabilities. We do not use the term twice-exceptionality.”

Similar to the KHDA, the interviewee from Hamdan Foundation explained that without having her Master’s in Special Needs, she would not have learned about twice-exceptionality.

In conclusion, to answer Research Question 1, educators’ awareness of twice-exceptionality is limited in Dubai, but it is more than the level of policymakers’ awareness. At least some schools, as the inclusion specialists’ interviews revealed, are catering to the needs of these students. The survey displayed that educators are familiar with them because of their experience with

such twice-exceptional students. However, a substantial group of participants showed that they did not know about the concept, types, and characteristics of twice-exceptional students. An evident confusion has been reported at the level of supporting these students, whether it is similar or different from special needs students and gifted and talented ones.

Research Question 2: What perceptions do educators and policymakers have of twice-exceptional learners in Dubai?

The purpose of Research Question 2 is to explore the perceptions that educators and policymakers have of twice-exceptional students in Dubai. To answer this question, the researcher relied on the survey designed for educators, semi-structured interviews conducted with inclusion specialists, and semi-structured interviews held with representatives from Hamdan Foundation and KHDA.

4.2.3 Perceptions of Educators

Educators' perceptions about twice-exceptional students were revealed by the survey questions 35-39 as well as the semi-structured interviews with the inclusion specialists.

Starting with the concept of twice-exceptionality, School A interviewee considers that twice-exceptionality is another label, apart from many other labels that students have. Such a label is no need of; students already have one label of special needs, another of gifted and talented, and another label of Emirati. As the Head of Inclusion for such an elite school, she was so firm during the interview, unlike other interviewees who were easy going.

“Do they need yet another label? So you’re already saying, okay, you know, we’re going to label them with it. We’re having a waiver that said they might be Emirati¹⁷, they might be a girl, they might have a disability, they might be gifted and talented. Do they need this twice-exceptional label as well? Do we need them, you know, to look at their data in another way?”

In addition, all interviewees perceive that schools and educators are not supporting twice-exceptional students because DSIB and KHDA are not imposing it. Schools that are trying to cater to these students are offering support based on parents’ request derived from external specialists’ identification reports and recommendations. Based on these interviews, the researcher inferred that these schools did not identify twice-exceptional students of their schools.¹⁸

In Table 4.2.1, when asked about ranking the factors that need a referral of twice-exceptional students, 26% of participants chose behavioural difficulties, 20% chose performance on classwork, and 18% picked the achievement on performance tests as the most critical factor. In contrast, parental concerns, peer relationship, and performance on ability tests seemed to be less significant as the percentage of participants who chose each one of them as the most important is much less than other alternatives. The following table shows that there is a variation in the ranking order among all participants. However, behavioural difficulties and performance on classwork were hardly ranked as the least

¹⁷ Based on KHDA supplement and DSIB framework, private schools in Dubai should indicate and cater for Emirati students based on their nationality.

¹⁸ This inference is required for Research Question 3.

important factor. This implies that they are of the most significant factors in making appropriate referrals of twice-exceptional students for evaluation.

Table 4.2.1 Answers of Question 35

35- Please RANK order from 1 to 6 the following factors you think should be considered to make appropriate referrals for evaluation of twice-exceptionality (gifted students with disabilities). Let 1 be the most important and 6 be the least important.					
a. Behavioural difficulties in the classroom and outside					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	26.0	26.0	26.0
	2	10	20.0	20.0	46.0
	3	14	28.0	28.0	74.0
	4	6	12.0	12.0	86.0
	5	5	10.0	10.0	96.0
	6	2	4.0	4.0	100.0
	Total	50	100.0	100.0	
b. Parental concerns					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	14.0	14.0	14.0
	2	8	16.0	16.0	30.0
	3	5	10.0	10.0	40.0
	4	10	20.0	20.0	60.0
	5	10	20.0	20.0	80.0
	6	10	20.0	20.0	100.0
	Total	50	100.0	100.0	
c. Peer relationships					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	12.0	12.0	12.0
	2	5	10.0	10.0	22.0
	3	8	16.0	16.0	38.0
	4	8	16.0	16.0	54.0
	5	15	30.0	30.0	84.0

	6	8	16.0	16.0	100.0
	Total	50	100.0	100.0	
d. Performance on classwork and class tests					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	20.0	20.0	20.0
	2	10	20.0	20.0	40.0
	3	11	22.0	22.0	62.0
	4	8	16.0	16.0	78.0
	5	7	14.0	14.0	92.0
	6	4	8.0	8.0	100.0
	Total	50	100.0	100.0	
e. Performance on ability tests					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	10.0	10.0	10.0
	2	9	18.0	18.0	28.0
	3	6	12.0	12.0	40.0
	4	13	26.0	26.0	66.0
	5	5	10.0	10.0	76.0
	6	12	24.0	24.0	100.0
	Total	50	100.0	100.0	
f. Performance on achievement tests					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	18.0	18.0	18.0
	2	8	16.0	16.0	34.0
	3	6	12.0	12.0	46.0
	4	5	10.0	10.0	56.0
	5	8	16.0	16.0	72.0
	6	14	28.0	28.0	100.0
	Total	50	100.0	100.0	

As for the best choice to offer primary support, participants perceived that special education teachers and classroom teachers should offer the primary support with approximately equal frequencies. Another highly frequent choice was the gifted education specialist. However, one of the participants considered that all stakeholders should be involved, and another one stated that it should be teamwork or team effort between the special education teacher, the gifted education specialist, and the counsellor, as shown in Table 4.2.2.

Table 4.2.2 Answers of Question 36

36- Who, in your opinion, is usually the best choice to provide primary support for the twice-exceptional (gifted with disabilities)?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Classroom Teacher	15	30.0	30.0	30.0
	Special Education Teacher	16	32.0	32.0	62.0
	School Counsellor	3	6.0	6.0	68.0
	Psychologist (School, Clinical, Counselling)	3	6.0	6.0	74.0
	Gifted Education Specialist	10	20.0	20.0	94.0
	Other (please specify)	3	6.0	6.0	100.0
	Total	50	100.0	100.0	
Other:					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		47	94.0	94.0	94.0
	All adults around the child forming a team	1	2.0	2.0	96.0
	All stakeholders	1	2.0	2.0	98.0
	Should be a team effort between the Sp. Ed. Teacher, the Gifted Ed. Specialist and the Counsellor	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

As for the areas of difficulty that educators observe with twice-exceptional students, social difficulties with peers, and academic difficulties were more frequent. In other words, educators perceived that twice-exceptional children mainly struggle with academic performance and social relations with their classmates. Other ones, such as school personnel coordination with parents, were less chosen by the participants. These results are shown in Table 4.2.3

Table 4.2.3 Answers of Question 37

37. What are the areas of difficulty that you observe for twice-exceptional (gifted with disabilities) students? <u>Check all that apply.</u>					
a. Academic difficulties					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	32.0	32.0	32.0
	Yes	34	68.0	68.0	100.0
	Total	50	100.0	100.0	
b. Social difficulties with peers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	22.0	22.0	22.0
	Yes	39	78.0	78.0	100.0
	Total	50	100.0	100.0	
c. Social difficulties with adults					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	34	68.0	68.0	68.0
	Yes	16	32.0	32.0	100.0
	Total	50	100.0	100.0	
d. School personnel coordination with parents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	39	78.0	78.0	78.0
	Yes	11	22.0	22.0	100.0
	Total	50	100.0	100.0	
e. Coordination of care among professionals (such as teachers) working with the student					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	No	31	62.0	62.0	62.0
	Yes	19	38.0	38.0	100.0
	Total	50	100.0	100.0	

In Table 4.2.4, in question 38, 52% of the participants perceive that they are confident about their understanding, no matter what their awareness level is. Moreover, 14% showed that they are not confident; all implying that their awareness and perceptions should be enhanced.

Table 4.2.4 Answers of Question 38

38- How confident are you that your current understanding of and experience with twice-exceptional (gifted with disabilities)?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not confident at all	7	14.0	14.0	14.0
	Not so confident	13	26.0	26.0	40.0
	Somewhat confident	26	52.0	52.0	92.0
	Very confident	4	8.0	8.0	100.0
	Total	50	100.0	100.0	

In Table 4.2.5, in question 39, the majority of educators, 42%, proved that they learned about twice-exceptionality through their experience. Furthermore, 20% of the participants claimed that they did not know this topic at all. This shows that their answers about perceptions may change if they learned about the topic through raising awareness.

Table 4.2.5 Answers of Question 39

39. Please indicate where the majority of your knowledge and experience pertaining to twice-exceptional (gifted with disabilities).					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor degree program	3	6.0	6.0	6.0
	Master degree program	6	12.0	12.0	18.0
	Other graduate school program/ certification	2	4.0	4.0	22.0
	School and/ or Dubai offered professional development	5	10.0	10.0	32.0
	Attending a conference	3	6.0	6.0	38.0
	On-the-job teaching (by teaching twice-exceptional students)	21	42.0	42.0	80.0
	None knowledge	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

As for the awareness questions, the rating of the school, curriculum, position, age, gender, and experience do not have an impact on the perceptions of the educators. The Chi-Square value was calculated for each one of the questions to test for the interdependence between variables. The following tables from 4.2.6 to 4.2.9 show that there is no impact of such variables on perceptions because all p-value were above 0.05 as an overall score of questions.

Table 4.2.6 Rating with Perception

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Rating	Q36	2.520	5	0.838		Not supported
Rating	Q37_1	1.418	1	0.234		Not supported
Rating	Q37_2	1.604	1	0.205		Not supported

Rating	Q37_3	0.018	1	0.895		Not supported
Rating	Q37_4	0.272	1	0.602		Not supported
Rating	Q37_5	0.036	1	0.849		Not supported
Rating	Q38	2.826	3	0.451		Not supported
Rating	Q39	4.354	6	0.693		Not supported

To elaborate, for example, the p-value of question 36 is 0.838 which is above 0.05. The same applies for other questions. As a result, perception variable is not affected by the rating of the school.

Table 4.2.7 Curriculum with Perception

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Curriculum	Q36	20.556	20	0.435		Not supported
Curriculum	Q37_1	1.761	4	0.797		Not supported
Curriculum	Q37_2	4.152	4	0.386		Not supported
Curriculum	Q37_3	5.201	4	0.277		Not supported
Curriculum	Q37_4	5.008	4	0.284		Not supported
Curriculum	Q37_5	3.668	4	0.485		Not supported
Curriculum	Q38	11.256	12	0.531		Not supported
Curriculum	Q39	21.115	24	0.632		Not supported

Similarly, the p-value of each one of the questions reveal that there is no impact of the curriculum on the perceptions of teachers. Such a result is identical for the nationality variable and gender variable. None of them has a significant effect on educators' perceptions about twice-exceptionality.

Table 4.2.8 Nationality with Perception

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Nationality	Q36	95.417	70	0.050		Not supported
Nationality	Q37_1	13.618	14	0.551		Not supported
Nationality	Q37_2	10.729	14	0.791		Not supported
Nationality	Q37_3	9.533	14	0.918		Not supported
Nationality	Q37_4	13.254	14	0.554		Not supported
Nationality	Q37_5	15.054	14	0.376		Not supported
Nationality	Q38	37.787	42	0.697		Not supported
Nationality	Q39	93.411	84	0.621		Not supported

Table 4.2.9 Gender with Perception

Independent variable	Dependent variable	Chi-Square value	df	Sig (p-value)	V-Cramer (effect size)	Decision
Gender	Q36	5.667	5	0.343		Not supported
Gender	Q37_1	0.105	1	0.746		Supported
Gender	Q37_2	0.004	1	0.951		Not supported
Gender	Q37_3	0.105	1	0.746		Not supported
Gender	Q37_4	4.929	1	0.026	0.314(medium effect)	Supported
Gender	Q37_5	5.702	1	0.017	0.338(medium effect)	Supported
Gender	Q38	4.090	3	0.254		Not supported
Gender	Q39	12.113	6	0.054		Not supported

To sum up, educators show different perceptions about twice-exceptional students. Some similarities were revealed through the survey in terms of the difficulties that twice-exceptional students face. Through the semi-structured interview, some schools confirmed the fact that they do not cater to the needs of twice-exceptional students because it is not required by policymakers' authorities. In contrast, the semi-structured interviews showed a discrepancy in their perceptions of twice-exceptionality. For instance, one of the schools considered that twice-exceptionality is nothing but an additional label to the student without any value whereas other schools tried to serve these students based on external specialists' recommendations.

4.2.4 Perceptions of Policymakers

During the interview, the KHDA representative stated that she perceives twice-exceptional students as the most challenging group of students. Furthermore, for the KHDA and the Ministry of Education, this is not yet a priority as they are still establishing foundations for gifted and special education.

“It is not yet a Dubai priority.”

However, the concept of twice-exceptionality is still perceived by these policymakers as mutually exclusive. In simpler terms, if the child is of the two categories, he needs to be catered for both, each one alone.

As for the representative of the Hamdan Foundation, she confirmed an inaccurate image of having a child either gifted or of special needs, as the KHDA representative stated.

“We have students with dyslexia or emotional disturbance but not twice-exceptional students.”

Nevertheless, two types of twice-exceptional students are gifted students with dyslexia and gifted students with emotional disorders. This answer during the interview showed that the representative has a false image of twice-exceptionality. Thus, this perception needs to change.

To wrap up, in the light of Research Question 2, educators perceive academics related difficulty and social interaction difficulty as major factors requiring referral and affecting twice-exceptional students. Furthermore, special education needs teachers, and classroom teachers have been nominated to support these twice-exceptional students. There has been a discrepancy in educators' level of confidence in the information they revealed in the survey. Moreover, educators showed that the knowledge they have is through experience, and a substantial percentage of educators admitted they did not know the concept. As for one of the schools' interviewees, she considers twice-exceptionality another label for the students without any purpose. In parallel, policymakers perceive these students as the most challenging and requiring support that is not yet a priority for the country.

Research Question 3: *What are the identification processes used to recognise twice-exceptional learners in Dubai?*

Table 4.3.1 Schools with Inclusion Specialist and Twice-exceptional Students

School	Position of the Interviewee	Name of Twice-exceptional Students Interviewed
School A	Head of Students Services and SENCO	None
School B	Head of Inclusion	Student A Student K
School C	Head of Primary Section	None
School D	Head of Inclusion	Student L
School E	Secondary Head of Inclusion	None
School F	Head of Inclusion and Welfare	Student E

The purpose of Research question 3 is to understand how schools identify twice-exceptional students. The semi-structured interviews with inclusion specialists and twice-exceptional students, along with the survey, revealed the identification system of these students. Table 4.3.1 shows the name of the schools, the position of the school inclusion specialists, and the name of the interviewed twice-exceptional students.

Based on the interview, the researcher recognised that none of the studied schools has any policies for twice-exceptional students. In other words, there is no clear and unified system of identification to be followed by the schools. However, it is imperative to explain how twice-exceptional students are identified in the schools in which they have reported cases. Furthermore, it is important to examine

why School A and School C do not have reported cases of twice-exceptional students based on the interviews.

4.2.5 Schools without twice-exceptional students

Schools A and C that do not have twice-exceptional students stated that they have policies for gifted and talented students and policies for special needs students, known as additional needs students.

Based on the interview with School A, there have been hints that they may have twice-exceptional students as a concept, but without the “label” according to her language. As an elite school, she works on identifying students’ additional needs and areas of giftedness if needed. As per the results explained earlier in Research Questions 1 and 2, the school is selective, and all the students are gifted and talented. However, out of these gifted and talented students some are special education students who might be autistic or dyslexic. Thus, a contradiction in the conversation was inferred because gifted children with autism or dyslexia are examples of twice-exceptional children based on the definition of the term. To confirm the researcher interpretation, School A interviewee proceeded by stating:

“They all go on to good universities, even if they might be autistic or dyslexic or physically disabled, so I don’t know if I need to identify them as twice-exceptional in order for them, you know. I don’t think anyone here would want to be identified as twice-exceptional.”

Apart from implying that twice-exceptional identification is wrong, inaccurate, or insulting, she considers, as discussed in research question 2, that twice-exceptionality is another label for the students. She asked the researcher the following questions:

“Do they need this twice-exceptional label as well? Do we need them, you know, to look at their data in another way?”

As for School C, she claimed that they do not have an identification system because the KHDA does not require it. They just work on identifying gifted and talented students and students with special needs.

4.2.6 Schools with twice-exceptional students

As for School B, twice-exceptional students have been identified by external agencies, not within the school. He added, once asked if the school has an identification system for twice-exceptional students, that the school has a system for the gifted and talented and the special needs students, each category of students as a standalone. In addition, he claims that they do not possess any identification system for twice-exceptional students. He also stated that schools without identified cases of twice-exceptional students, such as A and C in this context, do not have proper identification tools or procedures as if School B has proper ones.

Based on the interview with Student K, who is of Asperger's Syndrome, he informed the researcher that he was initially diagnosed with autism to become then diagnosed with Asperger's Syndrome in specific. Then with time, by grade 7, parents and teachers suspected that he was gifted. Thus, after being tested through the Hamdan Foundation giftedness toolkit, he got enrolled in Hamdan Foundation Program for his giftedness in science and math. For Student K, there has been a delay in identifying him as twice-exceptional. The proactivity of the parents was the reason behind the identification, even with a delay.

In the same school, based on the interview with Student A, she revealed her struggles with different specific learning disabilities such as dyslexia, dysgraphia, and dyscalculia. It was till the end of Grade 11 that she got nominated as gifted due to her meticulous comics artwork. Her parents, who have long followed up on her case with her medical complications and learning disabilities, supported her. Based on a report from a specialist, she is now considered as gifted with specific learning difficulties. Similar to Student K, Student A's giftedness was late in terms of identification. Thus, her identification as twice-exceptional has been delayed too. Similar to Student K, with the support of her parents, she was able to be identified as such. The interview with her showed a level of self-awareness. In other words, she understands and recognises her condition and its limitations:

"I have non-verbal learning disorder, staring spells which resulted me with difficulty with concentration, problems with math, depression, and Turner Syndrome. I don't like the curriculum. I hate math and physics."

Looking at School D, the Head of Inclusion explained that twice-exceptional students get to be informally identified through the SEN register and Gifted and Talented Pathway. She elaborated that there should be a formal process for identifying twice-exceptional students. When asked about reasons for schools' absence of identified twice-exceptional students in other schools, she claimed that there is no literature about it, and there is limited awareness of this category of students.

In this school, Student L explained to the researcher that he had been misdiagnosed two times in his previous schools. It was during the last semester of

the previous year that he got identified as a gifted student with Asperger's Syndrome.

"In my previous school, they did a diagnosis test but they couldn't do it properly. The specialist at the end of the year, last year had to repeat it. She noticed that I had autistic tendencies similar with high functioning autism or at or sometimes completely known as Asperger's syndrome. That's in the official terminology now. And then she because at the time, every so often there needs to be new tests done. I think every two years. So, another test was performed by a professional from an external private company."

Furthermore, School E highlighted that they had a clear way to identify twice-exceptional students through different internal and external sources as follows:

"They would be identified firstly with an external assessment CAT4 assessment where they would be measured across the four batteries. And we'd also be looking at internal data from their assessments and the reports."

Once identified, these students are put on the inclusion register to inform teachers how to support them. She also insisted on the importance of identification in educating twice-exceptional students by saying:

"Identification is always the first step. So, they would use internal or external assessment where you'd have students' details that may pop up that, you know. We have to look at old students where they would have to look at some type of external assessment, the internal data that we have. If to say that they don't have twice exceptional."

However, despite her positivity in confirming their use of the identification process, she asserted to the researcher that identifying twice-exceptional students is challenging.

“...we know who are highly able, and we know our inclusion children; this is even harder for our dual exceptional students.”

The interview with her showed that in School E, gifted students with English language barriers are treated as twice-exceptional, in addition to other cases they have.

As for School F, which has only one identified case, the inclusion specialist informed the researcher that the student was identified in his previous school. However, that school could not cater for his needs; thus, he moved to School F. Moreover, the school claims to have a system through CAT4, parents’ nomination, teachers’ nomination called a “record of concern” and:

“...And then we start an investigation process that might be lessons observations. We try and put different supports in place.”

Unlike other interviewees, he highlighted that one of the reasons for not having twice-exceptional students identified is gender differences between boys and girls.

“I would say probably the largest proportion of those at schools are missing girls because the girls that might have learning difficulties and the ones that get picked up more are the ones that are very obvious. And often the female representation of example inattentiveness is very different than the male interpretation.”

In other words, girls are underrepresented in twice-exceptionality due to the difference in expectations between boys and girls. He also added the following:

“Because usually in a classroom, the girls are quiet, get missed. And if the behaviour is fine, it’s less likely to be noticed unless it’s specifically being screened for. It would be interesting from a cultural perspective as well because a lot of families push the boys, and the boys are, you know, the head of the household.”

In addition to the CAT4 mentioned by Schools E and F, as shown in Table 4.3.2 Identification Process of Twice-exceptionality based on Survey, results from the survey showed that schools identify giftedness alone and learning disabilities alone. One of the respondents who is a Head of inclusion answered that “SEN route and G&T route both managed by myself; therefore, I marry up.” In simpler terms, she combines the two routes of giftedness and special needs. They also use referrals from teachers and counsellors before the inclusion department interferes, as mentioned by Schools E and F.

Table 4.3.2 Identification Process of Twice-exceptionality based on Survey

If yes, what			
		Frequency	Percent
	CAT 4 assessment	1	2.0
	Disabled students with music talents or math calculation talents	1	2.0

In light of question 11 we would separately identify someone as having a disability. That said, we do not have the need for that classification at the moment.	1	2.0
Process based on South California department of education based on American standards	1	2.0
Referral system	1	2.0
SEN route and G&T route both managed by myself therefore I marry up	1	2.0
Separate identification for Gifted and then also for disabilities	1	2.0
True recommendation of the teacher. The teacher fills out a form that is then given to the SEN department who then undergoes a series of meetings with the parents. The child is then placed accordingly.	1	2.0
When always try to identify the origin of the difficulty, the origin of the difficulty of some kids might be because they are gifted.	1	2.0

4.2.7 Policymakers' Role in Identification of Twice-exceptional students

The representative of the KHDA provided for the researcher two main reasons explaining why schools do not have twice-exceptional students identification system. The first reason is that the KHDA and DSIB did not specify

any system of identification for this category of students because twice-exceptional education is not yet a priority. The second reason is that schools still struggle in identifying gifted students so identifying twice-exceptional students is complicated.

The Hamdan Foundation representative clarified that the organization does not have any identification system for twice-exceptional students. They just accept students based on their abilities as mentioned in Research Question 1. They even work with experts just to develop toolkits and instruments that identify giftedness only.

In conclusion, to answer Research Question 3, none of the schools have a formally written process for identifying twice-exceptional students and some of the schools do not even use the term of “twice-exceptional”. They tend to use identification processes for gifted students and distinct processes for special needs, each one as a stand-alone. Interviews with students showed the impact of the delay and misdiagnosis of their twice-exceptionality identification. As for policymakers, they do not use any system for twice-exceptionality identification. Reasons are derived from priorities of the country and specialization of the organization.

Research Question 4: What are the provision programmes offered to twice-exceptional learners in Dubai?

Table 4.4.1 Schools with Inclusion Specialist and Twice-exceptional Students

School	Position of the Interviewee	Name of Twice-exceptional Students Interviewed
School A	Head of Students Services and SENCO	None
School B	Head of Inclusion	Student A Student K
School C	Head of Primary Section	None
School D	Head of Inclusion	Student L
School E	Secondary Head of Inclusion	None
School F	Head of Inclusion and Wellbeing	Student E

In Research Question 4, the researcher is to discover the programmes that studied schools offer to twice-exceptional students. Through semi-structured interviews with policymakers, inclusion specialists, twice-exceptional students and class observation of twice-exceptional students along with sample of twice-exceptional students' work, the supporting programmes for such students are exposed. Similar to Research Question 3, Table 4.4.1 shows the name of the schools, the position of the inclusion specialists and the name of the twice-exceptional students interviewed.

4.2.8 School with Twice-exceptional Students

Schools B, D, E and F which have twice-exceptional students explained their supporting programme to satisfy students' needs. However, School A and

School C do not cater for any twice-exceptional students because they do not have any identified cases. Moreover, the schools with twice-exceptional students wanted to participate in this study because they were struggling with the education of twice-exceptional students. Based on the transformative research, such schools were involved because they wanted to see and facilitate a change as per Mertens criteria for successful transformative research (2003).

School B

School B claimed that twice-exceptional students are receiving need-based support to accommodate their needs whenever and wherever required. This is part of its inclusion philosophy. He added that students' wellbeing is significant for the school, even if twice-exceptional students are not supported as much as special needs students and gifted students. Furthermore, he did not specify if he worked on the deficit and giftedness alone or together. In order to support students' deficit, he stated that special education specialists worked closely to modify the curriculum to meet students' needs and ensure that students are getting equitable access and participation of the curriculum. Moreover, giftedness is supported by differentiated instructions to challenge their abilities. Students can work at a higher pace, use more sophisticated resources when needed.

According to sections A and B of the observation checklist, when Student A was observed in a history class, she was half asleep because of a medication she takes. She was sitting in a heterogenous group without any differentiation or learning assistants as per section E. Once the teacher asked for a group work assessment, she woke-up and contributed with her friends. Her classmates were compassionate and showed empathy because of her condition which they got used

to. She also participated in class when discussing the outcome of the required task. The schools seemed to be understanding of her medical condition as section D of the observation checklist. Based on the same section of the checklist, her vocabulary and creativity showed to be advanced relative to her classmates. Even her opinion about history was developed.

As an additional comment filled in section F of the observation checklist, the researcher found out that Student A's handwriting was big while exerting much pressure on the pencil as the researcher walked around the classroom. As additional comments of section F in the observation checklist, the researcher wrote that Student A had dark circles around her eyes, and she was short in height relatively to all her classmates; such a difference ought to be related to her medical condition. During the interview with her¹⁹, she explained that she loves history, Islam Studies, biology, art, design, and technology. However, the following is her feedback about her school's support:

"I like my school, and the people are, for the most part, considerate and supportive. No matter what they do for me in school, it is very difficult for me due to my medical history, and I was extremely slow. I am doing my best to manage".

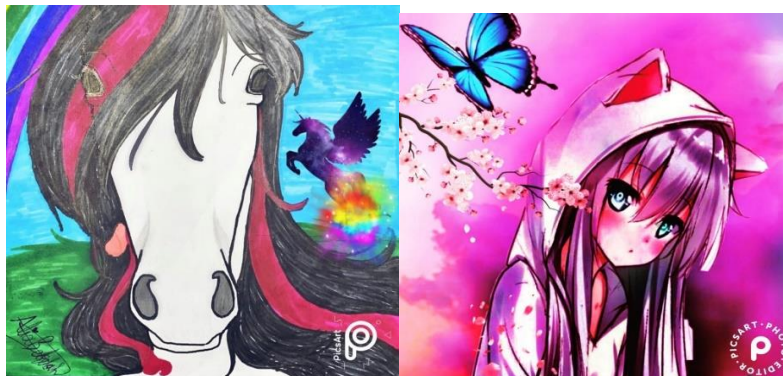
"...I loved art since I could hold a pencil in my hand."

Besides, she shared with the researcher a sample of her artwork and comics on her MacBook. The first picture is her own hand drawing artwork, and

¹⁹ Even though Student A's native language is Arabic as an Emirati, her command in English was good. She spoke during the interview in English.

the second picture is her artwork using specialised software for comics drawing as shown in Image 4.4.1 and 4.4.2.

Image 4.4.1 and 4.4.2 Sample of Work of Student A



When observed in an English lesson, Student K was sitting in a heterogenous group supported by the Learning Support Assistant, who was passive during the lesson, as per sections A, B and E. Moreover, he was listening to his teacher and asking questions when needed as section C and D. During his group work activity in literature, he was active explaining to his group members his part of task Then, he stood up to go ask a question to the teacher by her desk holding his copybook, showing the teacher's flexibility, according to section E. He seemed to be meticulous in his handwriting. When discussing with his classmates the task he had to do, he smiled because his answer was correct as per section F.

During the interview with him²⁰, he explained to the researcher how the school helps him support his giftedness and his deficit. Additionally, he

²⁰ Student K is also Emirati so his native language is Arabic. The interview was conducted in English and his command of English is acceptable.

highlighted with pride, with his serious look, the role that Hamdan Foundation plays in developing his giftedness.

“I participate in competition of science and sometimes my teachers ask me to do different projects than my friends. Hamdan Foundation is taking care of me. I learn a lot from the program. The school cannot do that for me.”

Throughout the corridor of the Boys’ section²¹, the researcher found on the bulletin board pictures of Student K participating in internal and external science competitions. However, the researcher, for ethical purpose, did not take any picture to display it in this study, as parents and school requested.

“I don’t struggle in subjects anymore. I am managing myself and I respect all my teachers. I want to be successful in all the subjects to stay in Hamdan Foundation program. In the past, I didn’t have friends. I just sit with my friends in the classroom. When I have a task to do, they give me extra time to answer and they make sure I understand the questions.”

The observations and interviews with students showed a gap in the quality of support that the school caters to twice-exceptionality. For example, there is no differentiation during the observed lesson for both of the students. Furthermore, the LSA was not contributing to the learning of Student K during the lesson. Additionally, student K admitted that the school could not provide him a programme to develop his giftedness of Hamdan Foundation standards. However, students seemed to be at ease and satisfied with their current school environment, regardless of the inadequacy of support. Possibly, the wellbeing of these students

²¹ The school is of Emiratis mainly. Thus, for cultural and religious purpose, the middle and high school classes are divided into Boys’ section and Girls’ section.

is related to the change they outreached after the years of struggles they have been through. The label of twice-exceptionality, or gifted in addition to their learning difficulties, enhanced their self-confidence.

Furthermore, during the interview, the inclusion specialist explained that the school relationship with parents of these children is professional and formal when asked about the relationship of the school with other stakeholders. He emphasised the teamwork effort of the teachers from the Inclusion department such as the giftedness educator and special needs educator, on the one hand, and other educators such as the subject teachers and principal. As for the KHDA, he stated that the school does not share with them details about these students because it is not as per its requirements²².

As for the main challenges that the school is facing to ensure twice-exceptional support is the lack of parental support and understanding of their children's case. Furthermore, in order to improve the quality of the support programme for twice-exceptional students, he informed the researcher that teachers' awareness and knowledge needs to be enhanced.

School D

As they do not have a policy for twice-exceptional students and because of the small number of twice-exceptional students in the school, School D explained that the school follows a personalization model that works for their needs.

²² This is from the participating schools that do not inform the KHDA about their twice-exceptional students in their self-evaluation form, unlike the other studied schools. The KHDA claimed that schools usually report such cases.

Furthermore, the school works to support the deficit and the giftedness at the same time:

“... subjects and heads of year look after their needs and where these overlap, Head of Inclusion, myself, becomes involved. If a twice exceptional student was struggling, we would put together a Team Around the Child support plan to help”.

In order to support the child's area of deficit, students have a named “link Inclusion teacher” who co-ordinates their needs and provision with the Head of Inclusion, teachers, and parents, and student directly. Thus, each child has someone in charge of him. At the level of giftedness, the school develops performance pathways dependent on his giftedness area so it would vary from one child to another.

During Student L observation in a history lesson, he was sitting in the front alone even though his classmates were sitting in pairs, based on sections A and B of the observation checklist, in Appendix 3.12. His desk was very organised, with his coloured pencils box and his bag on the seat next to him as he works well independently, as section C of the observation checklist showed. Furthermore, relying on section C of the checklist, the observant noticed that he was so attentive, continually participating, even sometimes speaking over his teacher. His classmates seemed to be upset because they could not contribute to the lesson. Once given a worksheet to answer, the teacher asked him to skip some questions and answer the last couple of questions, which is a form of differentiation as per section E of the checklist. Regarding section D of his checklist, it showed that his vocabulary and his ideas and opinions were superior to his classmates throughout

the lesson. He also presented a sophisticated sense of humour because he said a few jokes which did not entertain his classmates.

When asked by the researcher about his areas of interest and the support that the school offered him, he showed that the school challenges him with the math level, his subject of interest. He explained even why he loved history by relating it to his father. Throughout the interview, he stated the following:

“I enjoy history very much. I have often my father loves history. But mathematics is a first for a major one. A long time ago when I was in my previous school because of my differences, in primary school, I was taken as being capable but not able to reach top set. But when I was in secondary school, I was put into top set and then it because of my skill with mathematics. I did my maths GCSE last year in year 10 at the end of last year for the higher maths course I was very close to getting a 9”.

In contrast, when he was asked about his subjects or areas of difficulty, he stated that the school is being understanding and he has no significant challenges anymore. Similar to his areas of strength, he related the process of overcoming his deficit to his parents’ support.

“An assistant from the SEN came when I was doing my maths GCSE last year and I was provided things like extra time. My mind is on how much time has passed and they escort me to toilet when tests. They cope with my parents; they’ve been wonderful parents”.

He was also asked if he likes to work alone or in groups; his answer showed that he might have other deficits that may relate to OCD. Accordingly, he said:

“I like to sit alone too. Tables are aligned in history as if they’re like little islands where the individual dual person tables and I like to have the extra space because I like to have my bag on the seat next to me. I find it’s easier for me and because of my often-obsessive tendencies the way they often come about.”

After observing and interviewing Student L, his school seemed to be supporting him based on his strengths and deficits, each one as a standalone. No support was provided to enhance his social skills, which seemed to be limited due to his case. The school managed to enhance his wellbeing after being in previous schools where he struggled. However, he was not observed in subjects such as maths to evaluate how well he is supported.

In terms of the school’s relationship with other stakeholders, the inclusion specialist explained that parents are involved, and they discuss with the Inclusion department how areas of giftedness could be developed. Student L’s interview confirms this statement. Moreover, teachers also treat them as they treat other students. She also focused on the role that the principal plays in setting the direction of the school. As for the KHDA, the school does not communicate with it the cases of twice-exceptional students it has.

When asked about the challenges she is facing in twice-exceptional education, she explained that there is a lack of information about how to support these students, especially that the country has no policy for them. They are a diverse group, and they still do not know how to cater to all their needs and how to identify them correctly. Thus, some research or experts in that field could help the school to make sure they are serving these students correctly.

School E

Even though this school has identified cases of twice-exceptional students, parents did not accept to have their children take part in this study. School E insisted throughout the interview that the priority is to excel in the twice-exceptional students' weaknesses, such as the language. She also added that students have a passport, working for either IEP, ALP, or both. Based on the IEP, she explained that they modify the curriculum, but that would be on a case-by case basis depending on the need. They also run interventions or small group support, and they use technology when needed to aid the students. In addition, in-class support is provided where they try and look at the student plan with the teacher and observe the way that the student is learning in that classroom.

These efforts are made through linked teachers, inclusion teachers for subjects like English, maths, and science. They keep on looking for all that research and all that information to support the child. In contrast, for giftedness, based on the ALP, they also focus on the way that the student would be best taught and looking at the way that they should be supported and how the teacher should plan for them. Their students are challenged within all the lessons for outstanding lessons and practice. It will again depend on the students. She also related challenge to the quality of the IB curriculum:

“If you know the IB curriculum, we have diploma and our diploma programme is very challenging and that is probably, people say more challenging than the British A-levels.”

In order to support twice-exceptional students, the school has an open-communication with parents who are of diverse nationalities. She even expressed her pride in the international profile of her students.

“Many nationalities come together and different backgrounds. And we encourage this diverseness. And this, you know, celebrate their uniqueness and internationalness. So, parents get involved very quickly, and students know that parents are coming in.”

As for the teachers, they are of high quality and have an excellent relationship with the twice-exceptional students. Her job as a middle manager is to follow up on them to see how best students can learn. For the wellbeing of the students, students can refer to the counsellor, an emotional counsellor, and a career counsellor. Based on the interview, she described the school as a fully inclusive school where the team tries to look at the students from a holistic approach. At the level of the KHDA, they inform them about their cases in the self-evaluation for them to follow-up on them when inspection.

However, despite the school’s effort, the team encounters many challenges to support twice-exceptional students. Firstly, teachers struggle with the extension of students in their giftedness area as there are many students in the classroom, and they cannot specifically focus on twice-exceptional students. She stated that teachers face a “dilemma” because they have to move everyone forward. Secondly, the use of the term twice-exceptionality is not placed in any framework for them to know how to cater to the needs of the students. She, as a Head of Inclusion, prefers to use the term “potential” and her goal is to help students achieve their potential. Furthermore, she stated:

“I would like to see us looking at potential rather than the label.”

Thirdly, even though they engage students in extra-curricular activities, they are still supported from an academic perspective.

Thus, through the support of specialised manpower in twice-exceptionality, they could find out exceptionalities and interests that are not related only to academics. Furthermore, the ratio of manpower to students will be better as students could have more support.

School F

As School F has only one identified case of twice-exceptionality, most of the interview was about the case of Student E. For this student, the Head of Inclusion and Wellbeing explained to the researcher that the school works on the support of both deficit and giftedness at the same time. Based on a combination of the two sides of twice-exceptionality, he follows the response to intervention framework. He uses a passport for Student E, which is the school version of an IEP and ALP. On the one hand, he developed a target personalised for him for giftedness, such as acceleration of subject of interest such as maths. On the other one, he looks at the barriers that are preventing the student from achieving the student's full potential, and he works on removing them with the support of the team. With an explanation of Student E's case, he elaborated:

“...if we remove those barriers and the focus is on removing those barriers, then that's going to support him. So, if the barrier is social, emotional, we focus on that one, then the next barrier will come up and then we focus on that one and then we see how he is responding and if it is working or not.”

To support Student E's case, the school developed for him "a bespoke timetable" to make him feel special and different from his classmates, especially that he takes maths with Grade 11. Moreover, on that timetable, he also has a time where he meets the school counsellor to support him with his social-emotional learning. In addition, he has a workstation that is adaptable so he could either work there or move around the class to work with his classmates.

In terms of the deficit, the school provides him with push-in and pull-out when needed. The student has a counsellor to support him with his social-emotional learning, along with the teacher, and the learning assistant. He stated that:

"There is always someone around to support him."

Regarding his giftedness, in addition to him taking maths with Grade 11, where he goes with his learning assistant, Student E is enrolled in Mawhiba, which is part of Rahhal, a programme for gifted students set by KHDA. He is also a high performer in literacy, and his parents asked if he could participate in the literature festival of the school; he has written two books. He is also a high achiever in science, but the school is worried about exhausting him and accelerating the science course too. However, whenever there is an external competition, the school asks his parents to accompany him because it is not convenient for a teacher to go out with one student only.

As for the stakeholders involved in supporting Student E, his parents are quite involved, but they cannot keep up with him because of his case. For his teachers, the school looked carefully with whom to place him and worked on establishing a positive relationship between Student E and his teachers. For

example, for his wellbeing, the maths teacher of Grade 11, who is the Head of maths at school, met him at the beginning of the year and offered him a scientific calculator. Even his classmates in Grade 11, they came to visit him in his class. The Inclusion team is also involved with him in order to make sure of his social-emotional stability. Moreover, the school informed the KHDA about his case and IB to see how they could best support the students.

However, a significant challenge faced by the school is that he is self-taught through YouTube. Thus, he learns what he is interested in without covering the curriculum needed.

“But I suppose the biggest issue for him is because he’s self-taught, he’s learned based on interest. ... there are huge gaps in his knowledge. And so that’s what we have to try and backfill. And while he’s really strong in some areas of maths, he tries to skip all the steps that you would normally learn on and how to get there.”

As Student E is now in Grade 3, the Head of Inclusion and Wellbeing is concerned about the next step for the coming years.

“What we’re going to do is as he gets older, he’s currently doing grade level maths. So what happens next year? Do we then take him to grade 12? He’s doing IB coursework and then what happens after that? He’s going to start university coursework. So it’s kind of trying to put him on an accelerated programme where he’s getting credits for university to potentially graduate.”

To explore how Student E learns, the researcher observed him in an English lesson. Unlike other observations, this observation was of only a part of

the lesson; then, he was interviewed by the researcher with the support of the Head of Inclusion and Wellbeing. Even though he was sitting in a group, he was writing a plan of a story individually, as per section B of the observation. His handwriting was big while putting much pressure on the pencil. Regarding section E of the checklist, the learning assistant was sitting by his workstation that he did not use during that period. The station was organised with his timetable, copybooks, stationery, and drawings. As the researcher learned from the Head of Inclusion and Wellbeing, Student E has an imaginary character called “The Captain,” so also in his workstation, there was drawing of a flag, a map, and soldiers of his own imaginary country. The map was divided into states or provinces. This is beyond imagination; there is also apparent creativity in his work and use of colours. Such information was written in both section D and section F of the observation checklist.

As he was writing, the Head of Inclusion and Wellbeing asked him to explain his work. His answer showed explicit criticism of his work, and this implies the low level of self-confidence and perception as per section D of the checklist. This was also shown in the interview with him. There has been no eye-contact between him and the researcher and the Head of Inclusion and Wellbeing. As his social skills are weak, the researcher felt that he got easily frustrated throughout the interview. When the researcher simply asked him what subjects he likes at school, he replied:

“I like maths but it’s difficult, it’s very difficult. I don’t know. I like English. I am also writing books.”

He paused then continued saying:

“I go with Grade 11 students and I have a scientific calculator. My maths teacher is cool.”

The Head of Inclusion and Wellbeing asked him about the books he said he was writing:

“I forgot about what. They are not good enough; they are not perfect.”

The researcher proceeded by questioning him about his future career:

“I want to be architect to build a tilted tower.”

He even tilted his pencil, demonstrating how such a tower would look like. The researcher asked him to elaborate to check if he wants to build a tower like Burj Khalifa; he replied:

“No, like Pisa, not a tower like Burj Khalifa²³. Oh! I was told that living there is very dangerous.”

The researcher was shocked by the reply showing Student E’s general knowledge about both Pisa tower and the danger encountered from living in such a titled tower. Unfortunately, the interview with Student E was short due to his case and his brief answers.

To proceed, after asking for his permission, the researcher took pictures of his maths copybook. Unlike his big handwriting in English using his pencil, his handwriting in math is smaller and softer using a black pen in Grade 11 level of math. The researcher did not want to take a picture of his English work not to interrupt him. The images 4.4.3, 4.4.4 and 4.4.5 below show the advanced level of

²³ Burj Khalifa is the tallest attraction and most famous tourist attraction in the United Arab Emirates.

mathematics whereby a grade 3 student is studying the cubic regression, a chapter that high school students struggle with.

Images 4.4.3, 4.4.4 and 4.4.5 Sample of Work of Student E

Mode \rightarrow Most frequent
Median middle #
Range 6-5

x	f	f.x
2	1	2
3	2	6
4	2	8
5	2	10
6	3	18
	10	44

$\text{mean} = \frac{\sum f.x}{\sum f} = \frac{44}{10} = 4.4$

Standard dev

x	(x - \bar{x})	(x - \bar{x}) ²	F (x - \bar{x}) ²
2	-2.4	5.76	5.76
3	-1.4	1.96	3.92
4	-0.4	0.16	0.32
5	0.6	0.36	0.72
6	1.6	2.56	7.68
		10.8	21.76

$\frac{21.76}{10} = \frac{12}{5} = \frac{144}{25}$

$\sqrt{\frac{144}{25}} = \frac{12}{5} = 2.4$

Cubic Regression
Exercise 6H

a) done on GDC

b) $4 + 25m$ (used GDC to analyse)

c) done on GDC

d) R^2 value is closer to 1 than on cubic
 \therefore cubic regression is best.

done with help of teacher

Quadratic Regression

coefficient of determination R^2 high \rightarrow means reliable

low \rightarrow not reliable

moderate 50

reliable 0.995

$y = ax^2 + bx + c$

Pages: 254 - 255
246 - 258

To wrap up, Student E tends to be provided the necessary support regardless of all the recognised challenges that are forecasted for the future. However, this is the only identified case of twice-exceptionality in this school. As there is no concise and consistent system for all twice-exceptional students, the

continuity of this success is not guaranteed, whether to Student E or other future identified twice-exceptional students.

4.2.9 Schools without Twice-exceptional Students

Unlike the schools which have twice-exceptional students, School A and School C participated in the study due to a request from a friend or acquaintance that the researcher had in the schools. In other words, they would not have participated without the presence of these people because they feel that the study does not include them.

For schools which do not have any twice-exceptional students, they were asked about the factors hindering them from having a supporting system for twice-exceptional students and potential programmes to be used in case of identified cases in the future.

For School A, the Head of Students Services, and SENCO explained to the researcher that she was still not convinced that twice-exceptional students need to be supported as a different category of students.

“Well, the world hasn’t convinced me that that is a necessary thing to do. Does it make any difference to my differentiation, my treatment of the whole child, more monitoring of their well-being, the monitoring of their progress?”

In contrast, School C highlighted the different requirements that the KHDA framework expected from schools inhibiting them from supporting such students. Thus, schools and educators cannot find the time to support these twice-

exceptional students in specific, mainly because the KHDA does not yet demand it.

“A school has many perspectives to focus on when it comes to inspection. Also, teachers have many things to do, many tasks and many students to teach.”

Apart from the KHDA, in order to improve or support twice-exceptional students, she stated that the school needs to raise awareness of its staff. As a result, they would know how to help these students. In other words, the school requires people who are specialised in twice-exceptional students.

“We need to raise awareness of our staff. They need to learn about it in details. Everyone from teachers, psychologists, heads of sections should help in identifying these students to help them more.”

4.2.10 Policymakers

As explained in previous questions, the KHDA does not have any policies or frameworks for twice-exceptional students. Thus, they do not require schools to identify or support these students. However, if through the self-evaluation schools report such cases, the inspection team would look at the cases in detail to see how the school caters to their needs.

“If reported, we look at each case in depth. We look at the list of students, we have leadership, we have parents’ meetings. We look at the provision in class at all levels.”

Such a statement confirms what some of the school interviewees discussed with the researcher. However, if the cases are not reported as some schools, the

KHDA does not follow-up on twice-exceptional students' learning. Moreover, until today, the evaluation of the gifted and talented school practices is not shown as a separate paragraph in the inspection report as the Inclusion does. Thus, if the KHDA is not yet reinforcing gifted and learning practices, it will not focus on reported twice-exceptional students in evaluating schools.

Regarding Hamdan Foundation, even though they do not have registered cases of twice-exceptionality, there are few cases reported by the representative as mentioned explicitly and implicitly before. However, the Foundation does not support twice-exceptional students as gifted students who have disabilities. Instead, they support such students based on their giftedness only.

“We just cater students based on their abilities. We might have some cases with no clear disabilities. We have students with dyslexia or emotional disturbance but clearly twice-exceptional students.”

In addition, she stated that there are counsellors who could guide parents and students in case they need it. Nevertheless, these counsellors are not specialised in twice-exceptionality or disabilities.

“We do not have a team for disabilities, but we have a counsellor for guidance, but nothing done for specific disabilities of the children. For example, we do not treat or support dyslexia, we do not a specialised team.”

In conclusion, to answer Research Question 4, results show that schools that have twice-exceptional students are providing support to twice-exceptional without any specific frameworks or guidelines. Based on interviews with inclusion personnel, different approaches are used by schools that relate to students, case by case. Some schools work on deficit alone then develop giftedness while some

others try to work on the two together. Interviews with twice-exceptional students show how much they struggled in order to receive the needed support because of their misdiagnosis or late identification. Class observation showed part of the characteristics of the students, along with a glance at the support programmes provided to them in class. Furthermore, their opinion about their deficits and giftedness has been communicated to the researcher whenever possible. In contrast, policymakers confirmed that they do not have any support guidelines for twice-exceptional students, and they do not reinforce schools to do that in case they have such students.

Research Question 5: What are the suggested best practices recommended to support the education of twice- exceptional learners in Dubai?

In Research Question 5, the researcher aims to suggest some practices and strategies in order to support the education of twice-exceptional students in Dubai. Semi-structured interviews with all inclusion personnel, policymakers, and twice-exceptionality experts are used in order to obtain an answer to this question.

4.2.11 Dubai Schools Inclusion Specialists

Table 4.5.1 Name of the Schools and Position of Inclusion Interviewees

School	Position of the Interviewee
School A	Head of Students Services and SENCO
School B	Head of Inclusion
School C	Head of Primary Section
School D	Head of Inclusion
School E	Secondary Head of Inclusion
School F	Head of Inclusion and Wellbeing

Table 4.5.1 shows the names of the schools and the position of the interviewed inclusion specialists in Dubai. All the schools which participated in the research had similar requests except School A. For School A, the interviewee requested to be convinced and persuaded about the need to support twice-exceptional students. As mentioned before, her school is an elite school was that students succeed at university regardless of their ability or disability. Her approach shed light on the power relationship that exists between her and twice-exceptional students. In simpler terms, if persuaded by someone like the researcher that twice-exceptional education requires different education, she shall support the needs of such students. The following extract from the interview reflects how she blocked the researcher's attempt to collect data for the study. For sure, at this stage of writing the thesis, the researcher cannot influence the participant, but through sharing the results of this study, she attempts to do so. If the researcher did not have an intermediary to arrange the interview, she would not have participated in it.

“I think you would need to convince me or people that it's something that we would need to know about because this is the first time, I've heard the phrase when you've written to me. I've been teaching nearly twenty-five years that hasn't come up. And the children here, even with additional needs, they do very well. They're getting exceptional results. So you would first need to persuade me why I would need to know about twice-exceptional, I guess.”

In contrast, other schools were involved and sought change for the sake of twice-exceptional students. As for the Head of Inclusion of School B, he asked for

awareness workshops, just like the Head of Inclusion for School D asked. But, the Head of Inclusion in School B proceeded with a request to include this category of students in the KHDA special needs framework. Similar to School B, the Secondary Head of Inclusion of School E urged for a policy from the KHDA or Ministry of Education to explain how to deal with these students. The Head of Primary Section in School C called for a conference of experts to explain how to educate twice-exceptional students, along with structuring a programme specialised for these students. Lastly, the Head of Inclusion and Wellbeing of School F highlighted that at first, the thesis data collection process had been a first step to raise awareness for some schools. As a second step, this research showing different practices could be submitted to the KHDA in order to make a change in its framework to support the education of such students.

4.2.12 Dubai Policymakers

According to KHDA representative, the UAE wants always to be innovative. If twice-exceptionality education becomes a priority for the country, it will be shared by all forms of media enhancing twice-exceptionality awareness. To make a change in policies, it is essential to reach out to the executive council in charge of any new policy. She also explained how change could happen based on the Inclusion model of Dubai.

“I will relate it to Inclusion strategy as a model. We have the outcomes of our strategy for every year for 3-4 years, benchmarking internationally, modifying it to Dubai context, using different indicators, looking at our schools in terms of practices, then developing some kind of policy setting a

common language for all of Dubai. At least, this should be done to start with.”

Furthermore, the KHDA has the flexibility of the supplement added to the Ministry of Education DSIB framework. Thus, if Dubai wants to reinforce schools only in Dubai to support twice-exceptional students’ education, it will have to release guidelines in the supplement. Issued by the KHDA, the latter usually contains Dubai priorities such as Inclusion and the expected education of Emirati students.

As for Hamdan Foundation, its representative explained that the government is in charge of bringing change to the education of these students through developing a programme for the whole country. In other words, it could review, or change prior policies and release new policies, procure intensive training for teachers, develop national indicators for Emirati twice-exceptional students. Recognising twice-exceptional students may require intensive support, depending on their disabilities, that Hamdan Foundation does not have, she proceeded, saying:

“We can recruit expert, qualified and specialised people in the ministry and in our centre. Sometimes, a child may be severely disabled but gifted. So, he needs proper support.”

Besides, media should be involved to raise awareness, such as social media. In specific, Hamdan Foundation could have suitable support for twice-exceptionality if they have a budget for that and if it becomes part of its plan.

To sum up, policymakers highlighted the complications of changing existing policies to support twice-exceptionality education. Neither the KHDA nor

Hamdan Foundation has the power to support the education of twice-exceptional education without having it become of the national plan. Moreover, they both emphasised the role that media, conferences, and experts play in raising awareness of twice-exceptional students.

4.2.13 International Twice-exceptionality Experts

Table 5.5.2 List of International Experts

Expert	Country
Susan Baum	USA
Joseph Renzulli	USA
Susan Assouline	USA
Sara Rankin	UK
Eleonoor Van Gerven	Netherlands
Anies Al Hroub	Jordan

As advocates and scholars in twice-exceptionality, these experts discussed with the researcher different practices and strategies that could be used in order to enhance of twice-exceptional students in Dubai. This section is divided into different themes based on the interview, previous interviews with specialists of inclusion, students' interviews, observation, educators' surveys, and other researches. Table 5.5.2 indicates the names of the experts and their country of origin.

Experts' Beginning of Advocacy

At the beginning of each interview, the researcher discussed with experts the beginning of their advocacy movement in twice-exceptionality. Advocacy of

such a cause had two origins for these experts. The first origin is struggling with the education of a twice-exceptional family member, and the second origin is struggling with students who are twice-exceptional as educators. Not far from these origins, the researcher has learned about twice-exceptionality from teaching high school twice-exceptional students.

On the one hand, Professor Renzulli has a twice-exceptional daughter who struggled at school. However, with appropriate support, she earned her doctoral degree in counselling psychology to help twice-exceptional students. He began his advocacy movement using research articles and stories of twice-exceptional students with administrators in the government, school administrators, teachers, and parents at conferences. Similar to Renzulli, who had someone in his family as twice-exceptional, Professor Sara Ranken is an activist of twice-exceptionality. As a faculty member of Medical School in the Imperial College of London, and as the founder of 2eMPower, she had long struggled from twice-exceptionality when she was a student. Based on her position at university, she runs outreaching activities with students at school, inspiring them to join the College. Thus, it was an opportunity for her to start conducting workshops with twice-exceptional students, teachers, and parents related to science.

“...And so, I decided it would be nice to run some workshops specifically for twice-exceptional teenagers.”

Due to her success, she was able to get a grant from the College to making university teaching accessible for students with neurodiversity accessible. Equipment and software were purchased to support these students and faculty in the teaching and learning process at university.

One the second hand, as for Susan Baum Ph.D., she had to convince her advisor, who is Professor Renzulli, that such a category of students exists. Thus, through articles, speaking engagement, and the ability to get grants, she was able to begin to spread the word stating that:

“Yes, these kids exist, and yes, they need something different.”

She proceeded to explain that there the world today started to understand that such students exist.

“There is a global movement not only recognising that brains can be wired differently but on being more focused on strengths, talents, interests, and the gift that the twice-exceptional children bring to the table.”

Similar to Baum, Professor Susan Assouline, as an initial counselling psychologist, used research articles to get federal grants from the government to conduct some research about twice-exceptionality. It was until 2004 that the US government amended the special education regulations to recognise that individuals who have a disability could also be gifted. It was the time for her and her colleagues to obtain a grant to proceed with more research about twice-exceptionality.

“And we got a small grant for that. And so we just started doing that research and publishing our research.”

As an initial primary teacher, then a trainer of gifted education to teachers, Eleenoor Van Gerven Ph.D., initiated her advocacy for twice-exceptional students when she designed with her co-worker a twice-exceptionality workshop for teachers. However, this could be achieved when teachers in the Netherlands

consolidated educating gifted students. At that level, they realised that some students are bright but have disabilities and require a different kind of support distinct from gifted education.

“...how you know that are twice-exceptional students, and we want to help you to become a better teacher for them.”

Regarding Professor Anies Al Hroub, who is currently part of the education faculty at the American University of Beirut, Lebanon, he began his advocacy journey in Jordan with twice-exceptionality research, conferences, and training for educators. Many people became interested in this group of students; thus, Professor Anies became:

“...a focal point in the Arab Middle East for twice-exceptional education.”

Experts' Impact on Twice-exceptionality:

In this part, experts shared with the researcher the changes or impact they had brought to the twice-exceptionality field of education. The impact that these experts had brought to the education of twice-exceptional students presents the foundation of the suggested strategies by the researcher.

In Renzulli's Center for Creativity, Gifted Education and Talent Development at the University of Connecticut, Professor Renzulli initiated research about twice-exceptionality with Susan Baum, and Thomas Hebert was on underachieving students, and many of them were twice exceptional. This condition was when the term “twice-exceptional” was not in the vocabulary of people. According to him, by finding an area where a child has a strong interest, he will achieve more than if he does what was prescribed by the Ministry of Education. In addition, with his support, Susan Baum has created a college degree

programme for people who want to study about twice-exceptionality and a school for twice-exceptional students at Bridges Academy in California, with a programme distinct from the government programme. The researcher has taken “Study with Masters” with Baum at Bridges Academy during July 2018 in order to learn how to identify and support twice-exceptional students. Furthermore, Susan Baum’s other change made is, through confirming in research, the characteristics of twice-exceptional students and the support needed.

“...every study and every piece of research I did has confirmed the need to not only help our needy child but also not just try to fix them.”

Apart from influencing teachers, educators, and parents, Assouline added that she was able based on research to influence her colleagues at university. She is also the founder and director of the Belin Blank Center for Gifted Education and Talent Development, including twice-exceptionality in Iowa.

Similar to the previous experts, Van Gerven was able to influence educators through a two-way step process, as she mentioned. In other words, based on training teachers as a founder and director of Slim Educatief, twice-exceptional students were better educated and more understood by teachers.

Regarding Professor Rankin, she conveyed the recent and significant change in the United Kingdom, which till now, does not have any policies for twice-exceptional students. Through the workshops conducted and the support of the Imperial College, twice-exceptional students are being accepted at Cambridge University. Catering for the needs of the Fourth Industrial Revolution, she was able to make collaborations with companies such as Microsoft and Ernest &

Young to hire neurodiverse employees, who are complex thinkers with the support of other universities to run further workshops for these students.

“These STEM businesses recognise that with the Fourth Revolution and artificial intelligence, there is a need for complex thinkers rather than straight-line thinkers.”

She emphasised on the importance of her success of workshops leading to obtain funding to proceed with such workshops to support twice-exceptional students. Such funding was offered by a well-reputed organization such as the Royal Academy of Engineering. Such an example could be applied elsewhere with further determination.

“And the success of the workshops enabled us to get all the funding from the Royal Academy of Engineering to run the workshop we are currently working on.”

Apart from western experts, education in the Arab Middle East is evolving through the contribution of Professor Al-Hroub. Al-Hroub’s research influenced practitioners and government about twice-exceptionality existence. He focused on the identification and supporting programme for these bilingual students, which tend to be different from other countries.

Challenges in Twice-exceptionality Education

In this section, the researcher explored with the experts the challenges they encountered throughout their journey. From these challenges, the researcher can forecast the challenges that she may face in setting the strategies to enhance the education of twice-exceptional students in Dubai.

According to Professor Renzulli, when he started research to prove that twice-exceptional students do exist, the topic was new and not clearly defined. Thus, it was difficult for him to get research grants to support research in that field. However, nowadays, a big challenge is to create greater awareness of the field and to develop high-quality teachers for twice-exceptional students. For him, Bridges Academy, led by Baum, shall be helpful to train teachers and support these students.

“Many teachers do not know what to do, and they still focus on the deficit rather than the strength or the interest.”

As Professor Renzulli discussed, Baum explained the difficulties faced at the beginning of the journey when they believed that a child could be both gifted with disabilities.

“Nobody believed that these children existed and that they did exist; they would say you cannot be gifted and have a learning disability.”

Currently, the biggest challenge is that educators look at these children as if they need to be fixed or repaired. This is not the approach to be used with twice-exceptional students. Even though twice-exceptionality is recognised in the USA, she explained that public schools are not able to support these children adequately.

“The way the public-school system is organised and even the way we deal with special attention in this country with an individual educational plan called IEP, there is no place anywhere for achieving one goal on talent development. They do not know how to serve these children properly.”

Regarding Assouline, the beginning of her path in twice-exceptionality research was challenged by her colleagues in the school of education. Nevertheless, this challenge still exists until now. In other words, her colleagues till today are not convinced that twice-exceptional students exist as a separate heterogeneous group.

“...they don’t seem to really have a sense as to know that this actually exists.”

Another challenge that exists today is that there is a gap between research and practices in class. In simpler terms, research about twice-exceptionality still cannot aid classroom practices.

“The biggest concern is that there’s not necessarily a lot of bridges between what’s happening in the research arena and then what needs to happen in the classroom.”

Hence, she highlighted the need to proceed with further research about intervention in class with twice-exceptional students.

“I think we have a pretty good sense as to the best way to describe students, but we really need to do a lot more research about intervention.”

Concerning Van Gerven, at the beginning of her journey, she struggled with the ability of people to teach without being registered. Furthermore, there were no strict laws or policies about who could teach.

“The most complex challenge is that in the Netherlands, everybody can call himself or herself a teacher-educator without having the registration to become or to be a teacher educator.”

Furthermore, she iterated many times in the interview that there are several wrong assumptions and stereotypes about twice-exceptional students. Thus, through her training, she had to clear out the stereotypes that teachers had about these students.

“They’re using a lot of stereotypes. A saying is that if we find the solution for one child, you have a solution for all the children, and then the main challenges is that there is no recipe for success.”

Besides, with the concept of inclusion, teachers feel pressured as they are expected to do a lot. Furthermore, when it comes to twice-exceptional students, teachers could feel helpless. The following statement implies that Van Gerven deeply understands with sympathy for teachers’ demanding position.

“...I have to divide my attention over 32 kids. They’re not only gifted, but they also may be twice-exceptional, they may be not exceptional at all. They may have dyslexia or they may have problems at home. So, dividing their attention is a problem.”

As a novice field in the UK, Professor Rankin’s main challenge, for now, is that there is no provision for twice-exceptional students in the UK. However, she feels lucky to get grants to conduct such workshops for twice-exceptional students in science.

Looking at the challenges that Professor Al-Hroub had faced at the start of the journey, they are not different from Renzulli, Baum, and Assouline. He struggled with the conceptual challenge with educators and parents at the beginning.

“Many did not understand the coexistence of giftedness and disabilities in the same individuals. That’s something beyond their understanding because they’ve not been taught.”

Additionally, dealing with twice-exceptionality seemed to be similar to curing someone for illness, as per his words. So how can people talk about being gifted if they have dyslexia. Moreover, the lack of experts and teachers is also a problem.

“We’re also talking about teachers to be fully equipped to teach those twice-exceptional. Also, we need to work on attitudes. I would say many parents also don’t know about twice-exceptional.”

As the previous extract from the interview highlights, Al-Hroub elaborated that parents’ attitudes need to be worked on, not only teachers’ attitudes.

Raising Awareness about Twice-exceptionality

Aligned with Research Question 1, the researcher consulted international experts about the way to raise awareness about twice-exceptionality in Dubai. The aim is to transform the education of twice-exceptional students in the emirate.

Based on Renzulli’s experience about advocacy, he clarified that it should start with raising awareness. In this part, the researcher discussed with different experts the process needed to raise awareness of both policymakers and educators.

Renzulli specified that raising awareness apart from his research and conferences, it is not his area of specialisation, whether it is for teachers or policymakers. As for Baum, she explained that these students, if educated as they should, they would bring money back to the country. Thus, policymakers should

understand that any funds given by the government would be beneficial for the whole country. She also suggested finding twice-exceptional adults in the community to speak to policymakers about their experience at school. In addition, media could be used to raise awareness for both policymakers and teachers. Speaking about the teachers, she claimed that:

“I think that not only don’t they know who they are, they really don’t know what these children need and how best to teach them.”

So, teachers need to see examples of teachers who are supporting twice-exceptional students. Success stories of teachers need to be shared with other educators. Furthermore, awareness shall be enhanced by giving support and training.

Similarly, Assouline recommended the same proposition of Baum, which is having twice-exceptional students share their stories along with their parents to reach policymakers.

“Well, if you’re in a position to have twice-exceptional students tell their story. That’s always the best. It’s having young people have their voice and parents as well. Have them talk about the impact of being gifted and having a disability and how intervention can help.”

Through listening to students’ voices as well as parents, policymakers would consider legislation, and even it takes time.

“This took us a lot of time in the USA as I said before.”

Moreover, she suggested searching for twice-exceptional learners among policymakers. This way, sharing their experience would be helpful.

“...you have people who are part of the team for setting policy, who have their own experience, that can be really helpful.”

As for educators, Assouline’s suggestion was not far from Baum’s. Raising awareness is done through training, research conducted, and experts’ support.

“There are experts who are also providing information to them to help them understand that there are a range of abilities in their classrooms.”

Even if educators did not learn about it through their pre-service education, training would help them earn the required knowledge.

“If they didn’t get that when they were pre-serviced educators, then you have to slowly build that up while they’re currently working in schools.”

From a different lens, Van Gerven suggested policymakers to see what they need in their economy and based on that they should seek for talents. During the interview, she picked the example of computer programmers while implying their characteristics of the needed talented. In other words, not anyone could be a computer programmer.

“What do you need in your society? If you need a lot of computer programmers, you might prefer to work with students who have the ability to think rigidly and stay focused on one subject, etc...”

Based on the example of computer programmers, she elaborated her suggestion based on giving examples of how different types of twice-exceptional students would benefit society such students with ASD.

“And that being said, maybe you could use some strengths of gifted

children with ASD for developing, educating or especially computer programmers.

Apart from the computer programmers that a society might need, she chose creative thinkers. For such a post, a twice-exceptional student with ADHD could have required qualifications.

“If you need a lot of creative thinkers because you have a lot of complex issues and a broad perspective, people are able to shift all around every five minutes. You may want to use some of the strengths of gifted students with ADHD.”

She also insisted on looking at these students from the combination of their strengths and weaknesses, not only from their weaknesses. Apart from the enumeration of general examples, she shared with the researcher how Philips business in the Netherlands employs twice-exceptional adults in specific.

“They are called Phillips, and they invent all kinds of things, on medicine, materials, computers, etc. and they have a laboratory and invention, and they have basically an inventors’ plant where they give people who are highly creative and highly rigid thinkers and sometimes even lack social skills to be focused, to stay focused on their own subjects. They use the strengths of twice-exceptional people on that plant because everybody who works there is gifted.”

She proceeded by providing three main recommendations about how to raise policymakers’ awareness about this category of students based on the long journey. Firstly, being gifted does not prevent someone from having a disability.

“My first recommendation would be that the fact that you’re gifted does not prevent or does not work as a kind of a magic shield for also the opportunity of having a disability.”

Secondly, raising awareness should relate to the emphasis of strengths rather than weaknesses. Otherwise, any given society would be wasting and losing from its people’s potential.

“The second thing is that if you want to miss a lot as a society and you want to miss the use of people’s strengths, then you should probably look at the weaknesses. So, what I would recommend raising awareness is to ask if we can find strengths in all our students and if we see different opportunities for our gifted students as well.”

Thirdly, she focused on developing twice-exceptionality awareness without any gender discrimination or difference. This has been a problem at the beginning of her journey in the Netherlands.

“And awareness for twice-exceptional learners can only be awareness for twice-exceptional learners as long as we create a sex-neutral connotation to the word learners, learners mean it can be a boy and a girl... Therefore, both sexes can have can be twice-exceptional. It can’t be in a society that we ignore what sex and only have attention for only one.”

However, raising awareness of teachers is different from the process of policymakers. Through training, as other experts suggested, teachers need to ask themselves if they have twice-exceptional students in the class. Their task is not an easy as they are in a classroom daily, and they may be exposed to such students. However, to make use of their training, they need to ask themselves the

following questions. This way, they can cater to these students' needs. She should start by questioning herself if she wants to be a better teacher for him.

“Is the student you think is bright and you want to be a better teacher for?”

Then, the teacher has to figure out the strengths and weaknesses of the twice-exceptional student.

“And the second question can be, do you have children who are really bright that show you a discrepancy between different subject fields, so very bright in one subject? And if you think, how could it be that a student struggles in one subject and not another the subject?”

Also, she focuses on the role of the teacher in talking to the student to make him express himself to have him explain any discrepancy between how he thinks and how he performs.

“Or when you see, a student who is really bright as long as you talk to him. If you can hear him talk about whatever, you see a very bright kid, but if you look at his products, you see he's missing something.”

To conclude, she accentuated the importance of teachers being motivated to cater to the needs of twice-exceptional students. Training by itself is not sufficient to have a teacher support the needs of these students without motivation.

“Is there a student for whom you want to be a better teacher? Why should you be any different from all your other colleagues?”

Rankin's perspective about raising awareness of both policymakers and teachers is through using successful people who are twice-exceptional. She used the term “credible role models.” As Baum, Assouline, and Van Gerven explained

twice-exceptional students could contribute to any country's economy if well supported, Rankin proceeded by not only raising awareness of this category of students but also by the advantages they bring to businesses and thus, economy.

“We know that Alan Turing was autistic. And Alan Turing is the person in World War II who solved the Enigma. All these are really compelling arguments that these people are exceptional. You know, it's a strategic thing to have people with that ability to solve problems and come up with very innovative ideas in your business.”

With the support of some businesses, schools, and universities, she is trying to see how best to approach policymakers.

In addition to what other experts explained, Rankin considers training important in order to raise awareness of teachers. She even suggested that neurodiversity training should be included in the basic teacher training courses. As she is interested in science, she stated that science teachers could not support twice-exceptional students due to the lack of training.

“Teachers do not have any training on neurodiversity. That is why science teachers don't, you know, accommodate for them.”

Aiming to raise awareness of policymakers, Al-Hroub proposed to arrange conferences led by experts in this field.

“Arranging conferences of experts in the field is a main contributor for that.”

For him, the role of policymakers is to provide teachers with the training, change their attitudes, and through that satisfy the needs of twice-exceptional

students. Teachers' awareness is shaped by their background, their education, their area of specialization, the practices they are used to throughout their experience. Through workshops and researchers, educators need to be taught how to identify twice-exceptional kids and help them educate them. Furthermore, ensuring pre-service for the teachers is also important.

Identification of Twice-exceptional Students

Matching Research Question 3, identifying twice-exceptional students is discussed. Although challenging, experts shared the age and differences in identifying these students in this section.

Renzulli specified that there is no age or a unique way to identify twice-exceptional students. However, he highlighted the importance of primary teachers in identifying these students.

“I think that many teachers of very young children, primary grade teachers, are often very good at sensing that, quote, “something is wrong,” unquote, with this child as far as his or her learning ability is concerned.”

As for Baum, she also explained that twice-exceptional students are usually identified from early childhood to elementary school. However, she warned about the consequences of the delay in identification.

“The longer you wait, the more damage they become.”

“...these kids usually have some sort of emotional issues that they would not have had if they were identified earlier.”

In addition, Assouline emphasised the differences between the types of twice-exceptionality. In other words, for each type, there is a particular way of identification, depending on the strength and the weakness.

“It really depends on the disability and the talent area. Sometimes you can tell that depending upon the disability very early on and other times it happens much later.”

She also highlighted the importance of the paediatrician in identifying twice-exceptionality at an early stage.

“And you probably would want to work closely with paediatricians because they’re the first ones to see children, you know, when they’re born and when they’re young. And they’re the first to understand what the milestones are.”

Similar to Assouline, Van Gerven seconded her stating that identification depends on the differences in twice-exceptionality. However, she focused more on the type of disability and when its symptoms show. To support her answer, she gave one example of ASD and another example of dyslexia. The ASD example shows its heredity impact. In other words, she implies that parents of ASD children tend to know about it because there is a probability that one of them experienced it.

“For example, if you are gifted but you also have ASD, you can inherit ASD from one of your parents. So, there is a prevalence rate of 60 percent of one of your parents. If you have ASD, it’s highly likely that one of your parents or both of them can have ASD as well. There’s a prevalence rate of

60 percent. So that means that if you have ASD and at least one of your parents has ASD, they probably have experience in life.”

She proceeded stating that if one of the parents has ASD, it will not be considered as a disability until the student goes to school. There, the child will be different from his classmates. In contrast, she explained that dyslexia will not be a challenge before the need of reading and writing at school.

“Now, if you look at the gifted the children with dyslexia. You are born dyslexic. You’re not made dyslexic. You’re born dyslexic. But it only becomes a problem in an environment and in the social situation and a social club where reading and writing are required. if you grow up in a society where nobody can read, and nobody can write, there is no dyslexia.”

Thus, she also proceeded by stressing that the context of its society explains disability. In other words, disability is socially constructed if someone fails to be like others at specific socially required skills. The following example was used to clarify her argument.

“But if hunting and using a bow with an arrow was very important in that area and if you have a problem with your motor skills and your eyesight, then you will have a problem in that society. So, it does not depend on the age but on the society or your educational system calls on your weakness.”

As for Rankin, she stated that it is not her area of expertise.

“I don’t know. That’s beyond my expertise I would say.”

Related to Al-Hroub, he emphasised the importance of knowing how to identify and use some tools for identifying such students in the first language of the child. This results in recognising both the areas of weakness and strength for any twice-exceptional student.

“I think anyone who should work with twice-exceptional should have the basics of at least how to identify how to use some identification tools in the first language of the kids’ language, knowing about their strengths and weaknesses, knowing about the kind of abilities and deficits you’re trying to recognise.”

Even though it varies from one type to another, identification is essential in order to know about the type of intervention that is needed for these students.

“It varies from one type to another. A gifted student with ADHD is different from ASD. Also, they may have some difficulty or problem that are not identified like hypertension. We need to know about them for intervention, even before joining the school by specialists if possible.”

However, at the level of identification, it is essential to know when to start using the “twice-exceptional” label because the deficit may show at a certain age while the strength may show at another one. In other words, twice-exceptionality needs to be confirmed before labelling a child gifted, disabled, or twice-exceptional.

“In general, identifying their potential also could happen in the third grade or even in the fourth grade.”

He also stated during the interview that identification could take place before fourth grade depending on the gift or challenge.

“It could happen in grade two or grade three depending on their type and level of deficit and their ability. So, we need to be a bit cautious about labelling them.”

In other words, twice-exceptionality needs to be confirmed before labelling a child gifted, disabled, or twice-exceptional.

Support of Twice-exceptional Students

Following Research Question 4, experts shared with the researcher how twice-exceptional students need to be supported in this passage.

To begin with, Renzulli also apologised because it is not his specialization. He advised the researcher to discuss this topic with Baum. Thus, Baum iterated the statement that supporting twice-exceptional students is not fixing them.

“On our own research, we’ve said over the years has made me, I’m convinced, that if we just try to fix these children, we will lose them.”

Furthermore, as a prerequisite to support these students, it is necessary to make sure of their wellbeing. In other words, they should feel safe, not physically, but psychologically. At that stage, the support offered to them could be successful.

“...it needs to make sure that the children feel psychologically safe. If they are not emotionally available, they don’t feel safe.”

“...any programme should make them feel safe and make sure they’re not humiliated.”

She also stressed that programmes should respect and praise their giftedness.

“...they need to have a curriculum that honours the fact that they’re gifted and smart.”

Based on her research, supporting students should be based on “dual-differentiation,” not an IEP or ALP as schools use.

Looking at Assouline’s perspective, she stated that there are various programmes based on students’ needs. On the one side, understanding the different types of disabilities is crucial in order to accommodate these students. She elaborated by stating the number of disabilities.

“This goes back to having a better understanding of what the various disabilities are. There are all different kinds of disabilities in the United States. We have from an educational perspective. We have 13 different categories that impact students in school. So, the disability really makes a big difference in terms of the accommodations.”

On the other one, regardless of their area of difficulty, paying attention to developing the talents that students have is also compulsory for a successful supporting programme for twice-exceptional students.

“And the same would be true in terms of the talent area. So if you have a student who has a lot of capability that seems to be struggling, then you need to figure out not you, but you know that there needs to be an attempt to try to better understand why that student is struggling.”

Furthermore, Van Gerven highlighted that there are many groups of twice-exceptional students. Thus, no programme works for all of them.

“So we go on twice-exceptional with so many subgroups, and we have to keep in mind that each subgroup is a group of their own and we also have to keep in mind what works for one of them does not have to work for all of them.”

However, there is one approach for a programme that is a talent-based or strength-focused approach without focusing on the weaknesses of the children.

“But you also have to accept that there may be limitations to what you can ask on the one hand and challenge and opportunities that you can ask on the other hand. So every programme you design for gifted learners, and twice-exceptional levels should be talent-based and strength-focused.”

In a more structured process, she established how teachers could design a customised programme for each one of the twice-exceptional students. The following steps are needed in order to support twice-exceptional students.

“The first step is teaching your teachers how to teach gifted students in general. The second step is to teach your teachers to differentiate among gifted students. The third step is to keep in mind that giftedness does not mean that you have equal strength in all subjects. The fourth step is to ask if you see students with specific strengths and specific weaknesses in specific subjects. And if so, how we can set up custom-made provisions.”

As for Rankin, she proposed having universities involved and setting centre similar to 2eMPower to provide the support for twice-exceptional students.

Furthermore, such as the USA, the UK can set schools for only twice-exceptional students.

“I would suggest one way which is trying to get universities involved, setting up something similar to 2eMPower the power that we have.”

Not distinct from what Baum, Assouline, and Van Gerven focused on, Al-Hroub accentuated that there is no one category of twice-exceptional students. He proceeded by stating some examples as follows.

“So, each type should have its own. So, for ADHD, they have their own Applied Behavior Analysis, mentoring their behaviour and their own modification. All this in addition to their high potential. For ASD, we use the multisensory approach. We need to differentiate instructions to develop their strengths and compensate for their deficit.”

Therefore, each type requires a different way of support. In the interview, he shared a potential approach to support twice-exceptional students with ADHD and twice-exceptional students with ASD.

Expert's Suggested Plan for Dubai

In this section, experts suggested a plan or strategy in order to enhance twice-exceptional education in Dubai based on their experience and research. Originated from the transformative research, the section incorporates approaching and convincing policymakers and supporting teachers. In other words, the power relationship transformation is diagnosed throughout this part.

Starting with Renzulli, he proposed to submit to policymakers a brief and powerful document about twice-exceptionality. He proceeded with sharing how to write them based on his experience.

“First thing I sent them is a 600-word article that was in a national administrator’s magazine. I tell them in an email, this will take you five minutes to read and then I call it the hook. And then if you are interested, contact me for additional information. And so that’s the way people get started on something.”

He also recommended finding someone in the ministry of education who is knowledgeable or is interested in learning about twice-exceptional to help approach the main policymakers’ agents.

During the interview, Baum explained that policies are affected by policymakers’ acceptance of the existence of such a group. As a result, the researcher is expected to search for twice-exceptional cases in Dubai in order to work on building a policy based on the experiences of these cases. Furthermore, programmes for twice-exceptional students need to be developed specifically for these students in Dubai. The support of conferences led by experts and twice-exceptional students is also required, along with workshops for educators.

“...hold conferences and meetings of speakers who are experts in the field, as well as people who are twice-exceptional.”

As well, she advised the researcher to discuss with a coach who is professional at establishing policies and an expert in twice-exceptionality in order to see how best to approach policymakers.

“And with projects like this, I kind of see if you want to talk to a coach who has done a lot of work with trying to establish policy in general and another one with the twice-exceptional area of expertise.”

Concerning Assouline, she stressed that there are no shortcuts in the route. In other words, she asked the researcher to understand where Dubai stands in terms of gifted education and where it stands from disabilities. She recommended checking if giftedness and disabilities are not mutually exclusive. To bring a change to twice-exceptional students, building on Dubai’s policies for disabilities and giftedness is crucial. All stakeholders need to be involved in making such a plan to support twice-exceptional students.

“I think disability is probably I don’t think it’s one versus the other. I think if you understand disability from your country’s perspective and the policies that are related to that, then if you can help them also understand that people who are very bright may also have disabilities, that that’s really important.”

Concerning the interview with Van Gerven, she shared her experience and recommended the researcher to follow it. Reaching policymakers is bottom-up, meaning from the students’ needs in the classroom to teachers’ needs, to the school council’s needs until it reaches policymakers who will have to satisfy all the previous needs.

“The best way to reach policymakers is bottom-up. So that’s what we did. We didn’t start top-down with the policymakers here. We started the other way round because it happens often in the classroom: there is a student with a need and therefore there is a teacher with a need, and therefore there is the

school council with a need and, therefore, there is a school director with a need and therefore there is a school board with a need and therefore there are policymakers with a need.”

Without knowing about students’ needs through this process, policymakers will not make any changes.

“But they have to become aware of that. They cannot be aware of that bottom-up. You can’t be aware of need if you’re on top of the pyramid if you haven’t looked down. So we work all the way up to.”

The approach to make policymakers aware is through publishing through different magazine research about how teachers try to educate this category of students.

“We started to bombard all educational magazines in the country with someone who read an article, small case-studies that made teachers aware and how school counsellors become aware. That’s how we build, and it took us 20 years.”

From her perspective, Rankin suggested having allies who are interested in twice-exceptionality. They could be from politicians, businesses, or charities related to disabilities or giftedness. This way, the voice of twice-exceptional students could be heard by policymakers. Consequently, policies may be amended considering these students.

“I think you have to find allies. So, you sort of need to find somebody that has an interest in that area. So, for example, we have a few politicians that are twice-exceptional. So, they make a very good example to use is the original premier of Singapore, who was twice exceptional.”

According to Al-Hroub, any plan to support these students should begin with policy. In this policy, these students should be defined, and methods to identify them should be clarified. Furthermore, present policies could be amended by broadening the definition of gifted and talented, without solely focusing on strengths. Instead, it would show that a gifted child may have deficits. Moreover, identification systems shall be based on the new broad definition. In order to support educators, workshops about twice-exceptionality should be conducted.

“We have to have a broader definition of gifted and talented. This means that it doesn’t only focus on the strengths but only considers weaknesses. Gifted people have potential and deficits. So if you could start raising awareness by broadening the conception of these students. Then they should build a system for identification at schools. Also, they should be giving workshops and conferences about the topic.”

He proceeded by giving different models that could be used, involving parents, teachers, and school administrators. In addition, a multi-disciplinary team could be working on the identification as they encompass areas of strengths and weaknesses.

“This way, we can look at the proper identification model to use. It could be multiple or one dimensional. For these tools to be used, which procedure to follow? This should go through a process involving parents, teachers, school administrators, maybe.”

The researcher shall use all these suggested plans as a basis to propose strategies enhancing the education of twice-exceptional students. The transformation that the researcher seeks to bring is done with the support of experts, educators, policymakers, and twice-exceptional students.

Twice-exceptionality Hindering Factors in Dubai

In this passage, experts identified with the researcher the potential factors that could hinder the development of twice-exceptionality education in Dubai. In this context, the factors that could inhibit the transformation of the education of twice-exceptional students in Dubai.

For Renzulli, he stated that twice-exceptionality education could not be successful without making students discovering the area of students' interest. They need to explore different things in order to learn what they could be interested in. For sure, students would perform better in the area they are good at.

“You need to find out what a student is interested in or might become interested in if we expose them to things that they haven't been exposed to.”

Again, for the second time in the interview, Baum repeated that the environment of Dubai should be one that honours giftedness. She even stated that if Dubai does not have any programmes for gifted, it will not have a programme for twice-exceptional students.

“And if they don't have programmes for gifted, they will never have programmes twice-exceptional.”

Furthermore, it will take time to bring change in the country but not as much as it took her to do that when the term did not exist in research.

As for Assouline, she specified that lack of understanding the need to support gifted students and special education students could hinder the development of twice-exceptionality in Dubai.

“I guess the lack of public understanding of the role of addressing children’s needs to have high abilities and also lack of understanding of addressing children’s needs to have a disability.”

In contrast, according to Van Gerven, three factors could inhibit the development of twice-exceptional education in Dubai. Firstly, understanding that a gifted child could have a disability. Secondly, thinking that gifted students do not need learning as they will do well. Thirdly, if teachers want to support these students, policymakers will do that too.

“The most important factor is knowing that gifted children can have a disability as well. I think number two, a big number two, is called the misconception that giftedness means that you’re all able to do anything without learning, and it turns to gold as magic. So that means that when you see give a child struggle, we think you can’t be gifted. I think number three is the willingness of teachers to make a difference for their students. If teachers want to make a difference, policymakers, in the end, will make the difference as well.”

However, Rankin refrained from answering this question because she is still struggling with the UK system. Thus, she cannot advise about Dubai.

Finally, Al-Hroub explained that the absence of the catalysts of twice-exceptionality could hinder the development of twice-exceptionality.

“All these can contribute to the development of twice-exceptional education. With their absence, it’s negative, and with their presence, it could be positive.”

In simpler terms, if there are no policies at school or government and no trained teachers, twice-exceptional education can be developed in Dubai.

Use of Experts' Models and Strategies in Dubai

For this part, the researcher verified with experts if their developed twice-exceptionality models or strategies could be used in Dubai in terms of social, economic, and cultural context. These models and strategies are used in different western countries but their use in Dubai needs to be verified by the developing experts.

According to Renzulli, he recommended the use of the Enrichment Triad Model. It can be used to support the twice-exceptional student in Dubai, and it has been applied in different areas of the world, including the UAE.

“...we’ve had a great deal of success over the years with this approach.”

In her turn, Baum explained that twice-exceptionality support is a philosophy that could be used with children regardless of their culture. She aims to protect them and establish a proper learning environment. She ended this question by asking to fix the policies that exist in Dubai to build a friendly environment for the learning of twice-exceptional students.

“Know how to fix those policies to build friendly environments for learning, or you will not be successful with this.”

Moreover, Assouline considers that her research outcomes are not specific to the USA. This is why she approved the use of one of her questionnaires to collect data for this thesis. She also explained that talents and disabilities are present everywhere and are universal.

“I mean, that talent and disability are equally distributed across all cultures, across all geographic regions.”

Similar to the previous experts, Van Gerven mentioned that her strategies could be implemented in Dubai.

“Yes. Those strategies all can be implemented in every culture.”

Not different from other experts, Rankin also claimed that her approach could be used in different countries, including the emirate of Dubai.

Unlike what was discussed earlier, Al-Hroub accentuated the importance of adapting the tools to the culture of Dubai and even to the school.

“Of course, it could be done. What is so different about Dubai, relatively to other places such as Jordan. Perhaps, you need to adapt the tools you are going to use to the culture of the country and the culture of the school. In Dubai, there are different schools with different cultures.”

As a result, all these models and strategies developed by the interviewed experts could be used in Dubai. However, Al-Hroub insisted on the importance of adapting all these models to the culture of the schools, not only the culture of the emirate or country.

Advice for the Researcher

In this last section of Research Question 5, the researcher asked the experts for some pieces of advice as a novel researcher in this field. Their advice is crucial for a transformative research, such as this one.

Renzulli advised the researcher to address the ministry of education at first with the research that is conducted in this thesis. Then, she must show them that

these students exist. Perhaps, the government would agree to provide some funds for further research about this topic for Dubai. He also recommended having more research about successful intervention, showing how twice-exceptional students are using their strengths.

“If we can create some research studies that show what might be more successful interventions in getting them to use their abilities and their strengths in a positive way.”

Similar to Renzulli’s last advice, Baum said that as a new researcher, more research should be done on how to support twice-exceptional students.

“We already have multiple sets of common characteristics, but we don’t have enough ideas that say “I tried this and this happened.”

Looking at Assouline’s advice, she recommended that the researcher must know the giftedness and special education policies of the country. Furthermore, the researcher needs to identify the decisionmakers and other involved stakeholders to know how to approach them.

“... but understand kind of the landscape in terms of who the decisionmakers are, who the stakeholders are so that you can figure out who you need to connect with.”

Concerning Van Gerven, she provided the researcher with three pieces of advice in addition to the basic teaching skills. First, it is essential to know about giftedness and gifted education. Second, there needs to be a solid knowledge of disabilities. Third, there is a need to combine these two points to form a third person who is twice-exceptional; in this context, one plus one is not two.

“You have to have knowledge of giftedness and gifted education in general. Secondly, you have to have the knowledge on exceptionalities as in learning disabilities, behavioural problems, neurodiversity, etc...And thirdly, we have to be able to combine those three elements, because we always say one plus one equals three, being gifted or being twice-exceptional is more of being gifted. It’s more than having a learning disability.”

As it is not an easy journey, she proceeded by stating that the researcher should take time in twice-exceptionality while writing many articles about twice-exceptionality.

“I think the work that you’re doing now is important or may be helpful if you have positive case studies, I think those things help. Keep on writing articles as you are doing now.”

At a different level, Rankin guided the researcher to link and pair with charities that relate to disabilities to make our “combined voice” heard by policymakers. As a result, the researcher could build a network and connection to make stakeholders about twice-exceptional students. She gave examples of celebrations and associations that exist in the UK, wondering if such celebrations and associations exist in Dubai.

“Link-up if you have any charities like we have Dyslexia Association, Dyspraxia and ADHD Association. So linking up with those charities say, I think you have to do a combined voice. One of the things that you could really advertise is a really fantastic thing is to get schools to sign up for neurodiversity celebration weeks.”

Lastly, Al-Hroub started by mentioning that it is challenging. Furthermore, research on twice-exceptional students is considered as a study of two persons, which makes it complicated.

“Research is not similar to some others because you’re talking about people who have like two different versions, two different copies. So as if you’re talking about or maybe dealing with two people instead of one when assessing, identifying and teaching those kids.”

He also recommended working on reaching all the unidentified twice-exceptional students, even though it is not easy.

“...it’s not easy because you need to have some experience and practice in identification.”

Besides, he claimed that the researcher has two roles. First, identifying cases of twice-exceptionality is one role. Second, helping teachers educate twice-exceptional students is another.

In the light of research question five, school inclusion specialists in Dubai, policymakers in Dubai and twice-exceptionality international experts suggested different ways to enhance twice-exceptionality education in Dubai. Raising awareness of educators and policymakers was discussed. Furthermore, the ways to identify and support twice-exceptional students was explained from different perspectives. Moreover, different strategies or plans to approach policymakers and educators have been explored, while considering the factors that could hinder the development of twice-exceptionality. Moreover, experts’ research strategies and models were examined to check if they could be used in Dubai. Finally, experts

offered the researcher different pieces of advice about this field of education and research.

Overarching Research Question: How could the educational practices offered to twice-exceptional students be improved in Dubai based on the current educators and policymakers' awareness, perceptions and provisions?

The answers to the five research questions provided a complete answer to the overarching research question. As a transformative research, this thesis aims to provide a change in the education of twice-exceptional students in Dubai. Firstly, the researcher succeeded in analysing the awareness and perceptions of educators and policymakers about twice-exceptional students. Secondly, the researcher was capable of finding the identification processes and provision programmes that are used to cater for the cognitive and non-cognitive needs of the twice-exceptional students. Finally, she was able to gather suggestions from different stakeholders including experts in order to formulate enhancing strategies for the education of such students. Throughout these findings, the researcher aims to suggest a roadmap to change the educational practices used for twice-exceptional students in Dubai as the overarching question seeks.

4.3 Triangulation of Data

As mentioned in chapter 3.4.2, this transformative mixed method design offers two types of triangulation: methodological and data. Due to the richness of the data derived from the methodology strands, the diversity of the participants, documents, protocols, and instruments, the triangulation of data is necessary. For the research questions stemmed from

the overarching question, findings formed by the data were found similar, controversial, or complementary.

For the first and second research questions, designed to assess the awareness and perceptions of educators and policymakers about twice-exceptional students in Dubai, all strands indicated that educators and policymakers have limited awareness and misperceptions of twice-exaptational students. On the one hand, surveys and interviews with educators and policymakers showed a discrepancy among educators and policymakers' awareness and perceptions of these students. For example, some educators knew the meaning of the term "twice-exceptional" while others did not. An additional example is that during interviews with inclusion specialists, elaborations about twice-exceptional students with school A showed that she did know what these students were. It is critical to highlight that the number of identified twice-exceptional students in these schools is problematic because it is too low. On the other hand, observations and interviews with twice-exceptional students indirectly revealed the limited knowledge that educators and policymakers had because there are no clear guidelines to cater for their needs. Even though these observations and students' interviews were not designed for research questions 1 and 2, their findings highlighted practical gaps and inferred the lack of awareness and misperceptions impact on such students.

For the third research question, aimed to determine the identification process used for twice-exceptional students, the triangulation of data indicated an obvious contradiction among educators. To begin with, surveys showed that educators were confused firstly about the presence of such a system in their school, and secondly about what such a system implies. As for the interviews with inclusion specialists, the confusion was accentuated by having some schools claiming to have such a system while referring to external agents such as school

F. Besides, the interviews with twice-exceptional students showed how much these students struggled with misidentification and delay in identification.

Looking at the fourth research question, focusing on the provision programmes used by schools in Dubai for twice-exceptional students, the triangulation of data showed provision programmes for twice-exceptional students are asynchronous in Dubai. In other words, none of the participating schools knew how to support the cognitive and non-cognitive needs of such students except School F. In the latter school, the evidence of acceleration is subject of strength was shown in document analysis. Nevertheless, such a school faced many challenges to maintain its support to the only one identified twice-exceptional student; which is yet controversial as a number of identified twice-exceptional students. Moreover, apart from their inability to identify twice-exceptional students correctly as research question three specified, schools lack the system, the resources, the personnel, and the expertise required to support the social, emotional, and educational needs of these students.

The triangulation of data demonstrated that data obtained from surveys, interviews, documents and observation portray the weak provision programmes offered to any of the identified twice-exceptional students. As for potential twice-exceptional students to be identified in the future, there is no clear process implemented ensuring the efficient satisfaction of their needs.

Lastly, as per the fifth research question aiming to structure strategies to enhance the education of twice-exceptional students, the triangulation of data served to bring together different suggestions for each one of the involved experts. Such a research question relied on experts' interviews while considering the context of participating schools and policymakers. Therefore, the triangulation of data was complementary as experts had similar opinions in general despite some

controversial advice. Examples of controversies are the proposed identification system as some experts such as Al-Hroub and Baum suggested the application of their own distinct models. At least, such models were empirically formulated for twice-exceptional students. Regardless of these controversies, the researcher had to form recommendations in chapter five that best serve the context of Dubai, considering the participating schools, policymakers, and official documents.

Chapter Five: Discussions, Recommendations, Suggestions for Further Research and Conclusion

5.1 Overview

From an equity perspective, this study aims to investigate what private schools in Dubai offer to twice-exceptional students in order to suggest strategies to enhance their education. Thus, the researcher examined educators' awareness and perceptions of twice-exceptional students in the emirate of Dubai, along with the identification and support practices provided to cater to the needs of these students. Founded on the social justice paradigm, this transformative mixed method research targeted to answer the following research questions:

Overarching Research Question: How could the educational practices offered to twice-exceptional students be improved in Dubai based on the current educators and policymakers' awareness, perceptions and provisions?

Out of the overarching question, here are the research questions.

Research Question 1: To what extent are educators and policymakers aware of twice-exceptional learners in Dubai?

Research Question 2: What perceptions do educators and policymakers have of twice-exceptional learners in Dubai?

Research Question 3: What are the identification processes used to recognise twice-exceptional learners in Dubai?

Research Question 4: What are the provision programmes offered to twice-exceptional learners in Dubai?

Research Question 5: What are the suggested best practices recommended to support the education of twice-exceptional learners in Dubai?

Through responding to the research questions listed above, the researcher proposes and analyses a set of recommendations to improve the education of twice-exceptional students in Dubai. In order to ensure the success of the transformative research paradigm, this chapter aims to enable social change in the education of twice-exceptional learners (Mertens 2007; Sweetman, Badiee & Creswell 2010). The set of strategies recommendations are addressed to the Ministry of Education, KHDA, Hamdan Foundation, and educators as they should all contribute as a team to the education of these twice-exceptional students. As the researcher sought to sustain a high level of ethical standards throughout the process of this study, different stakeholders should trust the derived recommendations. In other words, as the findings of the thesis collection, analysis, interpretation, and reporting are ethical, the Ministry of Education, KHDA, Hamdan Foundation, and educators could apply the flourished strategies without any hesitation. Further, discussion of findings and recommendations are transdisciplinary because they include consequent facets of twice-exceptionality education, such as the economic, healthcare, social, and cultural impacts.

The discussion of the findings is organised based on the deductive thematic analysis resulted from the research questions in light of the theoretical framework. As there is no literature about twice-exceptionality in the UAE, and limited literature about it in the Middle East, the researcher decided to rely on the themes that are rigorously discussed in the literature review (Braun & Clarke 2006). Even though the inductive thematic approach is considered richer, the deductive thematic analysis is safer for the researcher as she is paving the way for other researchers based on literature (Nowell et al. 2017).

Besides, as a transformative research, one of the themes is related to the advocacy of twice-exceptional education. As one of the success criteria of such a paradigm, the research should be “written with an advocacy stance” (Sweetman, Badiie & Creswell 2010, p. 445). However, as twice-exceptionality is not recognised in any official documents in Dubai, the researcher decided to discuss advocacy of twice-exceptionality as a separate theme, in addition to the advocacy perspective of the study. Thus, the researcher planned the discussion according to the following themes: (1) awareness and perceptions about twice-exceptional students, (2) identification of twice-exceptional students, (3) academic and non-academic supporting programme for twice-exceptional students, (4) obstacles faced in the education of twice-exceptional students, (5) strategies to enhance the education of twice-exceptional students, and (6) advocacy of twice-exceptional students.

5.2 Discussion

5.2.1 Awareness and perceptions about twice-exceptional students:

Even though twice-exceptionality is a new field of research, studies about awareness of twice-exceptionality of educators and other involved stakeholders, such as policymakers, are limited (Foley-Nicpon, Assouline & Colangelo 2013). However, in order to bring change to the education of twice-exceptional students in Dubai, assessing educators and policymakers’ awareness and perceptions is a prerequisite.

Through triangulation, the analysed data disclosed that policymakers and a substantial percentage of educators are not aware of twice-exceptionality.

Regardless of demographics, education system of some educators and the position of the policymakers, they could not define the concept of twice-exceptionality correctly. It is crucial to understand the definition of twice-exceptionality in order to identify, support and monitor the progress of these students (Omdal 2015). Moreover, they did not know the different characteristics of twice-exceptional students.

For the discussion of the survey findings, the initial research findings were compared to this study's findings, despite some changes in the survey²⁴. This study showed that educators in Dubai had a lower level of awareness and different perceptions about twice-exceptional students than the initial research conducted in the USA on a bigger sample size by Foley-Nicpon Assouline and Colangelo (2013). First, educators had less experience and familiarity with all the types of twice-exceptionality than the original research (2013). Such a difference is derived from the absence of laws and policies in Dubai obliging educators to spot and support twice-exceptional students.

Second, educators in Dubai were less familiar than USA educators with gifted education, special education, and twice-exceptionality governmental guidelines. This dissimilarity is due to the relatively new "School for All" initiative of 2010, the absence of a rigid framework for gifted education, and the absence of twice-exceptionality education guidelines set by the federal government of Dubai.

²⁴ The differences in the survey are discussed in Chapter Three as part of the pilot study. The researcher only used the descriptive statistics of the original study findings without the group comparison as it does not match the research questions.

Third, educators in Dubai were less confident than the initial research about their ability to support twice-exceptional students than the former research. As for this discrepancy, it is justified by the absence of governmental guidelines for twice-exceptional education.

Fourth, based on the thesis findings, participants chose classroom teachers and special education teachers more than a gifted specialist to identify and refer twice-exceptional students, in contrast to the initial research, which had the gifted specialist as the most frequent choice. Such a difference points out that there are different perceptions about the roles of stakeholders in the education of twice-exceptional students. This difference could be explained by the KHDA requiring inclusion specialists as part of the school personnel without reinforcing the presence of a gifted specialist based on the different official documents (Dubai School Inspection Bureau 2017; Knowledge and Human Development Authority 2019). This is not the case in the USA, where laws require different personnel in the school for giftedness and special needs.

Fifth, similar to the original research, educators chose academic and social difficulties as the most frequent difficulties faced by twice-exceptional students. The ranking of such factors and other ones reflects educators' bias and stereotypes (Foley-Nicpon, Assouline & Colangelo 2013). Lastly, according to Foley-Nicpon, Assouline, and Colangelo, the primary source of twice-exceptionality knowledge of educators is through on-the-teaching experience, in simpler terms, through their teaching experience (2013). As for policymakers and some educators, they learned about twice-exceptionality through their master's courses, which was the second most frequent choice for the educators' knowledge about twice-exceptionality

(Foley-Nicpon, Assouline & Colangelo 2013). However, this thesis highlighted that educators in Dubai did not have any prior knowledge about these students, while some learned about it through teaching, unlike the original study.

Throughout this research, educators, through interviews and surveys, along with policymakers, perceive twice-exceptionality as the most challenging group of students. Baldwin, Omdal, and Pereles used the term “enigma” to describe the stereotypes that teachers have of these students when discussing the profiles of three twice-exceptional students (2015). Educators get confused and puzzled due to “mask effect” shown in the three scenarios of twice-exceptionality: (1) the strength is expressed much more than the deficit and mask the deficit, (2) the deficit is severe enough to mask the giftedness or (3) if the deficit and strength are of equal intensity for neither of the strength nor the weakness to be observed (McCoach et al. 2001).

Based on the interview with Assouline, she stated that there are 13 types of disabilities in the USA under the Individuals with Disabilities Education Improvement Act of 2004. Thus, combining all these types of different severity levels along with different gifts, cannot but complicate the perceptions of educators and policymakers about twice-exceptional students (Baldwin, Omdal & Pereles 2015). Due to educators’ misconceptions, twice-exceptional students can find themselves exposed to academic failure and bullying by both teachers and classmates (Ronksley-Pavia & Townend 2017).

Further, one of the inclusion specialists perceived twice-exceptionality as another useless label for students. However, using this twice-exceptionality as a waiver is needed to make involved stakeholders aware that dealing with a gifted

student with a coexisting disability is not the same as a gifted student or a special needs student (Boothe 2010). Furthermore, instead of using two labels for one student which can influence the perceptions of teachers and students on the one hand negatively for the disability and on the other one positively for the giftedness, the one label of twice-exceptionality is meaningful and is found more effective with less negative influence on educators and students (Bianco 2005; Foley Nicpon et al. 2011). In other words, if a student's disability was diagnosed before his giftedness, the disability label may lead to the reluctance of the teacher to refer him for giftedness diagnosis (Bianco & Leech 2010; Bianco 2005). Thus, by having the waiver of twice-exceptionality used in policies, teachers may accept that a student with a disability may be gifted. Using the label of disability alone and gift alone is considered mislabelling and puts the twice-exceptional students at risk of not being catered to adequately (Boothe 2010; Baum & Olenchak 2002). Furthermore, a label is considered as a starting point for a student and not as a destination as one of the inclusion specialists mentioned. In other words, it is used to support the student rather than hurt him.

In addition, a research run by Bianco and Leech examines factors that limit teachers' awareness to satisfy the learning needs of twice-exceptional students (2010). As a result, and in parallel with thesis findings, educators' limited awareness of twice-exceptional students could be interpreted by the absence, or inadequacy, of schools' and governmental policies, lack of professional development and absence of the twice-exceptionality as part of educators' preservice education (Bianco & Leech 2010). All these gaps in policymakers and educators' awareness and perceptions are because the education of twice-

exceptional students is yet not a priority for policymakers, as explained by KHDA and inclusion specialists. Nevertheless, this is not accepted as a justification because, by definition, these students possess both disabilities and giftedness. Not catering to their needs challenges the first-rate education system attainment, and the inclusion and wellbeing philosophy of the Ministry of Education and KHDA and contradicts equity and social justice (Mertens 2007b).

Furthermore, it is an ethical obligation cater for the needs of twice-exceptional students because they have complicated needs (Leggett, Shea & Wilson 2010). As for educators, without legislation related to the education of twice-exceptional students, they will not support these students (Roberts, Pereira & Knotts 2015). Therefore, this is what Dubai educators are doing currently. Due to their overload of work and because policymakers do not mandate it from them, they do not cater for twice-exceptional students' needs. If they do so, it is because of parents' request.

5.2.2 Identification of twice-exceptional students

Based on the triangulation of data collected through interviews and survey, findings indicated that none of the schools have a formal written policy with a sequence of the process of identifying twice-exceptional students. The same applies to policymakers that do not have any policies for twice-exceptional students. Moreover, none of the twice-exceptional cases reported in the studied schools was identified by personnel from the school. The latter relied on external specialists. Additionally, some of the schools do not even use the term "twice-exceptional." However, the lack of policies shows that educators and policymakers fail to recognise twice-exceptional students as a separate category of

students. As a result, there is no set of guidelines presented by policymakers and educators to identify these students.

However, the identification of twice-exceptional students should be determined by governmental policies to construct an adequate and robust education system for these students who puzzle educators (Pereira, Knotts & Roberts 2015). The identification of these students is already complicated for educators due to the “mask effect” of twice-exceptionality (Baldwin, Omdal & Pereles 2015).

Based on the evidence of this thesis, schools must have an identification process for gifted students and distinct processes for special needs, each one as a stand-alone. Consequently, in the case of twice-exceptionality incidence, schools explained that they could use the process of giftedness and disability separately to determine the needs of the twice-exceptional students. To elaborate, they deal with the identification of the twice-exceptional student as if the disability and the gift are mutually exclusive. Nevertheless, this is an inadequate approach because exceptionalities may interact with each other, unlike the case of a gifted student or a special needs student (Baldwin, Omdal & Pereles 2015). In other words, research showed the tendency of comorbidity and intersection between gifts and disabilities for twice-exceptional students (Reis, Baum & Burke 2014).

As a result, there are special approaches to use in order to identify twice-exceptionality. For example, the multidimensional approach could be used in order to identify twice-exceptional students. Such an approach could show a holistic image of a students’ potential and performance from different academic, creative, and cognitive perspectives while involving parents and educators of a

child's gifts and disabilities (Al-Hroub 2010). According to Al-Hroub, this method could be used in Dubai to identify twice-exceptional students. Through an examination of empirical studies of twice-exceptional students, Nicpon et al. presented different diagnostic approaches such as the Response to Intervention to identify twice-exceptional students that educators are using, apart from the multidimensional approach (2011). As a result, the government should legislate policies to indicate and train educators about the identification approach of twice-exceptional students (Pereira, Knotts & Roberts 2015). These two approaches imply that the identification process should be comprehensive involving teachers, counsellors and parents not to misdiagnose the student.

Furthermore, interviews with students disclosed the impact of the delay and misdiagnosis of their twice-exceptionality identification. They were frustrated, depressed and anxious due to their identification related-problems. As a result, early identification needs to be performed in order to offer adequate support to ensure the academic and social improvement of the students (Missett et al. 2016). Furthermore, practitioners need to consolidate the approach used to identify twice-exceptional students not to end up with a misdiagnosis (Morrison & Rizza 2007). Moreover, as the four studied students reveal, there is a wide range of twice-exceptional students' profiles, such as arts with a genetic disorder resulting in learning disabilities and math giftedness with Asperger's Syndrome. Thus, these students needed appropriate a comprehensive and holistic form of assessment that uses tools to both discover the strengths and the deficits of the twice-exceptional students (Amend 2018). As the interviewed experts mentioned,

stakeholders such as paediatricians and primary teachers are essential to spot any potential disability or giftedness of students.

Moreover, the number of identified cases of twice-exceptional students in the school is extremely low. Thus, twice-exceptional students are underrepresented in schools (Pereira, Knotts & Roberts 2015). Furthermore, one of the inclusion specialists claimed that twice-exceptional students are more boys than girls. This inquiry remains problematic as this is related to neuroscience. Till now, there is no difference in the incidence of twice-exceptionality in boys and girls (Haier 2013). Even though Krayem and Al-Hroub addressed the gender differences among twice-exceptional adolescents considering overexcitability, the culture is the one that determines how the symptoms are displayed or shown by the students of different genders (Krayem & Al-Hroub 2019; Lovecky 2004). However, this is the case in the USA because not all twice-exceptional students are identified. However, the percentage of the studied schools is low. This low percentage is primarily related to the absence of governmental policies and limited awareness of educators to identify twice-exceptional students.

As for policymakers, they do not use any system for twice-exceptionality identification because their education is not of the country's priorities and specialization of the organization for the Hamdan Foundation and KHDA. Thus, at this level, equity in education and social justice are also violated because these students are endangered of underachievement, quitting schools, apart from all the social and emotional damage that they could be exposed to. Instead of wasting gifts, the government should consider these students as investments for the country, as per the interviews with experts such as Rankin and Van Gerven.

Policymakers could encourage the development of research in order to find other comprehensive way to identify twice-exceptional students.

Finally, the age at which twice-exceptional students are identified varies from one type of twice-exceptionality to another. Based on experts, primary teachers and paediatricians are in charge of identifying twice-exceptionality. However, it is important for teachers to identify them as soon as possible to help them without hurting their development (Sparks 2012). In order to identify them, educators must go through professional development. Otherwise, they may not be able to do that (Wu & Dickinson 2009).

5.2.3 Cognitive and Non-Cognitive Supporting Programmes for Twice-exceptional Students

The triangulation of data was also used at this level to indicate what programmes are offered to twice-exceptional students in school. These programmes have two dimensions of support: cognitive and non-cognitive. After identifying twice-exceptional students, professionals are required to develop a supporting programme facilitated by different stakeholders such as parents, teachers, and psychologists, to match the comorbidity nature of their strength and their deficit.

However, the evidence from this study highlighted that twice-exceptional students long struggled to receive necessary support due to misdiagnosis and late identification in Dubai. This problem was evident across all four cases without any exceptions. In addition, schools seemed not to have any systematic supporting programme for twice-exceptional students as shown in observation and interviews. In other words, students were supported based on their case, when the

incidence of twice-exceptionality takes place and based on parents and external professionals' recommendation. Such an indicator is explained by the absence of policies for twice-exceptional students in the school and lack of legislation by the government (Omdal 2015).

Through a comprehensive evaluation such as response to intervention programme could be developed to grow strength and support deficit (Nicpon et al. 2011). Furthermore, dual differentiation could be used for the same purpose (Baum, Cooper & Neu 2001). Schools should employ strength-based strategies to develop giftedness. Meanwhile, accommodation and compensation strategies should be used to help students at the level of the deficit (Boothe 2010). However, it was clear that some schools work on deficit alone then develop giftedness while some others try to work on the two together, without any initial system or roadmap based on surveys and interviews with inclusion specialists. As witnessed by the researcher, schools tend to work on removing the barrier related to disability before working on developing the giftedness. The ultimate focus of the schools was to offer accommodation, remediation and modification to support the deficits of the students. For instance, giving more time, providing a flexible timetable, and having Learning Support Assistant. Such a finding confirms that enriching the twice-exceptional students is not considered as important as supporting the deficit (Reis, Baum & Burke 2014). However, focusing on the barriers or the deficits can damage students' self-confidence as educators only perceive them in need of remediation.

“Gifted learning-disabled students frequently spend their school lives feeling trapped by their learning deficits and totally ignored with respect to their talents” (Baum, Cooper & Neu 2001, p. 488).

Nevertheless, there are strength-based programmes, run by Bridges Academy, that develop the education and wellbeing of twice-exceptional students from the lens of their interests and strengths. The strength-based approach was found to be more effective than the focus on the boring deficit remedial classes to be given to students (Reis, Baum & Burke 2014). As Baum said in the interview, the mindset is not to fix the student. Educators should remember that not all deficits disappear; instead, it is their job to ensure that students know how to cope with them for their giftedness to strive (Baum, Schader & Hébert 2014).

In addition, two of the students had an acceleration or enrichment in the programme as the interviews with the students revealed. However, the schools did not have a clear programme to cater to the disability and gift at the same time. Twice-exceptional students should have a dual-differentiation programme that both compensates their disability and develop their gift (Baum, Cooper & Neu 2001). Apart from that, none of the inclusion specialists admitted that they change the curriculum to support the twice-exceptional students they have. However, for twice-exceptional students, they could use a parallel curriculum that suits strengths while moderating deficit (Tomlinson et al. 2002).

Furthermore, implementing supporting programmes for twice-exceptional students vary based on the combination of their strengths and deficits. Thus, educators may find it challenging. Therefore, professional development is required

for educators in order to be flexible to support their twice-exceptional students' needs (Bailey & Rose 2011; Foley-Nicpon, Assouline & Colangelo 2013).

Also, in order to build supportive programmes that could ensure future success at career, these programmes must match the needs of the economy. Otherwise, these talents become obsolete and not needed. According to experts and literature, gifts are determined by culture. Thus, policymakers, along with schools, should develop supporting programmes for twice-exceptional students, based on their strengths to suit the need of the economy (Shavinina 2009; Kettler 2016).

The researcher realised from the interview that three out of the four students felt humiliated and lacked self-confidence due to their cases or struggled in previous schools. Even though these schools have a counsellor and a psychologist, they could not compensate for the emotional and social struggles they were facing. In other words, as Baum explained in the interview with the researcher, twice-exceptional students need further professional support to ensure their wellbeing through catering for their social and emotional needs (Dare 2016). According to Baum, Schader, and Hebert, five factors should be maintained to ensure the growth of twice-exceptional students: (1) The first factor is that the school should provide psychological safety for the twice-exceptional student; (2) The second factor is the provision of time without demanding a lot from the student and putting pressure on him to change; (3) The third factor is to accept if the student behaves asynchronously due to his case; (4) The fourth factor is to build and conserve a positive relationship among all the involved stakeholders to ensure the wellbeing of the student; and, (5) Last, the environment should

stimulate and encourage the development of the strength and talent of twice-exceptional students (2014).

Despite the efforts of the inclusion specialists and educators, many of these factors did not exist in the studied schools to result in the low self-esteem of students. From humanism theory, twice-exceptional students, like any other students, have the right to feel confident, their potential, and satisfy the self-actualisation of Maslow's hierarchy of needs.

As findings revealed, schools support twice-exceptional students proactively because of parents' concern and professional recommendations from psychologists, psychiatrists, and doctors. However, policymakers do not have any support guidelines for twice-exceptional students, and they do not reinforce schools to do that in case they have such students. Thus, schools may support twice-exceptional students inefficiently to prevent any problems with parents without making sure that this support serves best the student. Moreover, the team at school is not trained to cater to the needs of twice-exceptional students as no professional development was conducted in any of the studied schools. The only student, who seemed confident during the interview, was the student enrolled in the Hamdan Foundation program. His high self-esteem is related to the prestige linked to the foundation programme.

Nonetheless, Hamdan Foundation is not offering him the opportunity to cope with his deficit as a student with Asperger's Syndrome. Even though counsellors look after the wellbeing of the enrolled students, they are not qualified either to deal with students with disabilities or with twice-exceptionality. The growth of this student is not even ensured in his school because its environment is

not equipped with all the five factors that Baum, Schader and Hebert discussed (2014).

Based on social justice theory and from a right-based approach, twice-exceptional students are underserved in Dubai. The supporting programme offered by schools to twice-exceptional students and the absence of twice-exceptionality governmental guidelines and policies reveal that the education system is not equitable. Nevertheless, to satisfy the needs of all students equitably, the government should address their needs through guiding schools.

5.2.4 Obstacles Faced in the Education of Twice-exceptional Students in Dubai

The UAE is a new country that aims to develop first-rate education. However, as the findings of this thesis confirm, the education of twice-exceptional student is still left behind. There are various obstacles that twice-exceptional education face in the emirate of Dubai specifically. Before suggesting strategies to enhance the education of twice-exceptional students, the researcher must discuss the current obstacles in Dubai and other areas of the world in advancing the education of these students.

As a novice field, there are many gaps in research of twice-exceptionality. In addition, research tends to be more theoretical than practical as Assouline outlined during the interview. Neither the definition nor the identification of twice-exceptional students is standardised in the countries in which they recognise this category of students (Nicpon et al. 2011). Moreover, as Van Gerven explained, for building a compact twice-exceptional education system, education of gifted students and of special needs must be consolidated by all practitioners

and policymakers. However, by the time giftedness education is not yet reinforced policymakers, special education is improving in the country as a priority.

Educational systems cannot afford catering to the needs of all gifted students, twice-exceptional students and special needs students at the same time. All these services require capital resources from technology, human resources and other resources to ensure the growth of all these students (Buică-Belciu & Popovici 2014). Till 2020, private schools used to charge for inclusion support but now, parents should not pay anything for the services presented by the school to their children (KHDA 2019). Thus, the source of funds to support all these students remains problematic.

Developing a qualified human capital is a challenge as educators require ongoing professional development about twice-exceptionality, in Western countries and in Singapore (Neihart & Teo 2013). Lack of awareness by educators and policymakers can keep these students marginalised, misdiagnosed or unidentified. Collaboration among all stakeholders is crucial from teachers, parents, gifted specialists special education needs teachers, administrators and twice-exceptional students (Josephson, Wolfgang & Mehrenberg 2018).

Twice-exceptional students struggle with career management as they get trapped with their disability. They may even underachieve at school leading to a failure in career. In other words, twice-exceptional students often struggle to decide about their career goals considering both their strengths and their limitations. Even the job market may not offer them jobs due to their disability regardless of their talents. From humanism theory and functionalist theory, schools and policymakers are responsible to manage the career of these students

because twice-exceptional students have high potential (Lin & Foley-Nicpon 2020). Such a service offered by schools is challenging because it requires qualified personnel who are trained for career intervention to bridge between the school system and the career field. The interviewed students have dreams of career but they seemed to be frustrated while speaking about them, as if they may not achieve or pursue these careers. The role of the society in terms of different stakeholders is to develop an environment that could cater for their needs in the workplace (Wiebe, Matranga & Baum 2019).

5.2.5 Strategies to Improve the Education of Twice-exceptional Students

In response to Research Question 5, based on triangulation, twice-exceptional education could be enhanced through convincing policymakers that twice-exceptional students need a different type support, relative to gifted students and special needs students. Moreover, experts and policymakers even suggested that they listen to success and struggles of twice-exceptional students. The voices of twice-exceptional students should be heard (Ronksley-Pavia & Townend 2017). Furthermore, educators who struggled with twice-exceptional students should share with policymakers their needs for guidance and help. These students may not perform well or behave inappropriately in class. Consequently, educators and teachers may get stressed about how to approach them. Based on educators and twice-exceptional students' voices, policymakers would make change. However, experts emphasised that such a journey is to take decades.

Furthermore, through sharing with the policymakers the research findings and strategies, inclusion specialists and experts suggested that policymakers would consider supporting twice-exceptional students. Thus, they would issue

official guidelines explaining to educators about how to cater for the needs of twice-exceptional students.

In addition, once policymakers are convinced of the benefits of this field, they would offer grants in order to develop further research about twice-exceptionality. Research and development centre should be built in the UAE with a multiple-discipline approach “to access, incorporate, and build on relevant research from other domains, such as special education, neuroscience, school psychology, and counseling psychology” (Nicpon et al. 2011, p.13). Such a strategy proves that this thesis and the education of twice-exceptional students is transdisciplinary.

Thus, as a significant step to improve the education of twice-exceptional students, legislation and policies should be released for that purpose. In the policies passed by the policymakers, the definition of twice-exceptional learners should be clear so that educators would understand how to cater for their needs and how to distinguish between their needs and the needs of gifted and special education students (Pereira, Knotts & Roberts 2015; Roberts, Pereira & Knotts 2015; Zirkel 2016).

Furthermore, educators, gifted specialists and special education specialists should cooperate together in order to develop a systematic plan for twice-exceptional students. Then, through this system, twice-exceptional students could be identified and supported. As experts confirmed, models that they have developed could be used in the context of the UAE. However, the policymakers can run a pilot study in order to guarantee that they are culturally reliable. In addition, for practitioners to be able to identify and support twice-exceptional

students, they require professional development and conferences to raise learn how to use identification models and supporting programmes (Foley-Nicpon, Assouline & Colangelo 2013).

Besides, the role of the different stakeholders is important to ensure that twice-exceptional students are having an adequate learning experience. Nevertheless, the education system should be a bridge between school and the workplace. Thus, these stakeholders should embrace and promote neurodiversity (Coleman & Gallagher, 2015).

5.2.6 Advocacy of Twice-exceptional Students

Advocacy organizations should be established in Dubai to protect the rights of twice-exceptional students. These students are marginalised by the education system. In other words, such organizations should ensure the equity of twice-exceptional students in terms of education and workplace. As the revealed, the studied students have struggled due to the lack of awareness about twice-exceptionality in Dubai. Furthermore, their parents were the reason for overcoming the challenges of their children (Besnoy et al. 2015). Themselves were challenged by the current education system in Dubai. Still, educators could not cater for the needs of twice-exceptional students adequately despite their efforts.

Therefore, advocacy, as per the standards discussed in chapter two, should work on influencing policymakers, businesses and schools in order to achieve an optimal education system for these students. Such organizations should be formed of parents, educators, researchers and twice-exceptional students. The latter should be self-advocates of their own selves based on this transformative research

(Leggett, Shea & Wilson 2010; Baldwin et al. 2015; Omdal 2015; Ronksley-Pavia & Townend 2017).

Furthermore, international successful entrepreneurs, who are twice-exceptional activists, could support or join these advocacy organizations. By themselves, they can influence the policymakers to cater for the needs of these students. All these interviewed experts contributed with their research articles to advocacy organizations such as the National Association for Gifted Children. Other researchers launched advocacy organizations such as Rankin, who is an activist, to support twice-exceptional students who are interested in studying sciences at university.

To sum up, this discussion reveals that twice-exceptional students are marginalised. Their education needs are under the control of policymakers and educators who cannot recognise them yet. If schools are supporting twice-exceptional students, it is because of their parents' advocacy rather than educators' freewill. Based on Mertens, these results show the power relationship that exists in the hand of policymakers and educators who hinder the growth of this specific category of students. Relying on these results of this study, recommendations are offered to stimulate social change to the education of these students (Mertens 2007a).

5.3 Personal Gains

The Ph.D. dissertation journey has been enriching for the researcher as her personal gains exceeded the product of the thesis. Stimulated by the twice-exceptional students that she encountered as a teacher, the researcher thrived to

build a strong body of theoretical and practical knowledge about this new domain of research. Through different methods, sources of data, and different stakeholders, she extended her knowledge about twice-exceptionality from different perspectives, without being limited to education.

In addition, the researcher developed her research and transferrable skills such as problem-solving, critical thinking, and reflection. Not only does the researcher need these skills in her future career, but she believes that her role in supporting twice-exceptional students is an ongoing process. For example, she relied on employing the transformative research design, which is not a traditional research design, while justifying her choice.

Further, the researcher learned how to use her previous economics and business education background to benefit this study. In other words, she did not rely only on pedagogy and special education. Through the transdisciplinary analysis and the theoretical framework, she examined the dynamic interrelation among twice-exceptional students and their environment.

Furthermore, through reading journal articles and books, along with visiting or contacting experts and twice-exceptional centres, the researcher acquired the process of synthesising a new research framework. Despite its limitations, this gain was harvested by comparing and contrasting different other research frameworks.

Moreover, the researcher improved her self-confidence as an established researcher and practitioner. In spite of the methodological challenges and issues, she tried to be persistent, dedicated and committed to achieving her goals. Moreover, at a personal development level, this journey enhanced her maturity

and independence, especially that literature about the field is limited. She developed her interpersonal skills through building and positioned herself amongst a network of schools and pioneers of twice-exceptionality.

The researcher achieved a higher level of meaningfulness. The researcher's passion has widely expanded to reach the depth and breadth of living a life of purpose. Seeking social justice, not only by using it as a research paradigm, the researcher acquired how to cater to the needs of twice-exceptional students, and students with other exceptionalities to fulfil their lives. Students should learn based on their strengths and weaknesses, while the world should benefit from neurodiversity.

Finally, the researcher feels rewarding to have accomplished this study regardless of the encountered challenges. In specific, the inquiry about a new field in the UAE tends to be risky for any Ph.D. candidate. However, being the first doctoral student to address twice-exceptionality in the country is self-rewarding. Furthermore, making the voice of twice-exceptional students and educators heard is self-fulfilling.

5.4 Limitations

This research has different limitations. The first limitation is that there is no previously published research about twice-exceptionality in the UAE; thus, the researcher could not stand this study on any antecedent ones. Furthermore, there are no guidelines by the Ministry of Education for schools to follow about twice-exceptionality.

The second limitation is that highly ranked private schools in Dubai do not represent the whole country due to the discrepancies among the education of the seven emirates and between the public and private schools. Furthermore, the number of schools participating is limited to 6 schools only, relatively to the 44 outstanding and very good schools in Dubai. The same applies to the sample size of the educators participating in the survey limited to only 50 educators, and the sample size of the twice-exceptional students restricted to four students. Based on the research findings, the rationale behind these small samples may be the limited awareness of twice-exceptionality in Dubai and the barriers to identifying such students.

The third limitation is that the semi-structured interview with inclusion specialists represented not all the curricula. For example, Indian schools of CBSE curriculum are not represented. However, CBSE educators agreed to participate in the educators' survey as an attempt to balance the gap.

The fourth limitation is that the researcher did her best not to display her opinions and feelings with the students or inclusion specialists, especially that this field is both novice and sensitive for practitioners and students.

The fifth limitation is that the researcher considered stakeholders surrounding twice-exceptional students, excluding parents. The reason for that is that educators and policymakers are the ones directly involved with the education of twice-exceptional students and are responsible for supporting parents at that level.

The sixth limitation is that the researcher is an advocate of twice-exceptionality and social justice in theory and practice. However, the researcher

sought support from experts and analysed data based on triangulation. Consequently, the validity and trustworthiness of data analysis are more robust.

The last limitation is that the majority of experts are from western countries. The researcher tried to offset this misbalance through interviewing an expert and perhaps a pioneer in this field in the Arab Middle East.

5.5 Recommendations

Figure 5.1 Twice-exceptional Students' Environment Model is developed by this study by the researcher. It shows that there is a dynamic interrelation among the different stakeholders constituting the environment of twice-exceptional students. In other words, the relationship between the macrolevel dimension, the mesolevel dimension, and the microlevel dimension shows that there is an overlapping and interrelation among the roles and dimensions of different stakeholders. From a functionalist perspective of the theoretical framework, each stakeholder has its own role in order to benefit the whole country. Thus, if any of these entities failed to accomplish its role, the whole economy is at risk. In this study, if its environment does not adequately support twice-exceptional students, the economy of the country is inefficient as it wastes its potential human capital.

Firstly, the microlevel dimension of stakeholders is composed of twice-exceptional students. Under this umbrella, all the cognitive and non-cognitive deficits and strengths are included.

Secondly, the mesolevel dimension of stakeholders is composed of sociocultural institutions and agencies. These are the socialization agencies that

directly affect twice-exceptional students. This dimension includes the family, schools, advocacy organizations, hospitals, psychologists, workplaces, and universities.

Thirdly, the macrolevel dimension is composed of policymakers and their affiliations. In the context of Dubai, these are the agencies that form the macrolevel of stakeholders. The Ministry of Education, Hamdan Foundation, and KHDA cover their education. In contrast, through the Ministry of Possibilities, Ministry of Community Development, and Ministry of Economic Development, the twice-exceptional students' contribution to the workplace is ensured while satisfying and contributing to the country's economy. As for the Ministry of Healthcare, it ought to maintain the mental and physical health of these students.

However, as this model implies, none of them acts or affects the twice-exceptional students as a standalone or a straightforward cause and effect relation. From one perspective, agents of the same level interact with each other and do not function solely. Furthermore, from another perspective, stakeholders from different dimensions interact mutually with each other. For example, at a microlevel, the deficit and strength of twice-exceptional students, whether cognitive or non-cognitive, are affected by the macrolevel and mesolevel of their environment. In other words, the macrolevel and mesolevel of stakeholders are affected by the needs of twice-exceptional students. Simultaneously, the Ministry of Education and Ministry of Possibilities should both grow the potential of twice-exceptional students in order to contribute to new inventions leading to a prosperous economy.

Furthermore, this interaction among these different stakeholders explicitly demonstrates the transdisciplinary approach of this model and study. In other words, stakeholders related to education, businesses, healthcare, economy all interact to build the environment of twice-exceptional learners. Despite the challenges faced in its implementation, the underlying target of the use of transdisciplinary approach is to achieve social good, not only for twice-exceptional students but also for the economy of Dubai (Augsburg 2014).

Figure 5.1 Twice-exceptional Students' Environment Model



In the context of this study, the recommendations rely on the strategies that Dubai is advised to implement to enhance the education of twice-exceptional

students. All these recommendations are derived from the various stakeholders participating in this thesis, as well as the literature review. All these recommendations are aligned with the importance that innovation plays in the education and economic sector of Dubai and UAE.

(1) Based on a transformative research, the researcher should create an impact on the twice-exceptional education. In other words, the researcher has to prepare a brief and concise report to the KHDA in order to convince policymakers that twice-exceptional need support. With the support of other research and the outcomes of this study collected from different stakeholders such as educators, inclusion specialists, twice-exceptional students, and international experts. Such an approach was suggested by experts such as Renzulli and inclusion specialists in schools.

(2) The inclusion framework should not be limited only to gifted students or to special needs students. From an ethical obligation, policymakers are recommended to modify and adapt the inclusion framework and Ministry of Education policies to recognise twice-exceptional students as a different category of students. However, before setting these official documents, policymakers should set a pilot study in a few schools in order to investigate what schools require for catering to the needs of twice-exceptional students.

(3) Based on the Ministry of Education and KHDA system, the term twice-exceptional students should be clearly defined in order to dictate their characteristics, identification, and supporting process. Accordingly, there are two potential options to reinforce the education of twice-exceptional students. One option is to issue new directives and guidelines about the inclusion

framework in which educators are oriented about how to identify and develop twice-exceptional students. Another option is to release a new KHDA supplement document that would include these guidelines. Afterward, schools should be inspected while collecting feedback from them about the challenges and reflections about the new framework or supplement.

(4) Through the support of the Ministry of Education and KHDA, schools are required to prepare and develop policies for twice-exceptional learners. In this policy, the personnel responsibilities, resources, process, and procedures need to be strictly described. This policy should be derived from the guidelines set by the Ministry of Education and KHDA. Without the backup of the policymakers, educators will not support the needs of twice-exceptional learners. Moreover, the inclusion department needs to grow at schools in order to have enough personnel to support the needs of twice-exceptional students, along with gifted and special needs students.

(5) Policymakers should direct schools in terms of identification and support of twice-exceptional students. In other words, schools must be guided to use a comprehensive identification system to identify twice-exceptional students accurately. Thus, problems derived from misdiagnosis, unidentification, and delayed identification could be prevented. Such issues would negatively affect the neurobiological development of their brains and hinder their self-actualisation growth. Furthermore, schools must implement dual differentiation to grow their giftedness and compensate for their deficits. As previously discussed, deficits and strengths for twice-exceptional students are not mutually exclusive.

Moreover, with the support of parents, counsellors and psychologists need to be aware of how to develop self-awareness of twice-exceptionality. Furthermore, they must help them at the level of their social and emotional struggles. They should also orient them for their career choice based on their preference and twice-exceptionality profile. As an end, students must have a voice in their curriculum design and preference so that they can make the best of their learning experience.

(6) The government, through the KHDA, should run ongoing professional development for educators. However, these sessions need to have three dimensions. The first dimension is special needs education that the KHDA and the Ministry of Education are currently running. As for the second dimension, gifted education professional development for them to be able to identify, support, and monitor the development of gifted students. Regarding the third dimension, educators need professional development in order to cater to the needs of twice-exceptional students. The justification for such a programme is for educators to consolidate their prior expertise and knowledge about special needs and giftedness. On such a solid foundation, twice-exceptional training is structured. The ultimate goal of this three-dimensional professional development is for educators to distinguish between gifted students and special needs students, to be able to identify and support twice-exceptional students (Foley-Nicpon & Kim 2018). Moreover, educators are welcomed to share with other educators their successful practices with twice-exceptional students.

(7) As the UAE launched the teaching diploma for educators, it must include in its theoretical test a section about inclusive education. In other words, after

conducting the three-dimensional professional development coursework, educators should be examined about the pedagogy of gifted, special education, and twice-exceptional students.

(8) Through the support of the Hamdan Foundation and other policymakers, grants should be set from the Ministry of Finance and Ministry of Education in order to develop the present Giftedness and Creativity Center that already exists. Beyond the existing centre, its purpose should be to research and develop giftedness and twice-exceptionality cognitive and non-cognitive profiles, identification, and supporting the education of these students with the support of international experts. Furthermore, such an expansion of the centre should include a department for neuroscience research about gifted students and twice-exceptional students.

This centre should also promote and encourage empirical research about twice-exceptionality and giftedness education. Scholars, residing in the UAE and internationally, from different universities, should be encouraged to research identification, support, career development. In specific, one type of research that would reveal vital information about twice-exceptionality is longitudinal research (Foley-Nicpon & Kim 2018). For instance, the longitudinal studies of Strengths and Weaknesses Heuristic could illustrate such an approach by scholars in Germany. Three articles revealed the progress of research about this promising method used for identifying twice-exceptional students on the autism spectrum (Burger-Veltmeijer, Minnaert & van den Bosch 2014, 2015; Burger-Veltmeijer, Minnaert & Van den Bosch 2016).

However, unlike the present centre, research should not only involve Emirati students as the country hosts students of diverse nationalities. Similar centres exist in the USA, such as Renzulli's Center for Creativity and Belin-Blank Center. According to Tetreault, it is the duty of society to discover solutions to ensure the growth and thrive of twice-exceptional students (2019).

As a result, the country could take the lead in research and development of neuroscience, twice-exceptionality, and giftedness, along with other countries such as the USA, Germany, and the Netherlands.

In specific, this centre would develop new identification framework and support programme that is more accurate than the previously developed ones (Lovett 2011). At least, prior researchers and scholars built a foundation for these two concerns of twice-exceptionality. Furthermore, these methods were criticised by other researchers such as Lovett who criticised the Response to Intervention. Based on the Sociocultural Theory of Learning, twice-exceptional learning experience could be influenced by the environment they are nurtured in. As a result, new identification and practices to Dubai may be more accurate.

(9) The Ministry of Education, in collaboration with KHDA, should raise awareness of parents about twice-exceptionality. Conferences should be hosted so that parents and twice-exceptional students share their experience and have their voices heard, in terms of struggles and success stories. In response, professionals of twice-exceptionality should present their expertise with parents, and twice-exceptional students as an intervention with twice-

exceptional students should not be limited to schools (Foley-Nicpon & Kim 2018).

Furthermore, the policymakers, with the support of local and international experts, should ensure the dissemination of knowledge for parents and twice-exceptional students about how to support their needs. The employment of media should facilitate that as interviewed policymakers proposed (Mpella et al. 2019).

(10) Advocacy organizations should be developed in order to ensure that twice-exceptional students obtain adequate education experience at school and university. Parents, educators, scholars, and twice-exceptional students should form these organizations to ensure the growth of twice-exceptional students at school, university, and in the workplace. Based on Roberts, an advocacy plan should be composed of the six components: (1) The first component consists of determining the exact goal the advocacy needs to attain; (2) The second element is to determine the audience the advocacy needs to address; (3) The third component is about preparing a specific and concise message to address the audience; (4) The fourth element is related to the decision-maker that is related to advocacy; (5) The fifth factor is about setting the time-frame for the decision to be made and; (6) The sixth and last element is determining the main persons who could impact decision-makers (Roberts 2017).

(11) With the support of policymakers, the school must establish a culture accepting asynchronous behaviour of twice-exceptional students. Based on Maslow's Hierarchy of Needs, twice-exceptional students must develop their strengths in a safe environment. In such an environment, educators protect

students from bullying, humiliation, and stereotyping. Even though the UAE has the year 2018 as a Year of Tolerance, to promote acceptance of diversity among its citizens, tolerance promotion must not stop among educators, parents, and students.

(12) School leadership team should develop a strategic improvement plan in order to cater for the needs of twice-exceptional students. This transformation in educating these students should be facilitated by a senior leadership team of different disciplines that acts as change agents. Thus, this team should lead, inspire, control and motivate educators to support these students as they support special needs students (Milligan, Neal & Singleton 2012).

(13) Aiming to benefit from the potential of this neurodiverse students, the Ministry of Economic Development, the Ministry of Social Development and Ministry of Education should ensure the development of a neurodiverse workplace. As the UAE considers that innovation is crucial for the prosperity of the economy, twice-exceptional students are gems that can present innovative ideas for the economic growth of the country. In order to ensure that schools supporting programmes are aligned with the economy's need, there must be an alignment between policymakers and schools' provision programmes. Moreover, no waste of human capital would exist at such a level. As a result, the UAE could have a first-rate economy without wasting any of its energies and resources.

To wrap up, from a transdisciplinary approach, all these recommendations highlight the importance of the dynamic interaction and interrelation among different stakeholders that compose the environment of twice-exceptional learners.

Despite the small sample size of participants, the researcher used experts research and interview to have a holistic image of twice-exceptional students' environment. Thus, the role of the school or the education system is not only to educate students and twice-exceptional students do not struggle or succeed by themselves. Instead, the overarching role of the education system is to facilitate the self-actualisation of twice-exceptional students throughout their education and career. Thus, schools and parents by themselves cannot fulfil this goal. Even though this field is a novice in education and neuroscience, Dubai could contribute to its growth through its interest in research and development, innovation, education system, and economic prosperity.

5.6 Implications of the Current Study

The implications of this study are not limited to academia as it is transdisciplinary transformative research. Not only is this doctoral study about twice-exceptional students the first in Dubai, but also it is the first in the UAE and the region. Therefore, it shall encourage future academic researchers to investigate and explore this field in the region. Furthermore, as a new field of study in the world, such a study is expected to enhance the image that researchers already have about twice-exceptional students. At the level of Dubai, seeking to have fully inclusive schools, this research on twice-exceptionality calls for updates of educational regulations and policies. In simpler terms, schools cannot ignore twice-exceptional students because catering to their needs is not compulsory by authorities as this research showed. Also, a country cannot consider itself inclusive if it does not include twice-exceptional students as a distinct category of students who need adequate support. It is also important to mention that even

outstanding schools require development to support twice-exceptional students as they may not even acknowledge their existence.

With an advocacy lens, this transformative study aims to enhance the education of twice-exceptional students. This study highlights many problems that such students struggle with at school that may not strictly be related to education such as marginalization and depression. Further, by making their voices heard, customized strategies for Dubai are formulated to bring change through involving different stakeholders such as students, policymakers, educators, and experts. Such changes involve adequate identification processes and professional development of educators.

As a transdisciplinary study, recognizing that twice-exceptional students are not limited to school, this study considered their self-actualisation at university and work. Thus, realizing the power of neurodiversity and its contribution to the workplace, schools and universities must cooperate with businesses in order to benefit from such human capital. Therefore, the model that the researcher designed emphasized the collaboration among different stakeholders such as twice-exceptional students, parents, policymakers, business owners, and educators to both ensure their wellbeing and their contribution to the economy. In other words, catering to the needs of twice-exceptional students is a win-win situation for all the stakeholders as investing in these students is expected to provide a high return to the economy.

In the end, this study is expected to create an impact on the education of twice-exceptional students and on their future as problem-solvers. Even though it was the first in the country and the region, it targets to attract other researchers to

proceed with the journey of advocacy and inquiry about twice-exceptional students locally and internationally.

5.7 Further Research

As this research was the first one to tackle twice-exceptionality in Dubai, it should be motivating for other potential researchers to proceed with further inquiries. As a transformative research, it aims to enhance the experience of twice-exceptional students through the efforts of the researcher. Furthermore, this research was limited in terms of the sample size of educators, twice-exceptional students, and schools. Therefore, other research about a more significant sample, not only of very good and outstanding schools, may result in different findings and recommendations. Moreover, as a transformative research, this study was the first one to involve participants in research aiming to initiate a change in the education system of twice-exceptionality. Based on the nature of the Cyclical Model of Transformative Research, the researcher shall proceed with exploring and advocating the education of twice-exceptional students.

More research is also required about the gender differences between twice-exceptional students, as pointed out by some participants. Furthermore, further details are required for each type of twice-exceptional students in the context of Dubai. As research revealed, there is a difference between the wellbeing of twice-exceptional students in Singapore and the USA.

Furthermore, neuroscience is a promising field of research, and Dubai should invest in revealing further characteristics of twice-exceptional students. Even though these students are treated as one group, there are different profiles of

twice-exceptional students that research and neuroscience could help discover. This type of research requires grants for research that Dubai may have. Furthermore, educators should take part in research with scholars, as they know their twice-exceptional students best.

Apart from the mentioned stakeholders in the Twice-exceptional Students' Environment Model, researchers should investigate the role of each one of them and the potential existence of other stakeholders influencing twice-exceptional students' cognitive and non-cognitive growth.

This domain is still new and requires further research to optimise the support of twice-exceptional students. What was mentioned by Nielsen a decade ago applies to Dubai today. This should motivate Dubai to conduct further research to cater to the needs of these students and to bring change to the education system of these students.

“The field is still in its infancy concerning issues related to appropriate services and interventions” (Nielsen 2010, p. 107).

This time the researcher took the initiative to inquire twice-exceptionality from a transdisciplinary perspective. However, recognising the benefit of the collaboration of a team of researchers from different disciplines, further transdisciplinary research about the field may reveal new results that this study could not shed light on.

5.8 Conclusion

In conclusion, this transformative mixed method research about the current practices that outstanding and very good private schools in Dubai offer to twice-

exceptional students was conducted. Its purpose was to enhance the educational experience of these students by suggesting strategies by the researcher. Underpinned by the social justice paradigm, this study was able to provide answers to the determined research questions. As the education of these students is controlled by policymakers and educators, this research aims to release the chains that control these students' education and wellbeing.

First of all, educators and policymakers demonstrated a limited awareness level about twice-exceptional students through the triangulation of data. Educators and policymakers demonstrated confusion about twice-exceptional students' characteristics and practices.

Secondly, their perceptions of twice-exceptional students are not accurate as they do not have adequate knowledge and limited experience with these students. These perceptions would affect their relationship with twice-exceptional students. Thus, they require raising awareness and adjusting perceptions.

Thirdly, schools do not have any identification system to detect twice-exceptional students. As they do not have policies, and as policymakers do not require identification, some schools do not have any twice-exceptional students. This implies that these students are underrepresented. For the reported cases in schools, they were diagnosed by external professionals. Furthermore, students struggled because of misdiagnosis and delayed diagnosis.

Fourthly, students were not provided adequate supporting programme fulfilling their cognitive and non-cognitive needs. Schools support these students based on external professionals' recommendations. Furthermore, they tend to work on remediation and accommodation before developing students' strengths.

Lastly, based on the literature review and experts' interviews, the researcher recommended to policymakers and educators some strategies to enhance the education of twice-exceptional students. These recommendations were derived from the Twice-exceptional Students' Environment Model developed by the researcher, showing the relationship among different stakeholders. The education system should support twice-exceptional students at school and prepare them for university and career. As a transformative research, the outcome is promoting change in the education of twice-exception students.

5.9 Final Thoughts

Even though it is a new field of study in the world, twice-exceptional students need to be recognised as a group of students with needs distinct from special needs students or gifted students. Moreover, the variety of types of twice-exceptional students must be considered while catering to their needs. Due to the combination of different deficits and strengths, each twice-exceptional student finds himself with a unique profile to be catered to.

Despite the challenges faced by using the transformative paradigm, this research aimed to initiate change in the education of twice-exceptional students in the emirate of Dubai. Regardless of the limitations of the study, the twice-exceptional needs from cognitive and non-cognitive perspectives were examined. Furthermore, the transdisciplinary approach of this study revealed all the stakeholders that affect and are affected by this distinct category of students.

Not only is the aim to disseminate knowledge, but also the researcher targeted to create an impact on the education and career of these students.

Consequently, economic prosperity would be boosted in a culture of research and development.

In Dubai, stakeholders must admit that neurodiversity, and in this specific twice-exceptional student exist. These energies compose the human capital of the emirate. These stakeholders, including educators, policymakers, and businesses, should act as guides to:

“Allow space and time for the bright mind to break free from the ordinary, experience the extraordinary, and then awaken to life” (Tetreault 2019, p. 51).

Here is a reminder of the research questions of this transformative study:

Overarching Research Question: How could the educational practices offered to twice-exceptional students be improved in Dubai based on the current educators and policymakers’ awareness, perceptions and provisions?

Research Question 1: To what extent are educators and policymakers aware of twice-exceptional learners in Dubai?

Research Question 2: What perceptions do educators and policymakers have of twice-exceptional learners in Dubai?

Research Question 3: What are the identification processes used to recognise twice-exceptional learners in Dubai?

Research Question 4: What are the provision programmes offered to twice-exceptional learners in Dubai?

Research Question 5: What are the suggested best practices recommended to support the education of twice-exceptional learners in Dubai?

To highlight, this research is set out to explore the awareness and perceptions of policymakers and educators about twice-exceptional students in Dubai's very good and outstanding private schools. Furthermore, current practices related to identification and supporting programmes are examined. As a result, from a transdisciplinary approach, strategies to improve the education of twice-exceptional students are recommended to policymakers and educators.

Founded on the social justice paradigm, this transformative concurrent mixed method research sought triangulation through the use of questionnaires for educators, sample of twice-exceptional students work, class observations of twice-exceptional students, semi-structured interviews with inclusion specialists, twice-exceptional students, policymakers and international experts in the field. The following are major findings. First, policymakers and educators have limited awareness and inadequate perceptions of twice-exceptional students. Moreover, schools support these students only if recommended by external agents without any school identification system. Secondly, the support that these students are obtaining from the schools is not efficient. Thirdly, students are undiagnosed, misdiagnosed, or delayed in diagnosis triggering further frustration and underachievement.

Consequently, recommendations were added to guide policymakers and educators in order to support the education of twice-exceptional students in Dubai, and perhaps the UAE. The researcher hopes this research will pave the way for more researchers to look for twice-exceptional learning as these students' education is more complex. Finally, from an ethical and equity perspective,

policymakers and educators must cater to their academic and non-academic needs of these students to ensure opportunities for them in the workplace.

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Appendix

Appendix 3.1 Observation Checklist Based on Literature

Research Title: Investigating Twice-Exceptionality in Dubai Private Schools: Awareness, Perceptions, Current Practices and Suggested Enhancing Educational Strategies

Observation of _____
 Observer: _____ Position: _____ Date: _____

A. Subject observed

<input type="checkbox"/> Language Arts	<input type="checkbox"/> Social Studies
<input type="checkbox"/> Math	<input type="checkbox"/> Science
<input type="checkbox"/> Music	<input type="checkbox"/> Art
<input type="checkbox"/> Free time	<input type="checkbox"/> PE
<input type="checkbox"/> Other: _____	

B. Learning Situation

<input type="checkbox"/> One-to-one	<input type="checkbox"/> Small group
<input type="checkbox"/> Whole group	<input type="checkbox"/> Small group
<input type="checkbox"/> Independent	

C. Student Behavior

<input type="checkbox"/> Attentive	<input type="checkbox"/> Difficulty copying	<input type="checkbox"/> Neat appearance
<input type="checkbox"/> Sits quietly	<input type="checkbox"/> from board	<input type="checkbox"/> Demands excessive attention
<input type="checkbox"/> Talks out of turn	<input type="checkbox"/> Careless, doesn't complete tasks	<input type="checkbox"/> Perseverates (repeats behavior)
<input type="checkbox"/> Easily distracted	<input type="checkbox"/> Constantly out of seat	<input type="checkbox"/> Daydreams
<input type="checkbox"/> Overactive, restless	<input type="checkbox"/> Contributes to class discussion	<input type="checkbox"/> Tries to control others
<input type="checkbox"/> Talks excessively	<input type="checkbox"/> Short attention span	<input type="checkbox"/> Avoids groups
<input type="checkbox"/> Works well independently	<input type="checkbox"/> Friendly	<input type="checkbox"/> Cooperative
<input type="checkbox"/> Disruptive	<input type="checkbox"/> Displays leadership ability	<input type="checkbox"/> Doesn't follow directions
<input type="checkbox"/> Slow to follow directions	<input type="checkbox"/> Easily frustrated	<input type="checkbox"/> Unusual language
<input type="checkbox"/> Disorganized work habits	<input type="checkbox"/> Aggressive toward children	<input type="checkbox"/> Speech problem
<input type="checkbox"/> Avoids eye contact	<input type="checkbox"/> Obscene language	<input type="checkbox"/> Withdrawn
<input type="checkbox"/> Defiant	<input type="checkbox"/> Other: _____	

D. Areas of strengths and deficit observed in class:

<i>Strengths</i>	<i>Deficits</i>
Superior vocabulary	Poor social skills
Advanced ideas and opinions	High sensitivity to criticism
High levels of creativity	Lack of organizational and study skills
Extremely curious, imaginative and inquisitive	Discrepant verbal and performance skills
Wide range of interests not related to school	Poor performance in one or more academic areas
Penetrating insight to complex issues	Difficulty with written expression
Specific talent or consuming interest	Stubborn, opinionated demeanour
Sophisticated sense of humour	High impulsivity
Excellent visual memory	Does not do well on timed tests

Other:	Other:
---------------	---------------

E. Strategies used in class:

1. Is solid relationship built with teacher?
2. Are instructions differentiated?
3. Is it a homogenous or heterogeneous grouping?
4. Are there any other staff members supporting the teacher in class?
5. Is remediation used in class for the twice-exceptional student?
6. Are critical and creative thinking taught to the twice-exceptional student?
7. Is there clear communication between the teacher, student and parents?
8. Is technology used to modify the lesson for the student?
9. Is the teacher teaching organizational skills to the twice-exceptional?
10. Is the teacher flexible with the twice-exceptional student?

F. Other Comments:

Appendix 3.2 Experts Interview Questions

- 1- What triggered your interest in twice-exceptionality research?
- 2- How did you start your advocacy movement of twice-exceptionality support in education?
- 3- What change or impact have you attained, through your research, in educating twice-exceptional learners?
- 4- What challenges you have faced at the beginning of your research and advocacy path of twice-exceptionality?
- 5- What are the challenges that still exist in your own country, and other countries in order to provide an educational system suitable for twice-exceptional learners?
- 6- How do you advise a novel researcher to pave the way for twice-exceptionality in a new, yet fast-developing country such as the United Arab Emirates?
- 7- As a novice field in the United Arab Emirates, and in Dubai, how do you advise policymakers such as the Ministry of Education to address best the needs of twice-exceptional learners?
- 8- What factors affect the perceptions and attitudes of policymakers and educators towards twice-exceptional learners?
- 9- How could the perceptions and attitudes of policymakers towards twice-exceptional learners be enhanced in Dubai?
- 10- How could the perceptions and attitudes of educators towards twice-exceptional learners be enhanced in Dubai?

11- Based on your experience and research, at what age are twice-exceptional children identified?

12- What do you recommend for the Ministry of Education in order to raise awareness of twice-exceptional students in classrooms?

13- What type of provision programmes should be implemented in Dubai for twice-exceptional learners?

14- How do you advise policymakers to raise awareness of educators about twice-exceptionality in Dubai?

15- Is there any plan or process that you advise policymakers and educators to follow in Dubai, in order to enhance the support of twice-exceptional learners? If yes, would you please outline your answer.

16- Do you think the model(s) or strategy (ies) you have developed as an expert in twice-exceptionality could be implemented in Dubai? If yes, would you please elaborate on your answer.

17- Out of your experience and research, what factors could hinder the development of twice-exceptionality awareness and education in Dubai?

Appendix 3.3 Interview with Head of Inclusion with Twice-exceptional Students

- 1- Do you have any twice exceptional enrolled in your school?
- 2- How many students do you have?
- 3- If yes, what are the types of twice-exceptional students that your school has?
- 4- What is their age?
- 5- What is their nationality?
- 6- How have these students been identified as twice-exceptional ones?
- 7- Do you have a school policy for twice-exceptional education?
- 8- Do you have an identification system to recognise twice-exceptional students?
- 9- Are there any procedures or practices that are offered specifically for twice-exceptional students?
- 10- How do you cater for students' disabilities or deficits? (early intervention, technology, curriculum, activities, consultation)
- 11- How do you support the areas of giftedness? (curriculum, activities, consultation, technology)
- 12- Do you support each one of the exceptionalities as stand-alone or both in the same time?
- 13- How do assess and monitor the progress of twice-exceptional students in your school?

- 14- 5% of population is the range of twice-exceptionality occurrence. How could you interpret that many of the schools I screened in Dubai claim not to have twice-exceptional students?
- 15- How would you describe the relationship that you have with parents of the twice-exceptional students? Elaborate how you communicate with them.
- 16- How would you describe the relationship that twice-exceptional students have with their teachers?
- 17- Who from the school personnel is directly involved with twice-exceptional students?
- 18- How do interact with the Ministry of Education and KHDA in relation to twice-exceptional learners as the concept is not mentioned in any of their official documents?
- 19- Do you work with all these stakeholders on an individual basis or cooperatively for the wellbeing of your twice-exceptional students?
- 20- Have you taken any professional development about twice-exceptionality? If yes, who offered it?
- 21- Do you run professional development about twice-exceptionality to your teachers?
- 22- What strategies do you use with your twice-exceptional students (in class or outside)?
- 23- What challenges are you facing with twice-exceptional students at your school?

24- Are you satisfied with the impact that you achieved with twice-exceptional students at your school? Elaborate.

25- What areas can you improve in your school twice-exceptional education? How?

26- What does a school need from resources (human and capital) to support twice-exceptional students?

27- In your opinion, are educators in the UAE aware of twice-exceptionality? Why?

28- In your opinion, what are the factors that are hindering the awareness of twice-exceptionality in Dubai?

29- What do you advise Dubai to do in order to start the development of twice-exceptionality education?

30- In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?

Appendix 3.4 Interview with Head of Inclusion without Twice-Exceptional Students

- 1- Do you have any twice exceptional enrolled in your school?
- 2- Do you have a school policy for twice-exceptional education?
- 3- Do you have an identification system to recognise twice-exceptional students?
- 4- Are there any procedures or practices that are offered specifically for twice-exceptional students?
- 5- How do you usually identify gifted students in your school?
- 6- What programmes do you offer them? (curriculum, activities, consultation, technology)
- 7- How do you assess and monitor the progress of gifted students in your school?
- 8- How do you usually identify students with special needs in your school?
- 9- What programmes do you offer them?
- 10- How do you assess and monitor the progress of the special needs' students in your school?
- 11- 5% of population is the range of twice-exceptionality occurrence. How could you interpret that many of the schools I screened in Dubai claim not to have twice-exceptional students such as your school?
- 12- Do your gifted students have any learning, social, emotional or behavioural difficulties?

- 13- Who from the school personnel is directly involved with twice-exceptional students? (from your department to any other departments)
- 14- How do you think you could raise awareness about twice-exceptionality at school and in the country?
- 15- How do you interpret that twice-exceptionality is not mentioned in any of the Ministry of Education and KHDA official documents?
- 16- Do you work with all these stakeholders on an individual basis or cooperatively for the wellbeing of your twice-exceptional students?
- 17- Have you taken any professional development about twice-exceptionality? If yes, who offered it?
- 18- What strategies do you think should be used with twice-exceptional students (in class or outside)?
- 19- What areas can you improve in order to identify your school twice-exceptional education? How?
- 20- What does a school need from resources (human and capital) to support twice-exceptional students?
- 21- In your opinion, are educators in the UAE aware of twice-exceptionality? Why?
- 22- In your opinion, what are the factors that are hindering the awareness of twice-exceptionality in Dubai?
- 23- What do you advise Dubai to do in order to start the development of twice-exceptionality education?

24- In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?

Appendix 3.5 Interview with Twice-exceptional Students

- 1- What are the subjects that you like and enjoy in class? Why?
- 2- What does the school do to help you improve the subject?
- 3- What are the subjects that you do not like or struggle with? Why?
- 4- What does the school help you to improve the subject?
- 5- What do you aim to be in the future?

Appendix 3.6 Interview with Hamdan Foundation Representative

- 1- Do you have any twice exceptional enrolled in Hamdan Bin Rashid Al Maktoum Foundation for Distinguished Academic Performance?
- 2- If yes, what are the types of twice-exceptional students that Hamdan Bin Rashid Al Maktoum Foundation has?
- 3- What are the nationalities of the students that the Foundation supports?
- 4- Are the students that the Foundation supports from the public schools or private schools?
- 5- Does the National Plan for Gifted Programme in the UAE offer any services to twice exceptional students?
- 6- Are there any policies, procedures or practices that are offered specifically for twice-exceptional students?
- 7- Apart from the services you offer to identify and develop giftedness, do you cater their disabilities?
- 8- Does the Giftedness and Creativity Center have a department relating to giftedness R&D as other parts of the world?
- 9- If not, does the Foundation have a plan for establishing a future research centre about gifted education?
- 10- Based on screening of outstanding and very good rated schools in Dubai, I found out that only 3 schools out of 10 do not have any identified twice-exceptional students. How could you interpret that?
- 11- How would you describe the relationship that you have with parents of students at the Foundation?

- 12- How would you describe the relationship with schools of students at the Foundation?
- 13- How do interact with the Ministry of Education and other policymakers?
- 14- Do you work with all these stakeholders on an individual basis or cooperatively?
- 15- Do you have any experts you work with who helps you with twice-exceptional students? If yes, how do they assist you?
- 16- What is the impact that the Foundation has attained till now?
- 17- Are you satisfied with the impact that you achieved?
- 18- What supporting services do you offer to gifted students?
- 19- Is the support that you offer only related to the students' area of exceptional ability?
- 20- What are the factors that are hindering the awareness of twice-exceptionality in the UAE?
- 21- What are the factors that the UAE have in order to enhance the awareness of twice-exceptionality?
- 22- What do you advise the UAE to do in order to start the development of twice-exceptionality education?
- 23- In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?
- 24- What would the Foundation need in order to start supporting twice-exceptional students through raising awareness?

Appendix 3.7 Interview with KHDA Representative

- 1- What is the role that KHDA plays in gifted education in Dubai?
- 2- What is the role that KHDA plays in special needs education in Dubai?
- 3- How often does the KHDA review its framework? Would it be possible to explain the process?
- 4- Do you rely on international experts for gifted education?
- 5- Do you rely on international experts for special needs education?
- 6- How do you explain the absence of the term twice-exceptionality or any of its synonyms in the KHDA inspection framework?
- 7- As per my visits to schools, I observed twice-exceptional students. When I asked about KHDA visits to their school and if they recognise these cases, I get told that they put it in the self-evaluation. However, no specific attention for them. How would this be explained?
- 8- Are there any policies, procedures or practices that are offered specifically for twice-exceptional students by the KHDA through programmes like Rahhal or others?
- 9- 5% of students is the percentage of twice-exceptionality occurrence. How do you explain that schools from the ones I interviewed do not have such identified students?
- 10- On what basis do you evaluate the plan for gifted education in schools as inspectors?
- 11- How does the KHDA work on developing gifted education?

- 12- How do you interact with the Ministry of Education and other policymakers such as Ministry of Community Development and Ministry of the Future to develop education of gifted students?
- 13- Do you work with all these stakeholders on an individual basis or cooperatively?
- 14- Do parents and teachers contribute to the KHDA inspection framework standards? If yes how?
- 15- What are the factors that are hindering the awareness of twice-exceptionality in the UAE?
- 16- What are the factors that the UAE have in order to enhance the awareness of twice-exceptionality?
- 17- What do you advise the UAE to do in order to start the development of twice-exceptionality education?
- 18- In your opinion, which stakeholder is the most important one in raising awareness of twice-exceptionality?
- 19- What would the KHDA need from resources (human and capital) in order to start supporting twice-exceptional students through raising awareness?
- 20- How could education policies be changed to adapt to twice-exceptional education? Elaborate the process.

Appendix 3.8 Questionnaire of Foley-Nicpon et al. 2013

- 1- State of residence:
- 2- What describes your main professional responsibilities?
 - ☐ Classroom Teacher
 - ☐ Gifted Education Specialist
 - ☐ School Administrator
 - ☐ School Counsellor
 - ☐ Licensed Psychologist (School, Clinical, Counselling)
 - ☐ Special Education Teacher
 - ☐ Special Education Teacher
 - ☐ School board member
 - ☐ Other Please specify: _____
- 3- What best describes the population of students with whom you work?
 - ☐ Prekindergarten
 - ☐ Elementary (K-5)
 - ☐ Middle School/Junior High (6-8)
 - ☐ High School (9-12)
 - ☐ All students (K-12)
- 4- Please indicate the licensures and/or endorsements you currently have: (Please check all that apply.)
 - ☐ Classroom Teacher
 - ☐ Gifted Education Specialist
 - ☐ School Administrator
 - ☐ School Counsellor
 - ☐ Psychologist (School, Clinical, Counselling)
 - ☐ Special Education Teacher
 - ☐ Other Please specify: _____
- 5- How familiar are you with the following?

	Specific familiarity	Some familiarity	Passing familiarity	No familiarity
Federal/state guidelines for special education services				
Your state's position on Response to Intervention (RtI) as a model for special education services.				

Your state's guidelines for gifted education services				
Your state's position on Response to Intervention (RtI) as a model for gifted education services				
Twice-exceptionality (gifted students who have learning difficulties and/or social impairments)				
Gifted students with Attention-Deficit/Hyperactivity Disorder (ADHD)				
Gifted students with Autism Spectrum Disorder (ASD)				
Gifted students with emotional difficulties (anxiety, depression)				
Gifted students with learning disabilities (math, reading, etc.)				

6- How would you describe your experience in working with the following populations?

	Extensive experience	Moderate experience	Some experience	No experience
Gifted students with Attention-Deficit/Hyperactivity Disorder (ADHD)				
Gifted students with Autism Spectrum Disorder (ASD)				
Gifted students with emotional				

difficulties (anxiety, depression)				
Gifted students with disabilities (math, learning, reading, etc.)				

7- How confident are you that your current understanding of and experience with twice-exceptional students enables you to make appropriate evaluation referrals of twice-exceptional students?

- ☐ I am very confident that I would appropriately refer twice-exceptional students.
- ☐ I am somewhat confident that I would appropriately refer twice-exceptional students.
- ☐ I am not very confident that I would appropriately refer twice-exceptional students.
- ☐ I am not confident at all that I would appropriately refer twice-exceptional students.

8- Please rank order from 1 to 8 the following factors you think should be considered in order to make appropriate referrals for evaluation of twice-exceptionality? Let 1 be the most important and 8 be the least important.

- ☐ Behavioural difficulties in the classroom
- ☐ Outside activities
- ☐ Parental concerns
- ☐ Peer relationships
- ☐ Performance on class tests
- ☐ Performance on class work
- ☐ Performance on CogAT (or similar ability test)
- ☐ Performance on ITBS (or similar achievement test)

9- Who, in your opinion, is usually the best choice to provide primary support for the twice-exceptional student?

- ☐ Classroom Teacher
- ☐ Gifted Education Specialist
- ☐ School Administrator
- ☐ School Counsellor Psychologist (School, Clinical, Counselling)
- ☐ Special Education Teacher
- ☐ Parent
- ☐ Other Please specify: _____

10- What percentage of gifted students in your state do you estimate are twice-exceptional?

- ☐ Less than 1%
- ☐ 1%-5%
- ☐ 6%-10%

- 11%-15%
 - Greater than 15%
- 11- What is the primary area of difficulty that you observe for twice-exceptional students?
- Academic difficulties
 - Social difficulties with peers
 - Social difficulties with adults
 - School personnel coordination with parents
 - Coordination of care among professionals working with the student
- 12- In your state, what in-school interventions (e.g., assistive technology, tutoring, enrichment classes) exist for students who are twice-exceptional?
- 13- In your state, what out-of-school interventions (e.g., assistive technology, social-skills groups, enrichment classes) exist for students who are twice-exceptional?
- 14- Is there any other information relevant to twice-exceptional students that we should know?

Appendix 3.9 Pilot Study Questionnaire adapted from Foley-Nicpon et al. 2013

- 1- What is the name of the school you are employed in? (The name of the school will remain confidential and will just be used for organising the data)

- 2- What is the rating of your school as per the last KHDA report?
 - o Outstanding
 - o Very Good
 - o Good
 - o Acceptable

- 3- What is the curriculum of the school you are currently working in?
 - o American
 - o British
 - o CBSE
 - o French
 - o IB

- 4- What is your nationality?

- 5- What is your age?
 - o 21-30
 - o 31-40
 - o 41-50
 - o 51-60
 - o 60+

- 6- What is your gender?
 - o Male
 - o Female

- 7- Please indicate the licensures you currently have based on your education: (Please check all that apply.)
 - o Classroom Teacher (Grade level and/or subject specific)
 - o Gifted Education Specialist
 - o School Administrator (Principal, or other)
 - o School Counsellor
 - o Psychologist (School, Clinical, Counselling)
 - o Special Education Teacher
 - o Other (Please specify): _____

8- What best describes the population of students with whom you work?

- ☐ Prekindergarten
- ☐ Kindergarten
- ☐ Elementary (K-5)
- ☐ Middle School/Junior High (6-8)
- ☐ High School (9-12)
- ☐ All students (K-12)

9- How many years of experience as an educator do you have in Dubai?

- ☐ 1-4
- ☐ 5-10
- ☐ More than 10 years

10- How many years of experience as an educator do you have, apart from Dubai??

- ☐ No experience
- ☐ 1-4
- ☐ 5-10
- ☐ More than 10 years

If yes where? _____

11- If you had any other experience as an educator, specify the countries you worked in.

12- What describes your main professional responsibilities?

- ☐ Regular Classroom Teacher
- ☐ Gifted Education Specialist
- ☐ School Administrator
- ☐ School Counsellor
- ☐ Licensed Psychologist (School, Clinical, Counselling)
- ☐ Special Education Teacher
- ☐ Special Education Needs Coordinator
- ☐ Resource Room Teacher
- ☐ Other (Please specify): _____

13- How would you define eligibility for the twice-exceptional student? Select only one.

- ☐ A pupil who is identified as gifted and talented in two or more areas of exceptionality.

- o A pupil who is identified in two or more categories of identification under special education criteria.
- o A pupil who is identified as gifted and talented in two or more areas of exceptionality regardless of disability.
- o A pupil who is identified as gifted and talented in one or more areas of exceptionality and is also identified with a disability.
- o I don't know

14- Does your school have an identification process for twice-exceptional students?

- o Yes
- o No
- o I don't know

If yes, what? _____

15- Does your school provide support for the needs of the twice-exceptional students?

- o Yes
- o No
- o I don't know

If yes, what? _____

16- Does your school have policies for twice-exceptional students?

- o Yes
- o No
- o I don't know

17- Twice-exceptional students have the same needs with the population of gifted students who do not present any difficulties.

- o Yes
- o No
- o I don't know

18- Twice-exceptional students have the same needs with the special education students.

- o Yes
- o No
- o I don't know

19- Twice exceptional students are all the same.

- o Yes
- o No
- o I don't know

20- Twice-exceptional students vary in school performance from very high to very low.

- ☐ Yes
- ☐ No
- ☐ I don't know

21- Identifying twice-exceptional students is the same as identifying any other type of special needs students.

- ☐ Yes
- ☐ No
- ☐ I don't know

22- Twice-exceptional students require the same provision programmes as gifted students.

- ☐ Yes
- ☐ No
- ☐ I don't know

23- How familiar are you with UAE and Dubai guidelines for special education services?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

24- How familiar are you with UAE and Dubai guidelines for gifted education?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

25- How familiar are you with your school guidelines for special education services?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

26- How familiar are you with your school guidelines for giftedness education services?

- ☐ Extremely familiar
- ☐ Somewhat familiar

- o Little familiar
- o Not familiar

27- How familiar are you with your school guidelines for twice-exceptional students services?

- o Extremely familiar
- o Somewhat familiar
- o Little familiar
- o Not familiar

28- How familiar are you with Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?

- o Extremely familiar
- o Somewhat familiar
- o Little familiar
- o Not familiar

29- How familiar are with Gifted students with Autism Spectrum Disorder (ASD)?

- o Extremely familiar
- o Somewhat familiar
- o Little familiar
- o Not familiar

30- How familiar are you with Gifted students with emotional difficulties (anxiety, depression)?

- o Extremely familiar
- o Somewhat familiar
- o Little familiar
- o Not familiar

31- How familiar are you with Gifted students with learning disabilities (math, reading, etc.)?

- o Extremely familiar
- o Somewhat familiar
- o Little familiar
- o Not familiar

32- How familiar are you with twice-exceptional students' needs and types?

- o Extremely familiar

- o Somewhat familiar
 - o Little familiar
 - o Not familiar

- 33- How familiar are you with your school guidelines for gifted students?
 - o Extremely familiar
 - o Somewhat familiar
 - o Little familiar
 - o Not familiar

- 34- How familiar are you with your school guidelines for twice-exceptional students?
 - o Extremely familiar
 - o Somewhat familiar
 - o Little familiar
 - o Not familiar

- 35- How much experience do you have with students who are Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?
 - o Extensive experience
 - o Moderate experience
 - o Little experience
 - o No experience

- 36- How much experience do you have with students who are Gifted with Autism Spectrum Disorder (ASD)?
 - o Extensive experience
 - o Moderate experience
 - o Little experience
 - o No experience

- 37- How much experience do you have with students who are Gifted with emotional difficulties (anxiety, depression)?
 - o Extensive experience
 - o Moderate experience
 - o Little experience
 - o No experience

- 38- How much experience do you have with students who are Gifted students with learning disabilities (math, reading, etc.)?
 - o Extensive experience

- o Moderate experience
- o Little experience
- o No experience

39- Please rank order from 1 to 6 the following factors you think should be considered in order to make appropriate referrals for evaluation of twice-exceptionality. Let 1 be the most important and 6 be the least important.

Factors	Rank
Behavioural difficulties in the classroom and outside	
Parental concerns	
Peer relationships	
Performance on classwork and class tests	
Performance on ability tests	
Performance on achievement tests	

40- Who, in your opinion, is usually the best choice to provide primary support for the twice-exceptional student?

- o Classroom Teacher
- o Gifted Education Specialist
- o Parent
- o Psychologist (School, Clinical, Counselling)
- o School Administrator
- o School Counsellor
- o Special Education Teacher
- o Other (please specify): _____

41- What are the areas of difficulty that you observe for twice-exceptional students? Check all that apply.

- o Academic difficulties
- o Social difficulties with peers
- o Social difficulties with adults
- o School personnel coordination with parents
- o Coordination of care among professionals working with the student
- o Behavioural difficulties in the classroom
- o Outside activities
- o Parental concerns
- o Peer relationships
- o Performance on class tests
- o Performance on class work

- o Performance on ability/IQ test(s)
- o Performance on achievement test(s)

42- How confident are you that your current understanding of and experience with twice exceptional students enables you to make appropriate evaluation referrals of twice exceptional students?

- o Very confident
- o Somewhat confident
- o Not so confident
- o Not confident at all

43- Please indicate where the majority of your knowledge and experience pertaining to twice-exceptional education has been obtained.

- o Bachelor degree programme
- o Master degree programme
- o Other graduate school program/certification
- o School, or Dubai offered professional development
- o Attending a conference
- o On-the-job teaching
- o None knowledge

44- Is there any other information relevant to twice-exceptional students that we should know?

Appendix 3.10 Final Version of Questionnaire as it appears on SurveyMonkey adopted from Foley-Nicpon et al 2013

1. What is the rating of your school as per the last KHDA report?

- ☐ Outstanding
- ☐ Very Good
- ☐ Good
- ☐ Acceptable

*2. What is the curriculum of the school you are currently working in?

- ☐ American
- ☐ British
- ☐ CBSE
- ☐ French
- ☐ IB

*3. What is your nationality?

*4. What is your age?

- ☐ 21-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ 60+

*5. What is your gender?

- ☐ Female
- ☐ Male

*6. Please indicate the licensures you currently have based on your education: (Please check all that apply.)

- ☐ Classroom Teacher (Grade level and/or subject specific)
- ☐ Gifted Education Specialist
- ☐ School Administrator (Principal or other)
- ☐ School Counsellor
- ☐ Licensed Psychologist
- ☐ Special Education Teacher
- ☐ Special Education Needs Coordinator
- ☐ Other (please specify)

*7. What best describes the population of students with whom you work? **Check all that apply.**

- ☐ Kindergarten
- ☐ Elementary
- ☐ Intermediary
- ☐ High school
- ☐ All of the students

*8. How many years of experience as an educator do you have in Dubai?

- ☐ 1-4 years
- ☐ 4-10 years
- ☐ More than 10 years

*9. How many years of experience as an educator do you have, apart from Dubai?

- ☐ None
- ☐ 1-4 years
- ☐ 5-10
- ☐ More than 10 years

*10. What describes your main professional responsibilities?

- ☐ Regular Classroom Teacher
- ☐ Gifted Education Specialist
- ☐ School Administrator
- ☐ School Counsellor
- ☐ Licensed Psychologist (School, Clinical, Counselling)
- ☐ Special Education Teacher
- ☐ Special Education Needs Coordinator
- ☐ Resource Room Teacher
- ☐ Other (please specify)

*11. How would you define the twice-exceptional (gifted with disabilities) student?
Select only one.

- ☐ A pupil who is identified as gifted and talented in two or more areas of exceptionality.
- ☐ A pupil who is identified in two or more categories of identification under special education criteria.
- ☐ A pupil who is identified as gifted and talented in two or more areas of exceptionality regardless of disability.
- ☐ A pupil who is identified as gifted and talented in one or more areas of exceptionality and is also identified with a disability.
- ☐ I don't know

*12. Does your school have an identification process for twice-exceptional (gifted with disabilities) students?

- ☐ Yes
- ☐ No
- ☐ I don't know

If yes, what?

*13. Does your school provide support for the needs of the twice-exceptional (gifted with disabilities) students?

- ☐ Yes
- ☐ No

☐ I don't know

If yes, what?

*14. Does your school have policies for twice-exceptional (gifted with disabilities) students?

☐ Yes

☐ No

☐ I don't know

*15. Twice-exceptional (gifted with disabilities) students have the same needs as the population of gifted students who do not present any difficulties.

☐ Yes

☐ No

☐ I don't know

*16. Twice-exceptional (gifted with disabilities) students have the same needs as special education students.

☐ Yes

☐ No

☐ I don't know

*17. Twice-exceptional (gifted with disabilities) students are all the same.

☐ Yes

☐ No

☐ I don't know

*18. Twice-exceptional (gifted with disabilities) students vary in school performance from very high to very low.

☐ Yes

☐ No

☐ I don't know

*19. Identifying twice-exceptional (gifted with disabilities) students is the same as identifying any other type of special needs students.

- ☐ Yes
- ☐ No
- ☐ I don't know

*20. Twice-exceptional (gifted with disabilities) students require the same supporting programmes as gifted students.

- ☐ Yes
- ☐ No
- ☐ I don't know

*21. How familiar are you with UAE and Dubai guidelines for special education services?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*22. How familiar are you with UAE and Dubai guidelines for gifted education?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*23. How familiar are you with your school guidelines for special education services?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*24. How familiar are you with your school guidelines for gifted students' services?

- ☐ Extremely familiar
- ☐ Somewhat familiar

- ☐ Little familiar
- ☐ Not familiar

*25. How familiar are you with your school guidelines for twice-exceptional (gifted with disabilities) students' services?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*26. How familiar are you with Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*27. How familiar are with Gifted students with Autism Spectrum Disorder (ASD)?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*28. How familiar are you with Gifted students with emotional difficulties (anxiety, depression, etc.)?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*29. How familiar are you with Gifted students with learning disabilities (math, reading, etc.)?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*30. How familiar are you with twice-exceptional (gifted with disabilities) students' needs and types?

- ☐ Extremely familiar
- ☐ Somewhat familiar
- ☐ Little familiar
- ☐ Not familiar

*31. How much experience do you have with students who are Gifted with Attention-Deficit/Hyperactivity Disorder (ADHD)?

- ☐ Extensive experience
- ☐ Moderate experience
- ☐ Little experience
- ☐ No experience

*32. How much experience do you have with students who are Gifted with Autism Spectrum Disorder (ASD)?

- ☐ Extensive experience
- ☐ Moderate experience
- ☐ Little experience
- ☐ No experience

*33. How much experience do you have with students who are Gifted with emotional difficulties (anxiety, depression, etc.)?

- ☐ Extensive experience
- ☐ Moderate experience
- ☐ Little experience
- ☐ No experience

*34. How much experience do you have with students who are Gifted students with learning disabilities (math, reading, etc.)?

- ☐ Extensive experience
- ☐ Moderate experience
- ☐ Little experience
- ☐ No experience

*35. Please RANK order from 1 to 6 the following factors you think should be considered to make appropriate referrals for evaluation of twice-exceptionality (gifted students with disabilities). **Let 1 be the most important and 6 be the least important.**

Factors	Rank
Behavioural difficulties in the classroom and outside	
Parental concerns	
Peer relationships	
Performance on classwork and class tests	
Performance on ability tests	
Performance on achievement tests	

*36. Who, in your opinion, is usually the best choice to provide primary support for the twice-exceptional (gifted with disabilities) student?

- ☐ Classroom Teacher
- ☐ Special Education Teacher
- ☐ School Counsellor
- ☐ School Administrator
- ☐ Psychologist (School, Clinical, Counselling)
- ☐ Parent
- ☐ Gifted Education Specialist
- ☐ Other (please specify)

*37. What are the areas of difficulty that you observe for twice-exceptional (gifted with disabilities) students? **Check all that apply.**

- ☐ Academic difficulties
- ☐ Social difficulties with peers

- ☐ Social difficulties with adults
- ☐ School personnel coordination with parents
- ☐ Coordination of care among professionals (such as teachers) working with the student

*38. How confident are you that your current understanding of and experience with twice-exceptional (gifted with disabilities) students enables you to offer adequate support for them?

- ☐ Very confident
- ☐ Somewhat confident
- ☐ Not so confident
- ☐ Not at all confident

*39. Please indicate where the majority of your knowledge and experience pertaining to twice-exceptional (gifted with disabilities) education has been obtained.

- ☐ Bachelor degree programme
- ☐ Master degree programme
- ☐ Other graduate school programme / certification
- ☐ School and / or Dubai offered professional development
- ☐ Attending a conference
- ☐ On-the-job teaching (by teaching twice-exceptional students)
- ☐ None knowledge

*40. Is there any other information relevant to twice-exceptional (gifted with disabilities) students that we should know?

Appendix 3.11a Sample of Participant Consent Form – Experts Consent Form

Research Title: Investigating Twice-Exceptionality in Dubai Private Schools:
Awareness, Perceptions, Current Practices and Suggested Enhancing Educational Strategies

Researcher: Aida Younis, Ph.D. Candidate in Special and Inclusive Education

British University in Dubai, United Arab Emirates

Contact Details: +971554191049

Email address: aidaelchaar@gmail.com

Introduction:

You are invited to participate in a research study of the awareness, perceptions, current practices to recommend supporting strategies for twice-exceptional students in Dubai, United Arab Emirates.

Rationale of the study:

By the time the UAE is pursuing a first-rate education system which offers equal opportunities to all students, the Ministry of Education still does not recognise twice-exceptional learners, as a separate category of students who require special education. Due to the complexity of these children educational needs, they require identification, intervention, provision programmes, assessments, and continuous monitoring, matching their coexistent disability and giftedness.

Reason for your selection to participate in this research:

You are being asked to participate because of your rich research portfolio and expertise in the field of twice-exceptionality, whether in your country of origin or other countries in the world. In addition to the abundant published research work in books, conference proceedings and academic journal articles, the researcher aims, through a semi-structured interview conducted by various experts in the field, to develop supporting strategies to enhance the education of twice-exceptional learners in Dubai, United Arab Emirates. Your contribution is appreciated and is intended to make an impact on the education journey of twice-exceptional students in the United Arab Emirates.

Research process:

If you decide to participate in this research, you will be asked to volunteer in a semi-structured interview session of 1 hour, through Skype or live if possible. You will be asked different questions about twice-exceptionality in general, based on your research and other research forming the literature review of the study. Furthermore, other questions are related to your suggestions to enhance its education practices in the United Arab Emirates, where there are no guidelines for educators to apply to support such children.

With your permission, the interview will be voice-recorded, while the researcher is taking some notes. As an expert in the field, the researcher will introduce your name at the beginning of the interview session, if you do not want anonymization.

You may withdraw by informing the researcher that you no longer wish to participate, at any point of the interview (no questions will be asked). Furthermore, you may skip any question during the interview, and continue to participate in the rest of the study.

Benefits:

Your participation in this research is a chance to support the twice-exceptional children who require complex support in the United Arab Emirates. Thus, you could create an impact on this category of learners.

Compensation and costs for participation:

There are no costs and you will not be paid to be in this study.

Confidentiality and use of data:

Please note that the data collected from this interview shall only be used for this study. The researcher will not use it again in other conferences or publications. In case the researcher uses direct quotes from the interview, she will send them to you by email for your approval of content.

The collected data will also be transcribed and kept in a secure location that only the researcher can access. After the researcher begins data analysis, you will be contacted by email with preliminary findings, which you can disregard or provide feedback. At the end of the study, you will also have an opportunity to learn more about the study's findings.

The researcher will email you initial findings to allow you the opportunity to provide feedback before the study is completed and will also email you information on the study's final report.

At the end of the study, you will also have an opportunity to learn more about the study's findings.

In case you wish to maintain your name anonymous, your responses to interview questions will remain tied to a random numerical code. Thus, in case someone helps the researcher in transcribing the responses, he will just be aware of the numerical code.

Whether you wish to remain anonymous or not, the recording will be destroyed as soon as the thesis is defended. The file containing the recorded interview and the transcribed data is going to be locked with a password so that no one else could access it.

Research records will be labelled with a pseudonym. The master key that links names and pseudonyms will be maintained in a separate and secure location. The master key will be destroyed after the thesis defence. Any computer hosting such files will also have password protection to prevent access by unauthorised users. Only the research staff will have access to the passwords.

Risks:

Due to the nature of the semi-structured interview, some of the questions may cause discomfort for you. Even though you were briefed about the rationale and purpose of the study, some questions could relate to a context you are not familiar with. Other than that, there are no major risks anticipated.

Please be aware that email is not a secure method of transmission. Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no

guarantees can be made regarding the interception of data sent via the Internet by any third parties. If you do not wish to be contacted via email but would like to provide alternative feedback arrangements will be made.

The researcher will do her best to protect the confidentiality of the information gathered from you, but the researcher cannot 100% guarantee confidentiality. You should also know that the British University in Dubai Dean of Education and the Research Programmes Board may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement.

In case of any further questions, please feel free to contact the researcher on the mentioned details on the first page of the information sheet.

Documentation of Consent:

Thank you for reading the information above about the interview. If you are happy to participate, then please complete and sign the form below. I read and understood the information sheet above

- I had the opportunity to ask questions.
- I confirm that my participation is voluntary and that I am free to withdraw at any time without any justification.
- I am free to refuse to answer any questions.
- I understand that my responses will be kept strictly confidential and used just for this research.
- I agree to have this interview voice-recorded by the researcher.

- I understand that I will receive the transcribed interview, the direct quote, the preliminary finds and the final report to approve before the research proceeds with the research.
- I have the option to maintain anonymization if I wish so.

Do you want to maintain anonymization so that your name will be numerically coded?

Yes _____

No _____

Expert's Signature:

Print Name:

Date:

Signature of the Researcher:

Date:

Appendix 3.11b Sample of Participant Consent Form – Head of Inclusion (or any equivalent post title) Interviews

Research Title: Investigating Twice-Exceptionality in Dubai Private Schools: Awareness, Perceptions, Current Practices and Suggested Enhancing Educational Strategies

Researcher: Aida Younis, Ph.D. Candidate in Special and Inclusive Education

British University in Dubai, United Arab Emirates

Contact Details: +971554191049

Email address: aidaelchaar@gmail.com

Introduction:

You are invited to participate in a research study of the awareness, perceptions, current practices to recommend supporting strategies for twice-exceptional students in Dubai, United Arab Emirates.

Rationale of the study:

By the time the UAE is pursuing a first-rate education system which offers equal opportunities to all students, the Ministry of Education still does not recognise twice-exceptional learners, as a separate category of students who require special education. Due to the complexity of these children educational needs, they require identification, intervention, provision programmes, assessments, and continuous monitoring, matching their coexistent disability and giftedness.

Reason for your selection to participate in this research:

You are being asked to participate as the Head of Inclusion of a very good or outstanding school in Dubai. Thus, exploring your awareness and perceptions of twice-exceptional children as Head of Inclusion is significant for the research aims. Furthermore, examining the practices that the school offers to gifted students, who are twice-exceptional, and to other stakeholders (such as the Ministry of Education) involved in gifted education, is necessary to develop supporting strategies to enhance the education of twice-exceptional learners in Dubai, United Arab Emirates. Your contribution is appreciated and is intended to make an impact on the education journey of twice-exceptional students in the United Arab Emirates.

Research process:

If you decide to participate in this research, you will be asked to volunteer in a semi-structured interview session of 1 hour, through Skype, phone call or live if possible. You will be asked different questions about twice-exceptionality in general, based on your experience and other research forming the literature review of the study. Furthermore, other questions are related to your suggestions to enhance its education practices in the United Arab Emirates, where there are no guidelines for educators to apply to support such children.

With your permission, the interview will be voice-recorded, while the researcher is taking some notes. You may withdraw by informing the researcher that you no longer wish to participate, at any point of the interview (no questions will be asked). Furthermore, you may skip any question during the interview, and continue to participate in the rest of the study. If possible, it would be really helpful to share during the interview some templates that you use such as policies, processes, action plan etc. for twice-exceptional students is really appreciated.

Benefits:

Your participation in this research is a chance to support the twice-exceptional children who require complex support in the United Arab Emirates. Thus, you could create an impact on this category of learners.

Compensation and costs for participation:

There are no costs and you will not be paid to be in this study.

Confidentiality and use of data:

Please note that the data collected from this interview shall only be used for this study. The researcher will not use it again in other conferences or publications. In case the researcher

uses direct quotes from the interview, she will send them to you by email for your approval of content.

The collected data will also be transcribed and kept in a secure location that only the researcher can access. After the researcher begins data analysis, you will be contacted by email with preliminary findings, which you can disregard or provide feedback. At the end of the study, you will also have an opportunity to learn more about the study's findings.

The researcher will email you initial findings to allow you the opportunity to provide feedback before the study is completed and will also email you information on the study's final report.

At the end of the study, you will also have an opportunity to learn more about the study's findings.

In case you wish to maintain your name anonymous, your responses to interview questions will remain tied to a random numerical code. Thus, in case someone helps the researcher in transcribing the responses, he will just be aware of the numerical code.

Whether you wish to remain anonymous or not, the recording will be destroyed as soon as the thesis is defended. The file containing the recorded interview and the transcribed data is going to be locked with a password so that no one else could access it.

Research records will be labelled with a pseudonym. The master key that links names and pseudonyms will be maintained in a separate and secure location. The master key will be destroyed after the thesis defence. Any computer hosting such files will also have password protection to prevent access by unauthorised users. Only the research staff will have access to the passwords.

Risks:

Due to the nature of the semi-structured interview, some of the questions may cause discomfort for you. Even though you were briefed about the rationale and purpose of the study, some questions could relate to a context you are not familiar with. Other than that, there are no major risks anticipated.

Please be aware that email is not a secure method of transmission. Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties. If you do not wish to be contacted via email but would like to provide alternative feedback arrangements will be made.

The researcher will do her best to protect the confidentiality of the information gathered from you, but the researcher cannot 100% guarantee confidentiality. You should also know that the British University in Dubai Dean of Education and the Research Programmes Board may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement.

In case of any further questions, please feel free to contact the researcher on the mentioned details on the first page of the information sheet.

Documentation of Consent:

Thank you for reading the information above about the interview. If you are happy to participate, then please complete and sign the form below. I read and understood the information sheet above

- I had the opportunity to ask questions.

- I confirm that my participation is voluntary and that I am free to withdraw at any time without any justification.
- I am free to refuse to answer any questions.
- I understand that my responses will be kept strictly confidential and used just for this research.
- I agree to have this interview voice-recorded by the researcher.
- I understand that I will receive the transcribed interview, the direct quote, the preliminary finds and the final report to approve before the research proceeds with the research.
- I have the option to maintain anonymization if I wish so.

Do you want to maintain anonymization so that your name will be numerically coded?

Yes _____ No _____

Head of Inclusion's Signature: Print Name: Date:

Signature of the Researcher: Date:

Appendix 3.12 Sample of a Signed Consent Form by a Twice-exceptional Student

Aida Younis
PhD in Education

British University in Dubai
2019-2020

Ia. Participant Consent Form - Twice-Exceptional Students

Research Title: Investigating Twice-Exceptionality in Dubai Private Schools: Awareness, Perceptions, Current Practices, and Suggested Enhancing Educational Strategies

Researcher: Aida Younis, Ph.D. Candidate in Special and Inclusive Education
British University in Dubai, United Arab Emirates

You are receiving this form as you are selected as a candidate to participate in research that studies the experience of gifted students who have learning difficulties. Such a case is known as twice-exceptionality. The study will focus on the experiences in the school environment in order to share your experience with your teachers and you, and the impact of your teachers on your academic, emotional, behavioral and social aspects.

If you accept to take part in the study, you will be interviewed by the doctoral candidate Aida Younis who will not interfere in your daily school routine. The interview will help shape future services and supports for twice-exceptional students, like you. Kindly note that if you wish to participate, you will not receive any compensation.

The researcher will ensure the confidentiality of your name, and the information collected will only be used for research purpose.

If you have questions or concerns regarding the study or your potential participation, please contact the student investigator for the research study, Aida Younis, at 20170147@student.buid.ac.ae or +971 554191049. Alternatively, if you wish, you may contact my supervisor and director of studies, Professor Eman Gaad, the Dean of Faculty of Education at the British University in Dubai, at eman.gaad@buid.ac.ae or +971 4 279 1439.

Best Regards,

Aida Younis

Academic Researcher

Mobile : +971 554191049

Email : 20170147@student.buid.ac.ae

Professor Eman Gaad

Dean of Faculty of Education

Tel : +971 4 279 1439 Ext.436

Email : eman.gaad@buid.ac.ae

Aida Younis
PhD in Education

British University in Dubai
2019-2020

Signature of the Student:

Print Name:

Date:

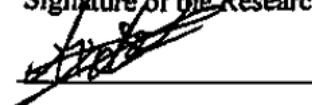




18/11/2019

Signature of the Researcher:

Date:



19/11/2019

Appendix 3.13 Sample of Filled in Observation Checklist of Student L

Aida Younis
PhD in Education

British University in Dubai
2019-2020

Research Title: Investigating Twice-Exceptionality in Dubai Private Schools: Awareness, Perceptions, Current Practices and Suggested Enhancing Educational Strategies

Observation of [redacted]
Observer: Aida Younis Position: PhD candidate Date: 19/11/2019

Lesson: Red
Scale: 70

A. Subject observed
☐ Language Arts
☒ Math
☐ Music
☐ Free time
☐ Other: _____

B. Learning Situation
☒ One-to-one (the rest of students in pairs)
☐ Whole group
☐ Independent

C. Student Behavior
☒ Attentive
☒ Sits quietly
☐ Talks out of turn
☐ Easily distracted
☒ Overactive, restless
☒ Talks excessively
☒ Works well independently
☐ Disruptive
☐ Slow to follow directions
☐ Disorganized work habits
☐ Avoids eye contact
☐ Defiant

D. Areas of strengths and deficit observed in class: (Based on observation)

Strengths	Deficits
Superior vocabulary ✓	Poor social skills ✓ <u>sit alone</u>
Advanced ideas and opinions ✓	High sensitivity to criticism
High levels of creativity	Lack of organizational and study skills
Extremely curious, imaginative and inquisitive ✓	Discrepant verbal and performance skills
Wide range of interests not related to school ✓	Poor performance in one or more academic areas
Penetrating insight to complex issues ✓	Difficulty with written expression
Specific talent or consuming interest ✓	Stubborn, opinionated demeanor ✓
Sophisticated sense of humor ✓	High impulsivity ✓
Excellent visual memory	Does not do well on timed tests
Other: <u>Excellent memory of numbers.</u> <u>Updated with the results.</u>	Other:

His pencil case is so neat / full of colored pencils unlike all his classmates. He put his bag on the chair next to him.

(when working on tasks) (He wants to talk a lot)

History

Science

Art

PE

Neat appearance

Demands excessive attention

Perseverates (repeats behavior)

Daydreams

Tries to control others

Avoids groups (sit alone)

Cooperative

Doesn't follow directions

Unusual language

Speech problem / hesitation

Withdrawn

classroom number 70

Effective course

He's the most active one in class

Comments on kkkk

E. Strategies used in class:

- | | |
|--|--|
| 1. Is solid relationship built with teacher? | Yes, she allows him to speak without blocking him. Tries to joke. |
| 2. Are instructions differentiated? | No differentiation / same task to all. |
| 3. Is it a homogenous or heterogeneous grouping? | (sits in the front, alone) while his classmates in pairs |
| 4. Are there any other staff members supporting the teacher in class? | No / Just his history teacher |
| 5. Is remediation used in class for the twice-exceptional student? | No / she clarifies the terms he doesn't get looking into his eyes |
| 6. Are critical and creative thinking taught to the twice-exceptional student? | Yes, she allows him to go beyond to deepen the thinking. |
| 7. Is there clear communication between the teacher, student and parents? | Yes b/w teacher + student |
| 8. Is technology used to modify the lesson for the student? | He has his laptop as a only student. She uses ppt for all her class. |
| 9. Is the teacher teaching organizational skills to the twice-exceptional? | Organize his ideas. → To save time he just solves harder questions in worksheet. |
| 10. Is the teacher flexible with the twice-exceptional student? | Yes, teacher smiles when he's joking / with his sense of humor but not his classmates. |

F. Other Comments:

He seems to enjoy history as a subject / engaged all the time.
No specific plan for ~~him~~ the teacher to use with him.
He's focusing on the video without being distracted or moving the eyes from the screen.

When asked for recap with the classmates, he is alone.
He answers alone.
Remembers ^{what} his classmates previously said.