



**Department of Psychological Sciences and Health**

**An Investigation  
into the Impact of Mediated Learning Strategies on the  
Learning Outcomes for Autistic Students**

**by**

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**A thesis presented in part-fulfilment of the requirement for the degree of  
Doctorate in Educational Psychology**

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Signed:

A handwritten signature in black ink on a light background. The signature reads "Helen Jimenez." with a period at the end. The letters are cursive and connected.

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## **List of acronyms**

AMI - Autism Model of Implementation

ASSET - Autism Self-Efficacy Scale for Teachers

CEA - Cognitive Education Advancement

CMB - Cognitive Modifiability Battery

CPD - Continuing Professional Development

DSM-V - Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition

EAL - English as an Additional Language

EBI - Evidence based Interventions

EBP - Evidence based Practices

EP - Educational Psychologist

EPIS - Exploration, Preparation, Implementation & Sustainment

EPSEN - Education of Persons with Special Educational Needs

ITT - Intention to Treat

LPAD - Learning Propensity Assessment Device

MLE - Mediated Learning Experience

MLESPBL - Mediated Learning Experience Scale for Problem Based Learning

NCSE - National Council for Special Education (Ireland)

NEPS - National Educational Psychological Service (Ireland)

NICE - National Institute of Clinical Excellence

NVI- Non-Verbal Intelligence

PMYC - Peer Mediation for Young Children

PRISMA - Preferred Reporting Items for Systematic Reviews & Meta-Analyses

RI - Requests for Information from children with autism spectrum disorders

SCM - Structural Cognitive Modifiability



SLR - Systematic Literature Review

SNA - Special Needs Assistant

SPSS - Statistical Package for the Social Sciences

TSE - Teacher Self-Efficacy

WCST-LP - Wisconsin Card Sorting Test-Learning Potential

ZPD - Zone of Proximal Development

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## Abstract

Autism is a much discussed condition due to its profound impact and prevalence of approximately 1.5% of the population (Zeidan et al., 2022). Whether the condition is conceptualised from a strengths-based or deficit perspective, research findings have demonstrated the benefits of autistic children accessing early intervention through therapeutic and educational settings. Educational placements for autistic children encompass a range of settings that include mainstream and specialist provision, depending on a child's profile of needs, with teachers using a wide range of teaching methodologies and evidence-based interventions. Despite the increased awareness and provision of specialist support for autistic learners in schools, learning outcomes for students are poor. The heterogeneous presentation of autism makes it challenging for teachers to develop education plans to meet individual needs, however, research has shown that one factor that has a positive impact on learning is teacher self-efficacy (Lauermann & ten Hagen, 2021). The competing demands in the classroom where there are complex needs result in higher levels of teacher burn out that can have a negative impact on students' learning (Huber et al., 2016). This suggests the need for teachers to access bespoke training in autism and to use flexible teaching methodologies such as the mediated learning framework to meet their students' diverse range of needs.

Study One employed a systematic literature review framework to identify and synthesise the findings from previous research studies on autism interventions that use a dynamic assessment approach and their impact on children's outcomes. The review also sought to identify the critical factors that need consideration when developing autism interventions for schools, with findings indicating the importance of developing interventions in the real classroom setting and input from teachers in the early design stage to optimise effectiveness. Findings also highlighted the importance of researchers and schools using an

implementation science framework in the development and delivery of interventions to optimise effectiveness and sustainability.

Study Two built on the findings from Study One and involved the delivery and evaluation of training to teachers working with autistic students on the mediated learning methodology. The training, which consisted of three sessions, was delivered online to sixty-seven teachers working in specialised autism classes in primary and post-primary schools in Ireland. The study, which employed a mixed-methods research design, focused on teacher self-efficacy with results indicating a statistically significant increase in teacher self-efficacy following completion of the training. Teachers' understanding and use of mediated learning strategies were also explored and while analysis of pre and post data did not demonstrate a significant improvement, the identification of small effect sizes indicated promising results. Of the three key skills of mediated learning that were the focus of the research, the principle of intentionality and reciprocity was shown to have a positive impact on teacher self-efficacy, which provides evidence for the benefits of teachers integrating the mediated learning methodology into their daily interactions with students. Qualitative information provided by teachers from semi-structured interviews and training evaluation questionnaires cited the benefits of using the mediated learning framework in their classrooms to understand their students' unique learning profiles as well as enhance the quality of their interactions which would impact positively on their learning experiences. Teachers also provided suggestions to develop the training further to enhance its use in classrooms.

The research contributes to the development of autism interventions in school settings and is unique in its integration of a core aspect of the dynamic assessment methodology with best practice autism intervention design into a training programme for teachers that can be

used to enhance the learning experiences of autistic children and young people who present with complex needs. Recommendations for future development of the intervention as well as key implications for the role of the educational psychologist are also discussed.

*Key Words: autism, mediated learning, dynamic assessment, teacher self-efficacy, learning outcomes, school, education*



## **Chapter 1: Introduction**

### **1.1 The Context**

Education provision for children with special educational needs has changed significantly in the last thirty years with a strong emphasis, both internationally and in Ireland, towards creating an inclusive education system where all children's needs can be met in their local school settings (Lindsay et al., 2013; Rice et al., 2023; Roberts & Webster, 2022). Inclusive education policies have been influenced and guided by the Convention on the Rights of the Child (Assembly, 1989), the Convention on the Rights of Persons with Disabilities (Assembly, 2006) and the Salamanca Statement (United Nations Educational & Cultural Organisation, 1994). These affirm the rights of all children, irrespective of their needs, that schools should be places of welcome, celebrating difference and supporting the learning of all by responding to their individual needs.

Legislation in Ireland, specifically, The Education Act 1988, The Education Welfare Act 2000, Education for Persons with Special Educational Needs (EPSEN) Act 2004 and The Disability Act 2005 and Department of Education policy have endeavoured to create learning opportunities for students with additional needs that are person centred and inclusive in their design, moving the Irish education system from a segregated model to an inclusive one.

Education provision for autistic students in Ireland encompasses mainstream, special class, special school and home tuition settings that respond to each student's profile of needs. A key aspect of that provision is the special autism class located within the mainstream school setting and has been a core aspect of the Department of Education in Ireland's inclusion policies, enabling autistic students with more complex needs to attend their local

school (Boilson et al., 2016). Each class has a maximum of six students and one teacher with two special needs assistants (SNA) providing support for the students' care needs. The teacher delivers an adapted learning programme using autism specific interventions and flexible teaching methodologies that match the students' individual profile of strengths and needs (Ring et al., 2016; Sweeney & Fitzgerald, 2023) The prevalence rate of autism has increased significantly in recent years with approximately one in every one hundred children being diagnosed with the condition globally (Zeidan et al., 2022) and rates in Ireland mirror the international picture (Boilson et al., 2016). This has resulted in the number of autism classes increasing at an exponential level in the last twelve years from approximately 548 in 2011 to 2,463 in 2022/2023 which represents a rapid expansion of this specialist placement provision, quadrupling in the last 12 years (Sweeney & Fitzgerald, 2023).

While the provision of autism classes aligns with government policy towards inclusion and is a welcome move for autistic children with complex needs to access an effective education, the increase in the numbers of autism classes has placed significant demands on the availability of teachers with the specialised training and expertise required. The lack of sufficient training for teachers in the use of evidence-based practices, both in their initial teacher training and ongoing professional development, was highlighted as impacting on teacher self-efficacy and thus on outcomes for learners (Barry, 2022; Rice et al., 2023; Sweeney & Fitzgerald, 2023). While the current research study is set within the context of the Irish education system, the challenges faced by Irish teachers reflect international trends and the need for teachers working with autistic students with additional needs accessing bespoke training to optimise their educational experiences.

Developing effective intervention plans for autistic learners with additional needs is a challenging process for teachers due to the heterogeneous profile of autism, which suggests that a *one-size-fits-all* assessment and teaching methodology is unlikely to bring about the intended outcomes for students. Teachers working with autistic students require an in-depth understanding of the specific challenges and barriers that can impact on their learning that can include social, communication, attention and learning difficulties, cognitive rigidity, sensory differences and emotional distress as well as knowledge of the emotional and behavioural factors that can impede learning. Delivering an effective education programme is not only contingent on teachers having access to a range of evidence-based interventions, but also having the skills and expertise to identify students' specific instructional needs to inform the development of targeted programmes as well as monitoring their progress (Strain et al., 2011). This requires teachers to adopt a broader and more flexible teaching and assessment framework that can be used in a complementary way with other interventions that will result in effective learning experiences and outcomes for students.

## **1.2 The Current Study**

While teachers frequently use information from standardised assessments to inform intervention planning, this information may not fully capture a student's unique profile of strengths and highlights their limited utility in informing effective intervention plans for children (Haywood & Lidz, 2006). The dynamic assessment methodology which focuses on the processes of learning rather than the products has the capacity to bridge the well debated gap between assessment and intervention using a person-centred approach that identifies areas of strength and potential strength by identifying the specific obstacles to effective learning, the strategies to overcome these obstacles and how learning can be improved with the optimal supports (Haywood & Lidz, 2006; Stringer, 2018). While standardised and

dynamic assessment methodologies differ, a contemporary conceptualisation views them as working in a complementary way that can ultimately improve outcomes for learners with additional needs (Fletcher & Miciak, 2017).

A key component of the dynamic assessment methodology is the active participation of the assessor, typically a psychologist, speech and language therapist or other professional scaffolding the child through the process, offering helpful strategies and hints when needed in a deliberate and purposeful way and assessing their effects on performance. These mediated learning skills are informed by Vygotsky's zone of proximal development (Vygotsky, 1987) and Feuerstein's theories of Structured Cognitive Modifiability and Mediated Learning Experience (Feuerstein et al., 2002; Feuerstein et al., 1991) which conceptualise them as key for children's cognitive development, with the amount and intensity dependent on the specific needs of each child. Mediated learning skills have also been integrated into bespoke interventions used in educational and clinical settings with research studies demonstrating how using a mediational style of interaction can promote a positive learning partnership between adult and learner while developing the child's confidence and competence about their own learning and problem-solving skills (Brooks & Haywood, 2003). Mills et al. (1995) describe teachers who use a mediated learning interaction style as *catalysts* between the children's thought processes and events in their everyday experiences and thus emphasises the engagement between teachers and their students as being critical for effective learning.

Feuerstein's theory of Mediated Learning Experience (Feuerstein et al., 1985; Feuerstein et al., 1991) provides a framework of twelve key skills of interaction that are fundamental to effective mediation which teachers can use flexibly in all learning activities to enhance students' outcomes, and is the theoretical basis of the mediated learning training

programme for teachers working in specialised autism classes that is the focus of this research study. The study seeks to investigate how teachers' applying the skills of mediated learning in their interactions with students can enhance and optimise their learning experiences, helping them develop effective problem-solving skills they can apply to future learning. While there are several factors that impact on student engagement and improved outcomes, the focus of this research study is on teacher self-efficacy, exploring how bespoke training programmes can contribute to their professional confidence and competence when working with students who present with a diverse range of complex needs.

The structure of the thesis is as follows:

Chapter 1 sets the context for the study, with particular reference to special education provision for autistic students in Ireland, which is the setting of this research study. It introduces the dynamic assessment methodology, specifically mediated learning as an interactive approach that can be used flexibly to improve learning outcomes for learners who present with complex needs.

Chapter 2 comprises an in-depth review of the literature that is central to this research study. The chapter explores autism theories, its complex causes and diverse characteristics, presenting unique learning challenges and opportunities. It examines how the dynamic assessment methodology and in particular, mediated learning, acts as a flexible interaction approach that can be used by teachers to enhance the learning outcomes of their students, developing their thinking and problem-solving skills for future learning. The chapter considers the role of teacher self-efficacy in creating positive experiences for autistic students and the impact of evidence-based practices on educational outcomes. The chapter concludes

by examining the role of implementation science frameworks in sustaining interventions, suggesting a significant role for school psychologists.

Chapter 3 outlines the methodology employed for the scoping review which is the focus of Study One, in particular, the Systematic Literature Review process (Moher et al., 2009).

Chapter 4 summarises the findings from Study One which explored the relationship between autism specific interventions and the dynamic assessment approach and how the integration of both has impacted positively on outcomes for autistic children who have received them. The study also sought to identify the key factors that researchers need to consider when developing autism specific interventions for the classroom setting using a systematic literature review methodology, with the findings informing the development of the mediated learning training programme that is delivered to teachers and is the focus of Study Two.

Chapter 5 outlines the mixed methods methodology used in Study Two (Creswell & Creswell, 2017) in which the integration of both quantitative and qualitative data provides a deeper understanding of the complexities of developing, delivering and sustaining effective interventions that can make a meaningful impact on the learning experiences of autistic learners with more complex needs.

Chapter 6 summarises the findings from Study Two which investigated the impact of a training programme based on Feuerstein's theory of mediated learning experience and delivered to teachers who work in autism classes in Irish primary and post-primary schools

on the learning outcomes of their students. The study explored the impact of the training on the teachers' self-efficacy while also gaining insight from the teachers on how the training could be further developed to optimise its effectiveness and sustainability.

Chapter 7 integrates the findings from Study One and Two and demonstrates the benefits of teachers completing the mediated learning training and applying it in their classrooms to optimise their students' learning as well as outlining aspects of the training that will require further development. The role of the educational psychologist in delivering the initial training, ongoing mentoring and coaching of teachers is also discussed as a key aspect of its successful implementation.

*Note:* The language around autism has changed and evolved in recent years with many autistic people showing a preference for using identity first language (autistic) than person-first language (person with autism). There is also some debate in the appropriateness of the terms *disorder* and *condition* to describe the characteristics of the autistic profile. The researcher has endeavoured to primarily use identity first language throughout the thesis but has included some person first language to reflect the diversity of language within the literature and recognises that this may be insensitive to members of the autistic community.

*Note:* The terms *mediated learning experience* and *mediated learning* are used interchangeably in this thesis, reflecting their usage in research literature.

## Chapter 2: Literature Review

### 2.1 Autism

#### 2.1.1 What is Autism?

Autism Spectrum Disorders are a group of complex life-long neurodevelopmental conditions that are present from childhood. The symptoms of autism were previously characterised by the DSM-IV (Bell, 1994), which is the most widely used diagnostic guide for autism, as impairments across the three domains of social functioning, language and communication and repetitive and restricted behaviours. However, in DSM-5, a review of the diagnostic criteria by the American Psychiatric Association in 2013 identified symptomology as impairments across the two domains of social communication and interaction and restricted, repetitive patterns of behaviour (American Psychiatric Association, 2013; Harrison et al., 2021). Autism is conceptualised as a spectrum disorder in that individuals can present with varying levels and degrees of severity of impairment in both domains, ranging from mild to severe and can experience a wide variety of developmental difficulties such as social, communication, cognitive ability and motor skills (Waterhouse et al., 1996), demonstrating heterogeneity in the presentation of symptoms (Pellecchia et al., 2021). While the term *autistic spectrum* was first used by Lorna Wing to describe this heterogeneity, Fletcher-Watson and Happé (2019) argue that the term *spectrum* does not fully capture the breadth and complexities of the autistic profile, and posit that the term *autism constellation* provides a better understanding of the non-linear profile of autism in that its presentation of symptoms does not follow a defined path from mild to severe but moves in a series of interconnecting circular patterns (Hearst, 2015).



### ***2.1.2 Prevalence of Autism***

While Kanner (Kanner, 1943) and Asperger (Frith, 1991) described autism as a rare condition, current prevalence rates would suggest differently, estimating that at present, about one in every 100 children are diagnosed with it (Zeidan et al., 2022). However, there is considerable variation across countries with prevalence rates ranging between 0.39% in China to 2.6% in South Korea (Elsabbagh et al., 2012). Prevalence rates in Ireland mirror current trends with the most recent data indicating a rate of 1.5% (Boilson et al., 2016). A number of reasons have been put forward to explain these increased rates that include the expansion of the diagnostic criteria that encompasses a wider population (Fombonne, 2018), an increased awareness of autism in society and of women being diagnosed with it (Russell et al., 2022) and research studies employing different methodological approaches which produce different results (Zeidan et al., 2022). Researchers also note that the increase in autism diagnoses has coincided with a decrease in other diagnoses such as global developmental delay or intellectual impairment which suggests that any increase may be interpreted as a change in the classification of difficulties rather than an increase in prevalence (Fletcher-Watson & Happé, 2019). Kim et al. (2011) suggest that the difference in prevalence rates highlights the complexities in both the diagnosing and understanding of the condition due to a lack of a shared definition and understanding of the profile.

### ***2.1.3 History of Autism***

In order to understand the complexities of the autistic profile, it is important to trace the historical context of the condition, both from the perspective of the clinicians and the autistic population and how it has shaped the current understanding of what autism is. Researchers studying autism suggest that it is not a recent disorder. Historical references in literature and folklore describe characters displaying unusual behaviours, for example, it has

been suggested that Sherlock Holmes may have exhibited autistic traits (Frith, 1989; Goldstein & Naglieri, 2014). *Victor*, the wild boy of Aveyron, initially thought to be feral, demonstrated classic features of autism such as language and communication difficulties (Goldstein & Ozonoff, 2018). Descriptions of childhood insanity from 1867 by Henry Maudsley are also considered to align with some autism features. The term *autismus* emerged in 1912 through Bleuler's work on schizophrenia describing self-centred thinking and social withdrawal observed in adults with schizophrenia (Fletcher-Watson & Happé, 2019; Goldstein & Naglieri, 2014; Volkmar et al., 2004).

However, it was the child psychiatrist Leo Kanner who is credited with introducing the modern concept of autism in his article “Autistic Disturbances of Affective Contact” (Kanner, 1943). He expanded on Bleuler’s work, describing a group of children who displayed *early infantile autism*, suggesting that they had been born lacking the typical motivation for social interaction causing them to live in their own world removed from day to day typical social interactions. Kanner saw autism as being distinct from schizophrenia in that it was a failure of development as opposed to regression, with the condition resulting in severe problems in social communication and interactions with others, combined with a need for sameness (Goldstein & Naglieri, 2014). While subsequent research by Kanner into autism indicated the presence of other behavioural characteristics such as an excellent rote memory, delayed echolalia, hypersensitivity to stimuli and limited spontaneous activities, he noted extreme autistic aloneness and the obsessive need for sameness as the core features of autism while these other characteristics named above were considered secondary (Fletcher-Watson & Happé, 2019).

While Kanner was developing his theories on autism, Hans Asperger was working at the same time with children with similar profiles (Wing, 1998). Both Kanner and Asperger’s

work conceptualised autism as distinct from schizophrenia and emphasised the innate nature of autism and its persistence through the lifespan. They also highlighted poor eye contact, a resistance to change and a need for rigid routines, as well as fixed, special interests and a strong heritability factor within families. However, Kanner and Asperger disagreed regarding the children's language and motor skills and cognitive profiles, leading to a dichotomy of diagnoses, Autism and Asperger's Syndrome, which dominated diagnostic debate and classification until the arrival of the DSM-5 criteria in 2013 which merged both diagnoses into one umbrella term of autism.

#### ***2.1.4 Symptomology of Autism***

While the diagnosis of autism centres on impairments across the two domains of social communication and interaction and restricted, repetitive patterns of behaviour, the considerable variety of presentations and associated behaviours suggests that Hearst's *constellation*, (Hearst, 2015) rather than Wing's *continuum*, (Wing, 1998) may provide a better understanding of the diversity and heterogeneity of the autistic profile. One of the core features of autism is the vast array of sensory symptoms that include hypersensitivity to hyposensitivity resulting in sensory seeking or aversion that makes participating in everyday experiences challenging.

Research into autism has shown a high comorbidity with other diagnoses such as anxiety, depression and epilepsy and early mortality related to seizures and suicide. Research studies have examined the relationship between autism and anxiety, for example, Van Steensel et al. (2011)'s research indicated that up to 40% of autistic children meet the criteria for multiple anxiety disorders. The challenges in understanding the relationship between autism and poor mental health is complex due to the complexities of the disorder and individual presentations leading Fletcher-Watson & Happé (2019) p.39 to say that "...it's not autism that is a problem, but all the baggage that goes with it", and suggests that the identification of

*intolerance of uncertainty* may provide a greater level of clarity in understanding the relationship between autism and anxiety (Wigham et al., 2015).

### **2.1.5 Theories of Autism**

Theories on autism have considered its aetiology at a biological, behavioural and cognitive level and while each approach has provided insight into the causes and core features of the condition, there is no universally acknowledged theory that provides a comprehensive explanation for the heterogeneity of the condition with a contemporary explanation embracing a *synthesis of theories*, (Chown & Beardon, 2017).

**2.1.5.1 Biological Theories.** Biological theories of autism emphasise the key role that genetics play in the condition and their interaction with environmental factors. The findings from twin studies confirm the role of genetic factors in the development of autism, however, current research has moved away from the search for the specific *gene* of autism, suggesting that the condition is likely to be polygenetic, involving multiple genes (Muhle et al., 2018). While the role of genetic factors is well acknowledged, the extent of that role has been challenging for researchers to quantify which may be due to the complex and heterogenous presentations of the condition as well as the small sample sizes of genetic studies which limit their generalisability (Fletcher-Watson & Happé, 2019).

The neurological basis for autism has identified differences in brain function between the autistic and neurotypical brain, linking specific regions of the brain to the behavioural characteristics of autism. Research findings such as Zwaigenbaum et al. (2014) have hypothesised that over growth in brain development in the first four years

of life may be a contributory factor. Differences in structural and functional connectivity have been examined, with research findings indicating a difference in synaptic functioning between the neurotypical and autistic brain with local connectivity increased and long range connectivity decreased in the autistic brain (Ameis & Catani, 2015). While neuroimaging techniques have shown differences in brain structure and have attempted to link specific regions of the brain to the behavioural features of autism, they have been unable to conclusively identify whether the differences are the cause of autism or the observed effects.

Researchers have also considered the role of other biological factors in autism and identified a link between autism and older paternal age due to genetic changes in older sperm, birth complications such as reduced blood or oxygen supply or trauma during delivery (Modabbernia et al., 2017), the use of medication, alcohol or drug abuse during pregnancy (Carr, 2015; Fletcher-Watson & Happé, 2019) and epilepsy (Steffenburg, 1991). However, no link has been identified with childhood vaccinations, maternal smoking or assisted reproduction (Modabbernia et al., 2017; Volkmar et al., 2004).

While extensive research into the causes of autism at the biological level have been carried out and are continuing, the findings have not provided the substantive evidence expected due to the diverse and varied characteristics of the condition (Ecker et al., 2015).

**2.1.5.2 Behavioural Theories.** While research has clearly identified that autism has a genetic component, it is diagnosed on a set of observed behaviours as outlined in the DSM-5 and ICD-10. Research into some of the observed fine and gross motor skills difficulties such as toe walking, rocking and stimming behaviours in autistic children has gained interest in recent years, in particular their contribution to the root causes of autism or behavioural manifestations (Bijou & Ghezzi, 1999; Chown & Beardon, 2017; Lovaas & Smith, 1989).

**2.1.5.3 Cognitive Theories.** Cognitive theories of autism seek to link biological and behavioural explanations and can be grouped into three main categories; primary deficit, developmental and information processing accounts with each perspective attempting to identify the underlying cause of autism that could explain the diverse range of behavioural characteristics (Baron-Cohen, 2004; Happé & Frith, 2006).

**2.1.5.3.1 Primary Deficit.** Theories such as Theory of Mind (Baron-Cohen et al., 1985) and Executive Dysfunction (Hughes & Russell, 1993) sought to identify the specific cognitive deficits that underpin the causes and characteristics of the autistic profile. These theories reflect a medicalised perspective that dominated late twentieth century research and have continued to influence much of the research into autism which focus on identifying the cognitive deficits or impairments that caused it.

One of the most influential primary deficit theories of autism is The Theory of Mind model (Baron-Cohen et al., 1985) which describes how autistic individuals lack the ability to understand the perspectives of others. Baron-Cohen centres his theory on the concept of *mindreading* which he describes as an evolved skill that is used by most

individuals unconsciously to interpret and predict behaviours in social interactions. Baron-Cohen contends that individuals with autism demonstrate a deficit described as mind blindness reducing their capacity to understand the thoughts, beliefs, intentions and emotions of other people. Baron-Cohen hypothesised that difficulties in developing shared attention skills was a core feature of autism and the ability to predict another person's intended behaviour facilitated awareness about expected behaviours (Chown & Beardon, 2017). One of the strengths of the Theory of Mind model was its alignment with the *triad of impairment* concept of autism (Wing & Gould, 1979), which categorised the features of autism into social interaction, communication and imagination difficulties. However, research has shown the limitations of the model as theory of mind difficulties have been observed in other groups of children such as typically developing toddlers under three years (Scott & Baillargeon, 2017) as well as children with learning difficulties (Cardillo et al., 2018) or children born deaf in non-signing households (Schick et al., 2007). This has resulted in researchers suggesting that the theory of mind model needs to be able to explain other features of autism besides the social communication difficulties (Fletcher-Watson & Happé, 2019).

Another important theory within the deficits domain is that of *executive dysfunction*, i.e. that autistic people demonstrate specific executive functioning deficits when compared to their neurotypical peers that hamper their performance across a wide variety of social and non-social activities (Demetriou et al., 2018; Ozonoff & Schetter, 2007). The concept of a control centre within the brain can be traced back to the infamous and well documented study of Phineas Gage in 1840, a railway worker who suffered catastrophic injuries to the right and left frontal lobes of his brain, following

an explosion on the railway line where he was working. While Gage made a remarkable recovery with intact speech, memory and learning, he demonstrated a profound impairment of social behaviour and decision making, with his friends and co-workers describing him as a changed man, (Hughes et al., 2004). Similar studies of soldiers from World War I who sustained frontal lobe injuries, also demonstrated intact abilities for routine, familiar tasks but impairments in grasping the *whole* of a complicated task or mastering new tasks (Goldstein, 1944). These accounts provide historical evidence for a connection between executive function impairment and social, flexible thinking, problem solving and decision-making difficulties, that are often characteristic of the autistic profile. However, the term executive functioning was first coined by Pribram (1973) when discussing the pre-frontal cortex. Since then over thirty different constructs of executive functioning have been developed making it challenging to provide a universal explanation that captures all aspects and is therefore best conceptualised as “... an umbrella term used for the diversity of hypothesised cognitive processes carried out by the prefrontal areas of the frontal lobes; they include planning, working memory, attention, inhibition, self-monitoring, self-regulation, and initiation” (Goldstein et al., 2015 p.438).

The relationship between executive functioning and autism was first explored by Damasio and Maurer (1978) who contended that the tremendous effort autistic people experienced when managing complex situations in their everyday lives was best explained in the context of executive functioning deficits. Comparisons between the behavioural difficulties of those with frontal lobe damage and autistic individuals led researchers to hypothesise that autism might be in fact a frontal lobe disorder. Brain imaging studies of autistic persons provided supporting evidence for this theory



showed that both the brain structure and function of autistic people differed from their neurotypical peers (Agam et al., 2010). Other studies such as Courchesne and Pierce (2005) have expanded on the notion of a specific localised executive functioning region in the brain to the concept of *deficient synchronisation* between brain networks which results in local over connectivity and long range under connectivity of the frontal cortex which has been identified as active during executive functioning tasks and linked to the presence of repetitive behaviours in autistic people (Agam et al., 2010). These new understandings of executive functioning difficulties and their associations with autism have the potential to highlight practical ways that teachers can support students who present with these challenges, including the transfer of knowledge across different areas of learning, planning and organising activities and dealing with changes to routines.

**2.1.5.3.2 Developmental Theories.** Developmental theories of autism focus on identifying the early and sometimes subtle differences in a child's relationship with their environment that places them on a developmental pathway that results in patterns of behaviour consistent with the features of autism (Happé, 2015).

Theories such as the Social Orienting Hypothesis (Dawson et al., 2007; Klin et al., 2002) and Social Motivation Hypothesis (Chevallier et al., 2012; Hobson & Lee, 1998) emphasise the central role of social experience as the mechanism by which autism could be best understood. In the Social Orienting Hypothesis, Dawson et al. (2007) posited that a child's lack of attention or interest in social experiences was one of the key predictors of an autistic presentation, as humans have an innate drive to respond to social experiences but that this can be disrupted in autistic children. The

Social Motivation Hypothesis focuses on how the innate need for *social reward* impacts positively on a child's social development and that autistic children lack this motivation mechanism which limits their social opportunities and learning experiences. Hobson and Lee (1998, 1999) theorised that the inability to perceive the affective expressions of others leads to atypical social experiences in early childhood.

These theories emphasise the central role of social interactions in the early years as being the root cause of autism, a claim which those in the autistic community have refuted (Haar et al., 2024), suggesting that while autistic people may not exhibit typical social behaviours, they nevertheless experience the same desires to interact socially with others and that it may be the non-autistic population's failure to understand the social interactions of the autistic community as contributing to the barriers to understanding the condition, a perspective that reflects a social model of disability (Barnes, 2019).

**2.1.5.3.3 Information Processing Models.** The information processing theories focus on the social aspect of the autism profile, how autistic people take in information from their social environment and make sense of it and how these differ from the neurotypical population. The focus of these domain general theories is their emphasis on strengths rather than deficits, viewing autism as a cognitive style rather than a pattern of weaknesses.

The Central Coherence Theory (Frith & Happé, 1994) describes the ability to bring information together from a variety of sources to provide a complete picture and overall meaning of the specific situation. This theory proposes that individuals with

autism have weak central coherence in that they demonstrate a tendency to focus on the details of a situation or problem rather than on the overall picture, a behaviour also reported by Kanner in which he described autistic children demonstrating an “...inability to experience wholes without full attention to the constituent parts...” (Kanner, 1943, p.246). While the original theory focused on weaker central coherence as an *impairment*, Happé and Frith (2006) reframed their theory from a strengths-based perspective suggesting that a weak central coherence is not a deficit but rather a cognitive style that runs along a continuum for all, from a focus on detail at one end to a focus on the general idea at the other end, with autistic people lying at the detailed end of the continuum (Chown & Beardon, 2017).

The strengths-based approach to understanding autism is further expanded and developed in theories such as the Enhanced Perceptual Functioning Model (Mottron et al., 2006) which suggests that autistic people can demonstrate superior perceptual systems when compared to their neurotypical counterparts. In addition, Plaisted et al. (1998a, 1998b) contend that the autistic profile is best understood in terms of a discrimination/generalisation dichotomy whereby autistic people can show superior skills in discrimination skills but difficulties in being able to generalise learning across different contexts, with further evidence provided from brain imaging studies that confirmed a preference for a *top down* attentional system rather than a *bottom up* perceptual system (Neumann et al., 2006).

An explanation for the *restricted and repetitive interests* of persons with autism is explained by Murray et al. (2005) in terms of monotropism. Their theory is based on the premise that all individuals have a limited amount of attentional resources at their

disposal, that lie along a continuum from a wide spread of attention at one end to a narrower focus of attention at the other end, with autistic individuals sitting at this end.

Another theory that attempts to describe the characteristics of autism from a strengths-based perspective (Wheelwright et al., 2006) suggests that it can be understood in terms of what can be described as having poor empathising and good systemising skills. Both constructs are measured using self-report checklists that evaluate social skills and preferences, i.e. empathising and a preference for activities that are rule based and predictable, i.e. systemising.

The Bayesian theoretical account for autism (Haker et al., 2016; Pellicano & Burr, 2012) while relatively new, provides a framework to understand the core symptomology of autism based on perceptual difficulties caused by an imbalance between the ability to make top down predictions about the world with incoming sensory information. However, while this approach may be interesting and novel, further research will be required to assess its contribution to understanding autism.

**2.1.5.3.4 Social Models of Autism.** While many of the theories of autism describe the causes and characteristics of autism from a biological, behavioural and cognitive level, the social model of autism, which is aligned closely with the wider social model of disability (Barnes, 2012; Woods, 2017), conceptualises disability as a result of societal structures and emphasises the importance of removing barriers to enable individuals to live full and independent lives. Theories such as the Double Empathy Model (Milton, 2012) challenge the long held view of autistic people lacking empathy for others, emphasising that any successful interaction requires the participation of two people,

with both taking responsibility for the situation, with neurotypical individuals making the necessary adaptations and expectations for autistic people to maximise the experience for all.

### ***2.1.6 Autism and Academic Achievement***

While schools, families and policy makers place great importance on academic achievement, to date, research into the academic achievements of autistic learners has been somewhat fragmented and piecemeal with most studies focusing on the more able students (Mayes & Calhoun, 2007). Evaluations of outcomes for autistic students can vary greatly using a range of measures from academic skills and adaptive functioning in children and adolescents to mental health and employment opportunities in adults, with findings indicating a less than positive picture overall (Howlin & Moss, 2012; Levy & Perry, 2011).

Measuring outcomes for autistic students can be challenging for several reasons. Kurth and Mastergeorge (2012) suggest that the setting in which a young person attends can influence expectations and priorities regarding learning targets, where education programmes in specialised settings tend to focus more on life skills than academic ones. Studies that evaluate academic attainments typically involve the use of standardised assessments of key areas of literacy and numeracy which some autistic students may not be able to complete, and thus does not fully capture their progress or lack of progress (Mayes & Calhoun, 2007; Thurlow et al., 2005). The heterogenous profile of autistic learners who present with a diverse range of learning strengths and needs is confirmed by the variability in academic outcomes ranging from those who are below expectation to those exceeding expectation (Keen et al., 2016) and contribute to parents' frustration levels regarding their children's progress and future career prospects (McDonald & Lopes, 2014; Starr & Foy, 2012). Keen et

al. (2016) highlight the limited knowledge that standardised testing can provide educators with, when developing effective education plans due to their focus on factors such as intelligence and language. They suggest the importance of measuring progress using a broader framework that includes information from teachers about a child's profile of strengths and needs and a consideration of environmental factors such as teaching methodologies and practices, pupil/teacher ratio, the use of technology, physical layout of classrooms and school attendance.

### ***2.1.7 Factors that Impact on Achievement.***

In considering how autistic children's learning experiences can be enhanced to ensure learning is a rewarding and positive experience for them, it is necessary to identify what are the facilitators and barriers to successful outcomes for them (McDougal et al., 2020). The diverse presentations of autistic students' strengths and needs within the autism constellation is reflected in research studies that have sought to identify the specific areas that impact on learning outcomes. Factors such as cognitive ability, language, social skills and sensory processing and autism severity were highlighted as important (Able, 2015; Keen, 2016). Studies such as Oswald et al. (2008); Oswald et al. (2016) have identified difficulties with social interactions, communication, attention and learning challenges, motor coordination, sensory needs and emotional distress, and in particular, anxiety, as potential barriers to academic outcomes for autistic students. The use of dynamic assessment approaches, and particularly, the use of mediation (described in Chapter 2 and the focus of this thesis), can be used to identify how an autistic learner responds to social cues and interventions which can form a key aspect of their education plan. Research studies have demonstrated its positive impact on specific areas of challenge relating to language and communication, executive functions, central coherence and non-intellective factors such as motivation and perseverance

(Aljunied & Frederickson, 2013; Calero et al., 2015; Donaldson & Olswang, 2007; Hegazi et al., 2012; Lebeer et al., 2013; Schoen Simmons et al., 2014; Tzuriel & Groman, 2017).

The role of anxiety in impacting on autistic learners' participation in education and progress was highlighted by Adams et al. (2020). Lack of certainty and routine during the school day, as well as performance anxiety were identified as triggers for increased anxiety levels by students on a self-report measure. Wigham et al. (2015) have hypothesised that an important function of repetitive and restrictive behaviours may be linked to the concept of intolerance of uncertainty, which can be a cause for increased anxiety levels, and which may be reduced by the use of restricted and repetitive behaviours. Gunn and Delafield-Butt (2016) suggest that knowledge of and incorporation of a student's repetitive interests into classroom activities can impact positively on a student's learning and social skills, enabling the teacher to engage the learners within their sphere of interest, using this passion to engage and motivate them.

The social context has also been identified as a key factor in not only how autistic learners participate in their learning experiences but also on their well-being (Ghanouni et al., 2019). While many autistic students are educated in inclusive classrooms with opportunities for interactions with peers, their social communication difficulties can make the day to day interactions with peers challenging to navigate and for them to be able to participate effectively in activities that are associated with school life such as group work, unstructured times, coping with multiple teachers and navigating the busy and often noisy school building. Research studies have shown how autistic children's participation in activities is less than their neurotypical peers, and affects their engagement in learning activities, thus reducing their acquisition of new skills and social learning opportunities (Orsmond et al., 2004). The

role of peers has also been identified as important on a number of levels, providing opportunities for autistic students to develop their social interaction skills in a naturalistic context that creates an empathic classroom environment, and one that reduces isolation and bullying (Campbell, 2007; Locke et al., 2010; Sreckovic et al., 2014). While a supportive and relaxed learning environment is beneficial for the learning outcomes of all students, McDougal et al. (2020) emphasise the critical role that this plays for autistic learners and cite the qualities and skills of the class teacher in optimising learning that goes beyond having a thorough understanding of autism but also an understanding of each child's unique presentation that forms the basis of building a trusting relationship between the teacher and child.

### ***2.1.8 Summary***

Autism presents as a complex, multi-faceted condition, and while theories have sought to explain its aetiology at multiple levels, no one theory, to date, has fully captured the breadth of its core characteristics. Its diverse and heterogenous presentation confirms the need for teachers and other professionals working with autistic learners to adopt more flexible assessment and teaching methodologies that complement their unique learning profiles. Dynamic assessment is one such approach and its potential to enhance the learning outcomes of autistic learners will be explored next.



## 2.2 Dynamic Assessment

### 2.2.1 What is Dynamic Assessment.

Dynamic assessment describes an interactive assessment methodology that focuses on the process of learning rather than on its products by examining key information about the learner's cognitive abilities when supported and guided by others (Haywood & Tzuriel, 2002; Hill, 2015; Yeomans, 2008). The assessment approach differs from standardised assessment methodologies in that the assessor is actively involved in the process, using a series of deliberate strategies to scaffold and support the learner and assessing their effects on bringing about real and meaningful outcomes. While the term dynamic assessment is an umbrella term that encompasses other definitions such as *dynamic testing*, (Sternberg & Grigorenko, 2002) and *learning potential assessment* (Budoff, 1987), the defining aspect of the approach is the active participation of the assessor in the process, monitoring and evaluating the learner's response to any intervention or support provided. Haywood and Lidz (2006) have identified key theoretical assumptions that underpin the dynamic assessment approach:

1. Some key abilities that are important for learning are not measured on standardised tests,
2. While having a knowledge of past learning is helpful, the opportunity to observe new learning is more informative,
3. The teaching/intervention aspect within the dynamic assessment process can provide rich information about how an individual learns and what supports can enhance the process,
4. Results from standardised testing may not fully capture learning potential,
5. There are other factors that can impact on an individual's learning potential that are not identified in standardised testing such as motivation and persistence.

### ***2.2.2 The Historical Basis of Dynamic Assessment***

The development of dynamic assessment approaches roots can be traced back to the beginning of the twentieth century where researchers explored alternative ways to measure learning potential that were contrary to the dominant standardised testing methodology which was introduced by Alfred Binet in 1909. Researchers such as Thorndike, Rey and Kern as cited in Haywood (2012) emphasised the *capacity to learn* as a key aspect of intelligence, as well as the limited utility of predicting future learning based on the results from one off testing events. This broader conceptualisation of intelligence, in conjunction with societal changes that acknowledged the impact of cultural and linguistic diversity and trauma on children's learning potential, identified the need for assessment tools that were culturally fair, and were focused on identifying a learner's potential performance rather than assessing their typical performance (Sternberg & Grigorenko, 2002).

While standardised or static testing has been used extensively in educational settings, there has been a shift in focus in recent years towards developing more inclusive learning environments and practices where the primary objective is the development of interventions that match the unique learning needs of a diverse group of learners. This has led to professionals questioning the utility of information from standardised assessment approaches in providing practical and useful information required by teachers to optimise their students' learning experiences, with Sternberg & Grigorenko (2002) and Tzuriel (2021) suggesting that conventional standardised testing measures a narrow range of developing skills that do not capture the broader range of skills that are relevant for success in school and beyond. The practical application of dynamic assessment methodologies in the classroom context have been highlighted in studies by Delclos et al. (1992), Bosma and Resing (2010) and Tzuriel (2021) who found that teachers gained more useful information from dynamic assessment

reports that were directly applicable to informing their individual education plans than standardised assessment scores. Benjamin and Lomofsky (2002) found that teachers who observed a dynamic assessment developed a more optimistic stance towards the learner due to learning about mediation and other learning/teaching factors that were highlighted as important for the learner's future academic success. However, while the impact of interventions using dynamic assessment approaches suggests promise, research findings to date have provided conflicting results (Hunt et al., 2022; Sternberg & Grigorenko, 2002; Tiekstra et al., 2014). The subjective nature of *learning potential* and how it can be scientifically measured, along with varying definitions of dynamic assessment and the need for assessors to be skilled and competent in using the approach, contribute to the current inconsistencies in research findings that need to be addressed to provide substantive evidence that the approach is valuable in effecting positive change in learners.

### ***2.2.3 A Contemporary Definition***

While original proponents of dynamic assessment such as Feuerstein (Feuerstein et al., 2002) viewed it as an approach, separate and distinct from static ones, a more contemporary understanding views it as being complementary to other methodologies, thus emphasising the benefits of a *hybrid* approach to assessment methodology in which static and dynamic approaches can play a complementary role in identifying a child's strengths and weaknesses, while also assessing their potential to learn across different areas, (Cizek, 1996; Fletcher & Miciak, 2017; Gustafson et al., 2014; Haywood & Lidz, 2006).

### ***2.2.4 Influences on Dynamic Assessment***

While the field of dynamic assessment has and continues to be influenced by many researchers and experts in the field, it is the work of Vygotsky and his concept of the zone of

proximal development (ZPD) that underpins the approach. The ZPD which is described as the space between a learner's "...actual development level as determined by independent problem solving" and a more advanced level of "...potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky & Cole, 1978, p. 76). The ZPD emphasises the critical role of the interaction between the child and the adult or more experienced peer, enabling the learner to develop new skills with the necessary amount of support and guidance that challenges and stimulates new learning but does not overwhelm.

Dynamic assessment has also been hugely influenced by the work of Reuven Feuerstein whose theory of Structural Cognitive Modifiability (SCM) emphasised the flexible nature of intelligence and that an individual's abilities were not only determined by genetic factors but also by external factors, in particular, intentional and focused intervention from more experienced adults and peers (Feuerstein et al., 1981). This positive and optimistic conceptualisation of intelligence was visionary, as it emphasised the plasticity of the brain many years before the advent of neuroscience and brain imaging techniques. The approach posits an optimistic vision of development that encourages parents and educators to see potential beyond a diagnosis, by working in a focused, intentional way to modify and create meaningful change through the intentional process of mediated learning (Fox, 2020).

### ***2.2.5 What is Mediated Learning Experience?***

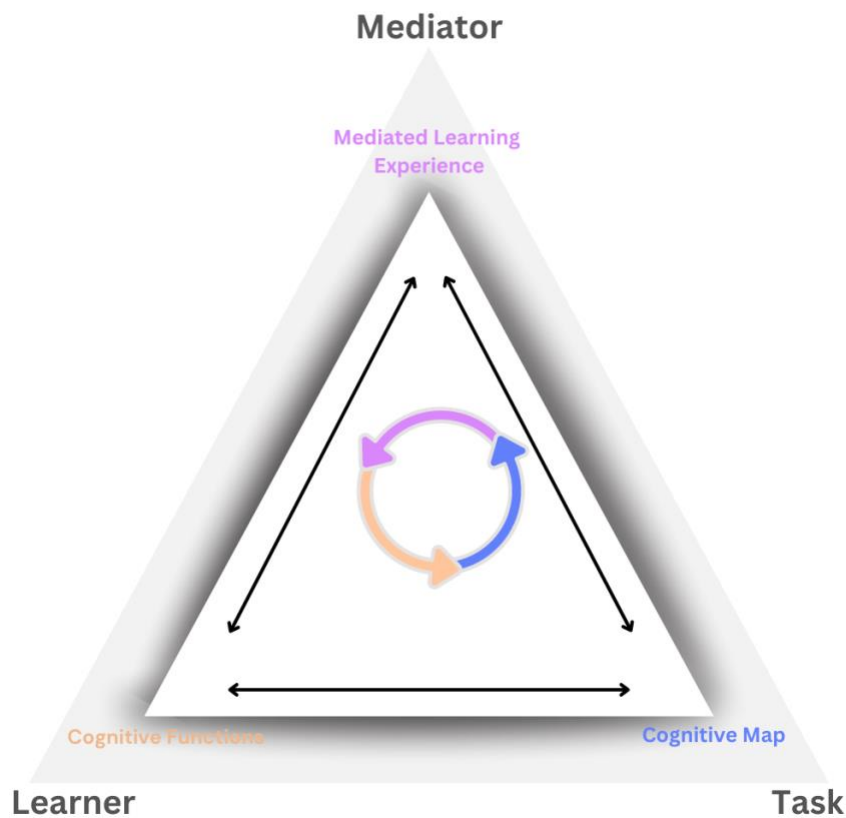
Feuerstein proposed that humans learn from two kinds of experiences: (i) direct experiences, which involve immediate and repeated experiences with objects and events and (ii) mediated learning experiences, which describe a process where a significant caregiver or adult focuses, interprets and makes meaningful the learner's experiences with the world.

While both experiences are necessary, it is through mediated learning experience interactions that cognitive modifiability is achieved and its significance is embedded within his theory of Structural Cognitive Modifiability and fully expanded in his theory of Mediated Learning Experience (MLE) (Feuerstein et al., 1991). Feuerstein et al. (1979) p.71 describes a mediated learning interaction as a “...pre-requisite to effective, independent and autonomous use of environmental stimuli by the child”, and occurs within a tripartite learning process involving the learner, the task and the mediator with each one working in a dynamic and synergistic way to optimise learning outcomes (Figure 1).

In a mediated learning experience interaction, the mediator takes an active role by evaluating the tasks or skills the learner needs to complete. They observe the learner’s initial response and strategically position themselves between the learner and the task, using various strategies to enhance the learner’s experience and mastery. This can involve strategies such as focusing the learner’s attention on the task, breaking it down into its component parts, highlighting the relevant aspects of the task and making important links between it and other areas of learning. Feuerstein posits that the tripartite learning process is a highly skilled one that requires the mediator to have an in-depth knowledge of the learner’s cognitive profile of strengths and needs, the specific skills required to complete the task and carefully using the skills of mediated learning experience to provide the support and scaffolding as required, making the necessary adjustments during the interaction.

**Figure 1**

*The Mediated Learning Experience Tripartite Learning Process (Feuerstein et al., 1991)*



For Feuerstein, effective learning involves the mediator employing three core techniques; knowledge of the learner's cognitive functions, analysis of the skills required to complete a task which he called the cognitive map and using specific mediated learning experience strategies to facilitate the development of efficient thinking skills.

The first core technique that the mediator uses is knowledge of important cognitive functions or skills that the learner already has or needs to have to optimise learning.

Feuerstein grouped these key skills into the *input stage* which focuses on the effective gathering of information, the *elaboration stage* where the information is processed and the *output stage* where the learner communicates a response to the processed information. By identifying which phase of thinking the learner is experiencing difficulty with, enables the

mediator to develop important thinking skills which can be applied to current and future learning experiences (Mentis et al., 2008; Rosen, 2019; Tan et al., 2019).

The second core technique involves the mediator using information gained from the cognitive map, analysing the specific skills required for the learner to successfully complete or master a given task. Having knowledge of the content of the material, the specific modalities in which the task is presented, as well as a clear understanding of the level of complexity involved in the task, can identify what adjustments, accommodations and supports the learner will require to complete and achieve a level of mastery in this activity.

Thirdly, Feuerstein highlights the core skills of mediated learning experience as being critical for cognitive development, by enhancing the learner's engagement with tasks and social interactions, thus developing important foundational attitudes and skills necessary for self-directed and autonomous learning (Mentis et al., 2008; Rosen, 2019). Feuerstein identified twelve key strategies which are expanded in his theory of Mediated Learning Experience, providing a framework for mediators to ensure the learning activity is a mediated learning experience one (Feuerstein et al., 1985; Feuerstein et al., 1991). He described the first three strategies of *intentionality and reciprocity*, *meaning* and *transcendence* as necessary for an interaction to be described as a mediated learning one and that every learning task must have them embedded in it both implicitly and explicitly. Through the strategy of *intentionality and reciprocity*, the mediator deliberately guides the interaction by arousing the learner's interest in and motivation for the specific task and presents it in a way that encourages active participation by the learner. Through the process of *meaning*, the mediator conveys the significance and importance of the task to the learner, making it relevant to the learner's world of experience. The objective of mediating *transcendence* is to

create meaningful links between this learning task to past or future learning experiences that develops a deeper understanding of the world and how different areas of learning are connected. Feuerstein described the other nine mediated learning experience skills of *competence, self-regulation, sharing, individuation, goal planning, challenge, self-change, search for the optimistic alternative* and *sense of belonging* as situational depending on the specific skills in a task and the learner’s response (Mentis et al., 2008; Rosen, 2019).

**Figure 2**

*Mediated Learning Experience Framework* (Feuerstein et al., 1991)



While the mediated learning methodology has been used in clinical settings by speech and language therapists and psychologists when working with children with complex needs, it has also been incorporated into several programmes that have been delivered to learners of different ages across different settings (Donaldson & Olswang, 2007; Klein, 1991; Klein & Alony, 1993; Klein et al., 2003).



### ***2.2.6 Autism and Mediated Learning Experience***

While mediated learning experience strategies enhance the learning experiences of all learners, they are especially beneficial for autistic learners in developing key cognitive, academic and social skills through teachers and significant adults acquiring an in-depth understanding of their cognitive map, cognitive functions and the specific mediation they respond best to as the basis of a targeted intervention plan (Feuerstein, 2024). However, one of the strengths of using mediated learning strategies with autistic learners is their ability to ameliorate the impact of non-intellective factors such as impulsivity, blocking, motivation, persistence and executive functioning difficulties that can play a significant role in reducing student engagement in learning tasks and academic performance (Damasio & Maurer, 1978; Feuerstein, 2024; Tzuriel, 2021a).

Through the principles of intentionality and reciprocity, the mediator engages the autistic learner in the task by consideration of key factors such as the learner's communication system, the appropriateness of concrete or abstract language, the use of other modalities and aids to stimulate interest and curiosity, while establishing that the learner understands the task correctly through observations of their non-verbal gestures and conversations. While mediating the meaning of a task is important for all learners, it is essential for autistic learners to perceive the personal significance of a specific task which motivates and sustains interest. As outlined in Section 2.1.5.3.3, autistic learners can demonstrate weak central coherence making it challenging for them to make important links between different areas of their learning, perceiving the "whole" picture rather than its constituent parts. The mediation of transcendence can support the learner to focus on the process rather than on the outcome alone, generating rules that can be applied to other contexts while making important connections between past, present and future learning.

Autistic learners can experience high levels of anxiety when confronted by new tasks or challenges that can cause them to shut down and demonstrate blocking type behaviours due to feeling overwhelmed (LeBeer, 2005; Tzuriel, 2021). Through the mediation of competence, tasks can be broken down into small, achievable chunks, enabling the learner to experience success at different stages of the process, thus reducing the build-up of anxiety while fostering persistence and increasing self-esteem. Mediating challenge can support autistic learners when coping with new or unexpected events which may be linked to their intolerance of uncertainty. Strategies such as scaffolding learning opportunities in which autistic learners have to manage a novel task, indicating areas they may find challenging and what they can do to overcome them while acknowledging their successes can provide them with the support required to cope with new challenges or changes to routines which can impact significantly on their learning experiences.

Autistic learners' engagement and participation in learning opportunities can be reduced by impulsive behaviours and internal and external distractions and through the mediation of self-regulation & control of behaviour and self-change the mediator can support the learner in developing effective metacognitive skills, by modelling reflective rather than impulsive reactions, encouraging the learner to take responsibility for their own learning and behaviour, while recognising and appreciating the value of personal growth and change.

The social communication difficulties that form part of the autistic profile can reduce social interactions and group learning experiences with peers, contributing to feelings of isolation and loneliness which impact on overall progress in school Educators applying the mediated learning skills of sharing and sense of belonging can support the autistic learner's understanding and appreciation of participating in group based activities, developing their

connectedness with others within the class, school and wider community contexts. The black and white thinking that is characteristic of the autistic profile can result in difficulties understanding different viewpoints and perspectives which can make the sharing of ideas in group based activities challenging for them. Through the mediation of optimistic alternative, the mediator can encourage the autistic learner to explore different viewpoints, opinions and solutions to problems.

However, while it is important for autistic learners to develop effective group participation skills, it is also important for them to recognise diversity and uniqueness as positive attributes. Opportunities to mediate individuation in learning opportunities, enables autistic learners to recognise and understand their profile of strengths and needs, empowering them to participate fully in all areas of their learning, reflecting a social model of autism (Anderson-Chavarria, 2022).

Primary deficit theories on autism such as Executive Dysfunction (Demetriou et al., 2018) have identified that autistic learners can demonstrate particular difficulty with the skills of planning, organising, task completion and making links between different subject areas, skills that are central for optimal performance in school and daily activities. Through the mediation of goal planning, the mediator can direct the learner through the process of setting, planning and achieving realistic goals as well as reviewing, modifying and adjusting them as needed.

Implementing mediated learning experience (MLE) strategies can provide autistic learners with the scaffolding and support required to improve their educational experiences. Future research could investigate how these strategies can be tailored to address particular

sensory processing challenges in autistic learners. For example, studies could explore the impact of combining sensory-friendly classroom settings with MLE techniques on student outcomes. In addition, longitudinal studies could be conducted to evaluate the long-term impact of MLE interventions on social skills development and academic achievement.

### ***2.2.7 Autism and Dynamic Assessment***

While the dynamic assessment approach has been used extensively with learners presenting with a diverse range of needs and age groups in clinical and educational settings (Haywood & Lidz, 2006), research that explores the benefits of the approach with autistic learners is limited, which may be attributed to the complexities associated with its diverse and heterogeneous presentation of characteristics.

However, while the research on how dynamic assessment approaches can support the development of key skills for autistic learners, Fox (2020) in her book, *“An Autism Casebook for Parents and Practitioners-The Child Behind the Symptoms”*, outlines the strengths of the dynamic assessment approach when working with autistic children with additional needs, citing it as positive, affirming and energising in its ability to identify a child’s strengths that may be obscured by more traditional assessment methodologies. Using Feuerstein’s vision of psychology that focuses on a learner’s potential over pathology can provide parents, educators and clinicians with a framework to transform and develop “...what initially appears hopeless to hopeful” (p.3). The author explains how concepts such as Feuerstein’s ‘islets of normalcy’ which describe those “...nuggets of developmental promise that may be microscopic, fleeting and infrequent” (p.102) but can inform the development of targeted interventions that are not only important for the autistic learner but can impact on parental attitude and morale that can shape intervention plans and long-term outcomes for the child.

The author highlights Feuerstein's input/elaboration/output phases of learning as particularly helpful when working with autistic children with communication difficulties as well as using his conceptual roadmap for charting a learner's progress in developing a specific skill. The author also cites the complementary nature of dynamic assessment approaches, in particular, mediated learning strategies, to enhance the effectiveness of other autism interventions such as the DIRFloortime approach (Greenspan & Wieder, 2007).

### **2.2.8 Summary**

Dynamic assessment encompasses a flexible assessment and interaction approach that adapts and responds to the diverse needs of learners. It emphasises the collaborative nature of learning, with the mediator playing a key role, facilitating the acquisition and mastery of new skills that result in effective and meaningful experiences for the learner. This approach impacts both the learner and mediator, influencing learning outcomes and teacher self-efficacy which will be discussed in the next section.

## **2.3 Factors that impact on learning outcomes.**

### ***2.3.1 Teacher Self-Efficacy.***

**2.3.1.1 What is Teacher Self-Efficacy?** In an era where accountability in education continues to gain traction, educators and policy makers seek to identify the specific factors that make the greatest impact on learning outcomes that are cost efficient, effective and sustainable. While the relationship between effective teaching and learning has been highlighted as key to improving outcomes for learners (Devine et al., 2013; Kyriakides et al., 2013; Stronge et al., 2007), the role of teacher self-efficacy has been identified by Tschannen-Moran and Hoy (2001) as one important factor in enhancing teacher performance, in that it not only builds teachers' confidence but also impacts indirectly on the learning of students. While teachers may have the necessary teaching skills, they also need to feel confident about their abilities to facilitate the learning of their students (Ruble et al., 2018). While teacher self-efficacy (TSE) presents as a simple construct, it has significant implications as it enables teachers to bring about positive outcomes for their students, especially for those with complex needs or who may be challenging or unmotivated (Ruble et al., 2013b; Tschannen-Moran & Hoy, 2001).

TSE has been informed by several theories such as Rotter's locus of control perspective (Rotter, 1966), which hypothesised that teachers' beliefs about their own competencies were shaped by their perception of whether or not they feel a sense of control in a specific learning situation, and whether their understanding of successful outcomes were the product of fate (external locus) or the result of their own efforts (internal locus). Bandura's social cognitive theory (Bandura, 1982; Bandura & Freeman, 1997; Bandura & Walters, 1977) posited that an individual's locus of

control was contingent on their own personal skills and described self-efficacy as a person's beliefs about their own abilities to successfully carry out a specific task. While Bandura conceptualised self-efficacy as being multi-faceted and domain specific, his theory identified a number of key self-regulatory skills that impacted on proficient performance across all domains that include the ability to analyse task demands, being able to construct alternative courses of action, setting effective goals, creating incentives and rewards to sustain effort in challenging situations and managing stress levels and negative thoughts that can affect progress (Bandura, 1982, 2002, 2006; Bandura & Freeman, 1997; Bandura & Walters, 1977). Tschannen-Moran and Hoy (2001) adapted the concept of self-efficacy to teaching and the classroom context, describing it as encompassing teachers' beliefs regarding their teaching approaches, classroom management and student engagement. Subsequent researchers have explored the impact of TSE on teacher performance in the classroom and identified key factors such as teaching practices and methodologies, motivation and persistence which in turn can exert a positive influence on student outcomes such as motivation and achievement (Duffin et al., 2012; Martin & Marsh, 2006; Podell & Soodak, 1993; Skaalvik & Skaalvik, 2004). Research into the impact of TSE in mitigating the onset of teacher burnout has identified that teachers who reported a low sense of self-efficacy reported higher levels of stress and burnout compared to teachers with high levels of self-efficacy (Huber et al., 2016; Ruble et al., 2013; Schwarzer and Hallum (2008).

**2.3.1.2 Teacher Self-Efficacy and Student Achievement.** The relationship between teacher self-efficacy and student achievement has formed the basis for a significant number of research studies. Some have identified a relationship between both

(Klassen et al., 2014), while other studies have not replicated similar findings (Jerrim et al., 2023; Klassen et al., 2011) and suggest a cautious approach when interpreting the relationship between both factors. How TSE can influence student achievement has been posited as occurring in two ways; the indirect pathway which assumes that increased TSE improves teachers' behaviours and practices in the classroom and the direct approach which suggests that teachers' TSE will impact students directly, increasing their self-efficacy and persistence with challenges (Lauermann & ten Hagen, 2021).

TSE levels impact on the efforts teachers put into their teaching and enthusiasm for the job, as teachers with higher levels of TSE display greater planning and organisation skills (Ashton & Webb, 1986; Chesnut & Burley, 2015), engage better with their students and are more open to and willing to try new approaches (Allinder, 1994; Guskey, 1988; Ryan et al., 2015), and demonstrate higher levels of persistence and resilience when working with challenging students (Jerusalem & Mittag, 1995; Pintrich & Schunk, 1996). Teachers with high TSE levels display higher levels of enthusiasm for their job, are more likely to stay in the teaching profession, and attend and participate in training events, and are less likely to be critical of their students if they make mistakes, and are more confident in referring students to special education provision (Coladarci, 1992).

Research has focused considerably on the role that TSE may play in improving the academic achievements of students (Klassen et al., 2014; Klassen et al., 2011; Tschannen-Moran & Hoy, 2001) with results providing a substantive link between teacher confidence and students' learning. Mojavezi and Tamiz (2012) suggest that



teachers with higher TSE are more likely to use creative and innovative teaching methodologies and resources and classroom management techniques that encourage and foster students' autonomy in their learning, as well as assume greater responsibility for all their students' learning including those with additional needs and are better at keeping their students on task and adapting their teaching to match students' evolving needs.

**2.3.1.3 Teacher Self-Efficacy and Outcomes for Autistic Students.** While there is a substantial body of research that has examined the impact of teacher self-efficacy on teacher behaviours and student outcomes (Bandura & Freeman, 1997; Dembo & Gibson, 1985; Hoy & Spero, 2005; Klassen et al., 2011; Ryan et al., 2015; Tschannen-Moran & Hoy, 2001), research that has focused specifically on the impact of TSE and outcomes for autistic learners is limited (Anglim et al., 2018; Horan & Merrigan, 2019; Ruble et al., 2013a; Ryan & Mathews, 2021). Research studies have shown that teachers who work with students with autism are at a high risk of burnout (Coman et al., 2013; Wang et al., 2015).

Much has been written about the specific challenges of teaching autistic students, specifically the heterogeneous nature of autism and the diverse range of needs that can make it challenging for teachers when developing individualised education plans, and these can contribute to high levels of burn out (Anglim et al., 2018; Iovannone et al., 2003; Segall & Campbell, 2014). While teachers understand and acknowledge the benefits of an inclusive education classroom, they report low levels of confidence in meeting the needs of learners with additional needs, in particular relating to autism (Able et al., 2015; Finke et al., 2009; McCray & McHatton, 2011; Soto-Chodiman et

al., 2012). Developing and delivering an effective education plan for autistic students requires teachers to have a vast range of skills that includes having a deep understanding of autism, its characteristics, strengths and challenges, as well as an in-depth knowledge about evidence-based interventions and appropriate teaching methodologies in addition to the ability to communicate and collaborate with parents and other professionals to provide a holistic learning experience for students. Teachers also need to keep up to date with new methodologies and cite the need for ongoing, specialised training as an important component to build their professional expertise and confidence. The provision of ongoing training opportunities and increased levels of TSE have therefore been identified as protective factors against burnout for teachers working with autistic students (Jennett et al., 2003).

**2.3.1.4 Teacher Self-Efficacy and the Irish Context.** With the increase in specialised autism classes in Ireland and a move to an inclusive model of education (Banks et al., 2016; Howe & Griffin, 2020), research studies in Ireland have also sought to identify the factors that contribute to positive outcomes for students with a particular focus on teacher self-efficacy (Anglim et al., 2017; Ryan & Mathews, 2021). Similar to the findings from international studies, the provision of autism specific training for teachers prior to teaching in a specialised class, as well as ongoing training opportunities, were highlighted as important for teachers, giving them the necessary knowledge and skills while also building their confidence in being able to deliver an effective education for their students (Anglim et al., 2017; Banks et al., 2016; Horan & Merrigan, 2019). The impact of teaching experience on TSE was highlighted by Horan and Merrigan (2019) where they found a small but statistically significant difference, ( $p < .05$ ) in TSE levels between teachers with little specialised training

compared to more experienced teaching colleagues. The self-efficacy of teachers working in specialised autism classes in Irish primary schools was investigated by Ryan and Mathews (2021) in which teachers' confidence levels were measured using the *Autism Self-Efficacy Scale for Teachers* (ASSET), (Ruble et al., 2013). The findings indicated satisfactory levels of teacher confidence regarding the specific skills they require to deliver an effective education plan for their students, and in addition they found that TSE levels were positively correlated with the teachers' level of engagement in autism specific continuing professional development (CPD). There was also a positive correlation between TSE levels and the support the teachers received from their school principals and their experience teaching in the specialised class setting.

### ***2.3.2 Implementing Interventions in a School Setting***

**2.3.2.1 What are Evidence Based Practices?** Evidence based practices (EBP) or evidence based interventions (EBI) are programmes that have been shown through the use of robust, empirical research design to demonstrate positive outcomes for clients (Stoiber & DeSmet, 2010). While they emerged from the fields of medicine and science, they now form the basis for supports and interventions for children and young people both in classrooms and in special education settings. Using rigorous scientific methods to establish the potential value of a specific intervention, it would seem plausible that using interventions with a strong evidence base has the potential to bring about the greatest impact on students.

However, while demonstrating the efficacy of an intervention which takes place in scientifically controlled experimental settings, the dynamic setting of the real classroom lacks experimental control, making the delivery of these interventions

challenging and thus impacting on their effectiveness (Slavin, 2002). This suggests that the impact of an intervention does not rely exclusively on the scientific rigour of it but equally on how the programme is delivered in the setting for which it was intended (Bauer & Kirchner, 2020; Kelly & Perkins, 2012; Wilson & Kislov, 2022). Current research approaches and economic considerations place a great emphasis on accountability, making sure that settings such as healthcare and education deliver treatments, interventions and supports to clients that are based on strong empirical evidence that demonstrate both their efficacy and effectiveness (Kelly, 2012).

The focus on accountability has increased significantly in the last twenty years and has led to the development of a scientific discipline called implementation science, which Wilson and Kislov (2022) describe as “...the scientific study of methods to promote the systematic uptake of evidence-based clinical treatments and practices and organisational and management interventions into routine practice” (p.1). The focus of implementation science is to identify the barriers and facilitators of effective interventions and is therefore conceptualised as providing the “...missing link that connects research outcomes with the delivery of effective practices” (Bacon et al., 2011, p. 46). While the approach is used primarily in the healthcare sector, it is being used increasingly in education sectors to identify the specific processes and contextual variations that need to be considered when delivering interventions in the school setting (Kelly, 2012).

**2.3.2.2 What is Implementation Science?** Implementation science is a multi-disciplinary field that draws on research methodologies from across a wide range of disciplines and contexts and is underpinned by a shared understanding that change is a

complex process that operates at a multi-systems level and it aligns closely with Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979). This theory emphasises the impact of environmental factors operating at the individual, school and societal levels on development. An in-depth understanding of the contextual factors is at the heart of this approach, as school-based interventions are delivered in settings which are not static, but dynamic and constantly evolving, which researchers and practitioners need to be cognisant of. The approach involves two key phases, the first one uses robust research design to establish the evidence base for an intervention and the second phase establishes how it can be implemented effectively in real world contexts (Cook & Odom, 2013). The implementation process ensures that the impact of interventions move from a *letting it happen* approach to a *making it happen* one (Greenhalgh et al., 2004) with the former having been shown time and time again to be unsuccessful (Tseng, 2012).

Implementation science, established with its first journal in 2006, unites various disciplines and methodological approaches to share best practices. Despite being new, it addresses long-standing challenges in applying research to practice (Sanetti & Collier-Meek, 2019). Mosteller (1981) explains that the process of transferring new innovations with a robust scientific basis into routine practice is a lengthy one that can take from seventeen to twenty years and often results with a less than fifty percent uptake. Mosteller uses the historical example of how the benefits of using citrus fruits to cure scurvy in sailors, initially identified in 1601, were not adopted as routine practice until 1865. The advent of organisations such as the RAND Corporation (Woo et al., 2024), the Agency for Healthcare Policy and Research (Atkins et al., 2005) and the National Institute of Clinical Excellence (NICE) (Rawlins, 2015) have built on

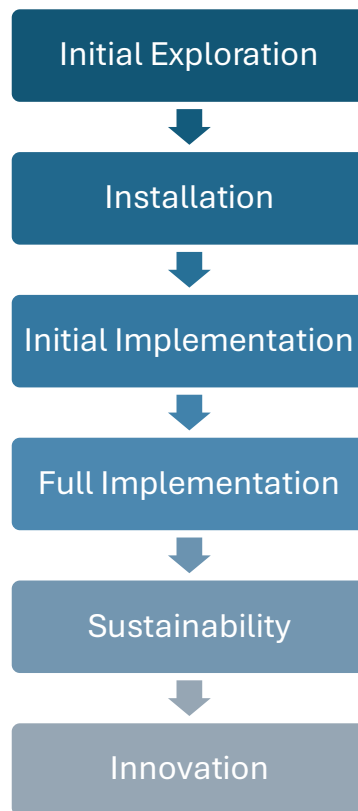
this new understanding of linking research findings to everyday practice, acknowledging the need to move beyond a mere focus on establishing the internal validity of an intervention to an examination of the external variables that can facilitate or impede effective implementation of it. Sanetti and Collier-Meek (2019) explain the benefits of implementation science in its ability to look at translating research into practice using a wider lens that can not only identify the factors that influence effective implementation across different levels, but also the factors that can promote sustainability.

While the challenges of effective implementation are rooted in the healthcare sector, the recurring *research to practice dilemma* is also in the education sector which Fixsen (2005) describes as the *science to service dilemma*, where the findings from high quality research do not impact on service delivery as anticipated, and while there has been a focused effort to bridge that gap, the challenges continue to persist (Odom et al., 2005). The use of implementation science approaches have the potential to bridge that ongoing gap (Fixsen et al., 2005), enabling researchers and practitioners to identify and address these challenges, by knowing the *what* of an intervention, that is, how to implement, improve, scale up and sustain it to *make it happen* for children and young people who receive it (Bailey, 2012).

**2.3.2.3 The Implementation Process.** While there are a significant number of implementation frameworks to guide effective practice, there are several core features that follow a staged process and are summarised in Figure 3.

**Figure 3:**

*Implementation Process* (Bailey, 2012)



The first stage is called *initial exploration* and involves all stakeholders, including teachers, and is critical for staff *buy in* and commitment. The second stage is *installation* which includes the necessary preparations, training and identification of organisation supports that are needed. This is followed by the *initial implementation* and *full implementation stages* where different iterations of the intervention are delivered which can be a vulnerable time for all involved and described as the “initial awkward stage” (Joyce & Showers, 2002, p.249). In the *full implementation stage*, staff confidence has grown regarding the delivery and implementation of the intervention across the school and the focus is now on programme evaluation. In the *sustainability stage*, which is an ongoing process, there is a focus on additional training, supervision and coaching to improve competence

across the school staff involved. Finally, during the *innovation stage*, the focus is on fidelity to the key components of the intervention and the identification of possible adaptations that can add value to the intervention (Bailey, 2012; Fixsen et al., 2005).

While the provision of effective training is key to building teacher confidence and competence in delivering interventions as intended, Fixsen et al. (2005) have identified seven core strategies that are necessary for implementation to be a successful process.

### I. *Staff selection*

The school team, comprising the principal and teaching staff, plays a pivotal role in intervention success. They must foster a shared philosophy, gauge openness to change, and ensure motivation and commitment to the new approach (Bailey, 2012; Moir, 2018). By exploring teachers' theories of action and addressing concerns and motivators, a shared vision can be established (Robinson, 2017).

### II. *Training*

Effective training needs to align with teachers' current knowledge, address their specific needs and match their theories of action. Knowledge of teachers' prior experiences and knowledge is vital, as these shape attitudes and motivation (Robinson, 2017).

### III. *Ongoing consultation and coaching*

The provision of post-training coaching is crucial for building competence in the new intervention, and its adoption and consistent use by teachers (Joyce & Showers,



2002), but is contingent on the availability of coaches with expertise and strong communication skills.

#### IV. *Staff evaluation*

Once a new intervention or practice has been delivered in a school setting, it is important for all involved, in particular the teachers delivering it, to reflect and evaluate on how it is being implemented, with a keen focus on fidelity especially in the early stages (Kaderavek & Justice, 2010; Moir, 2018).

#### V. *Programme evaluation*

While the use of effective, targeted training and ongoing support are key to successful implementation, research studies have also shown how the use of performance feedback to teachers can be a powerful method to emphasise the importance of intervention fidelity in school settings through the use of fidelity data presented visually in graph form. This enables them to evaluate the current implementation and identify strategies to improve fidelity (Coddington et al., 2008).

#### VI. *Administration support*

The support of an efficient administrative system operating within a school setting is an essential component in coordinating the practical tasks required for the successful implementation of a new initiative within the school. Activities such as providing the resources required for training workshops, organising training events, coordination with outside agencies that can offer training and support between stakeholders, can facilitate and support the smooth day to day delivery of the intervention (Durlak & DuPre, 2008; Robinson, 2017).

## VII. *Organisational support*

Numerous studies emphasise the importance of organisational factors operating both within the school and in the wider community in facilitating the implementation process. Ross et al. (2016) highlight the significance of adequate infrastructure, key personnel engagement, organisational readiness, and efficient workplace processes and systems. Durlak and DuPre (2008) stress the need for a positive work climate, shared vision among staff, and collaboration with external agencies. Effective communication and monitoring systems are also crucial for successful implementation (Fixsen et al., 2005; Forman & Barakat, 2011).

**2.3.2.4 Factors that Affect Implementation.** While there is broad agreement amongst researchers and practitioners about the benefits of using evidence based practices and interventions to improve outcomes for students (Cook et al., 2012; Slavin, 2008), the school context presents a number of unique challenges that can make it difficult to translate research findings into the real world classroom. Fixsen et al. (2005) describe implementation challenges as *wicked* problems due to their evolving and ever-changing status that can *fight* against the intended change. Implementing a new intervention in a school setting involves careful consideration of several complexities regarding the intervention itself, its relevance and fit with the targeted population of students, as well as practical issues for the teachers which can involve resources, training, knowledge of evidence-based practices and intervention fidelity, and organisational issues relating to management *buy in*, administrative support, effective training and ongoing support and coaching. Cook and Odom (2013) emphasise the importance of the following key factors to ensure that evidence-based practices are effective in the naturalistic setting of the classroom.

- *Linking rigour with relevance*

The emphasis by researchers on the importance of using evidence based practices that are supported by strong research, and practitioners that value practice based evidence approaches can result in the creation of a dichotomy between the two viewpoints which can result in poor implementation (Smith et al., 2013). To overcome the obstacles created by this dichotomy, the authors suggest the need for collaboration between researchers and practitioners using both educational research design and communities of practice, reflecting Barkham and Mellor-Clark (2003), who suggest that for effective practices to be developed and implemented successfully, special education needs to embrace the scientific rigour of evidence based practice and the relevance of practice based evidence.

- *Disseminating research findings*

An important but often overlooked aspect of the *research to practice* dilemma in special education is how research findings are communicated to practitioners that can lead to meaningful change and outcomes for students (Winton et al., 2008). Research findings continue to be disseminated in academic journals where the target audience comprises mainly of academics rather than practitioners working on the ground who are charged with implementing the intervention. This suggests the need for researchers to communicate their findings in a style that is accessible to all stakeholders and that has a lasting impact. To optimise research findings in real world settings, Heath and Heath (2007) suggest the use of dissemination strategies such simple, concrete language, novelty, credibility, emotion and narrative accounts, as well as including practitioners as co-authors in reports (Smith et al., 2010).

- *Flexibility within fidelity*

A key aspect of implementation science is the importance of intervention fidelity; the extent to which teachers are delivering programmes as envisioned by the researchers who have developed them (Cochrane et al., 2019). There is an assumption that evidence based interventions with high fidelity will result in improved outcomes for students and similarly those with low fidelity will result in poorer outcomes (Harn et al., 2013). However, while fidelity has been shown to correlate with student outcomes, research findings have been inconsistent, which may be due to differing definitions of what constitutes fidelity, how it can be measured and analysed, as well as the impact of contextual variables in different settings (Al Otaiba & Fuchs, 2006). While fidelity in medicine can be correlated with treatment, fidelity in education needs to be conceptualised more broadly to consider both structural and process aspects, which can influence how teachers adhere to the delivery of an intervention (Rohrbach et al., 1993).

Research into the *Incredible Years Teacher Classroom Management Programme* (IYTCM) by Webster-Stratton et al. (2011) identified three components that are critical for achieving appropriate levels of fidelity that will lead to sustained implementation and improved outcomes for students: firstly, making explicit the core components of the intervention with built in adaptations; secondly, emphasising and differentiating teacher professional development experiences; and thirdly, embedding ongoing coaching into the teacher training.

The study also emphasised that some interventions work differently in different situations and contexts, and there is a need to create a balance between

implementation and adaption that maintains a high level of fidelity, as well as the need for researchers to develop interventions that can be adapted to match the dynamic and ever-changing school contexts and situations. The heterogeneous profile of autism and the diverse learning needs of autistic learners creates specific challenges for teachers regarding the delivery of interventions with the intended fidelity, and suggests the need for researchers to develop additional adaptation strategies to optimise the intended outcome (Aljunied & Frederickson, 2013).

- *Scaling Up*

The process of scaling up an intervention is an important factor in influencing its successful implementation and sustainability and describes the process of expanding the use of an intervention which has demonstrated both its efficacy and effectiveness on a small scale to larger implementation while keeping its core aspects constant. Fixsen et al., (2005) identified four key stages in the scaling up process as demonstrated in Figure 4.

**Figure 4:**

*The Four Stages of Scaling Up an Intervention (Fixsen et al., 2005)*



First is the *emergence* stage where stakeholders decide that this intervention has the potential to be delivered to a wider context, second, is *demonstration of capacity* in which the researchers determine the potential of the intervention in improving outcomes for students, third is *elaboration* where the researchers

implement it widely using information from the demonstration stage; and the fourth is the *adoption and sustainability* stage where the intervention is integrated into daily classroom practice. While the scaling up process is important for the sustainability of an intervention, it can be reduced by a number of factors such as researchers and practitioners not sharing the same goals and working in an independent, fragmented way that limits the success and sustainability of the intervention (Cobb & Smith, 2008).

- *Implementation in diverse settings*

Forman et al. (2009) emphasise that careful consideration needs to be given to the successful implementation of evidence-based interventions for students with a diverse range of needs including race, ethnicity, socio economic status, gender identity and sexual orientation to ensure positive outcomes for them.

**2.3.2.5 Implementation Science and Autism Interventions.** While there has been an increase in the development of evidence based interventions for autistic learners with research studies demonstrating their efficacy, there are limited studies that demonstrate their effectiveness in the real classroom setting with findings suggesting that practitioners may not be implementing them with fidelity (Hess et al., 2008; Morrier et al., 2011; Wong et al., 2015). These inconsistencies in the delivery of autism specific interventions highlight the role of implementation science frameworks in both the development and delivery of these interventions.

Implementation science frameworks such as the EPIS Model (*exploration, preparation, implementation and sustainment*) (Aarons et al., 2011) and the National

Implementation Research Network model (NIRN), (Fixsen et al., 2005) have been used frequently when developing and promoting effective practices and services for autistic students (Brookman-Frazee et al., 2012; Brookman-Frazee & Stahmer, 2018; Ho et al., 2018; Odom et al., 2013; Odom et al., 2014; Oswald et al., 2018; Stahmer et al., 2012). While implementation science frameworks have been used extensively in the area of autism specific interventions, the development of the *Autism Model of Implementation* (AMI) (Drahota et al., 2012) considers specific barriers to the successful implementation of interventions for autistic learners such as the educational training of staff, funding issues, societal constraints, challenges with identifying evidence based practices/interventions, adaptations required to meet the needs of a heterogenous group that require specialised training, and the role of advocacy groups on legislation and funding for services which influence services at an organisational level.

#### **2.3.2.6 Implementation Science and the Role of the Educational Psychologist.**

Successful implementation in the school context can be facilitated by educational psychologists (EPs) through supporting and explaining at multiple levels, the role of implementation science and the various drivers that underpin the process (Bailey, 2012; Kelly & Perkins, 2012). The potential role of the EP is highlighted by Sanetti and Collier-Meek (2019) who suggest that one of the principal barriers to the successful use of implementation science methods in school psychology research and practice is the limited knowledge and training that EPs receive. They emphasise the importance of EPs being upskilled about the terminology, theories and frameworks, strategies, measures and research design that are key to the successful use of implementation science in special education settings.

The role of the EP in developing schools' understanding of implementation science frameworks and strategies is expanded by Moir (2018) in which the author states that the EP is uniquely positioned to develop schools' understanding through the systemic work they undertake, working collaboratively with teachers and principals to assess staff readiness prior to implementation, as well as providing them with the support required at different stages of the process. The EP can support schools in providing advice around the selection of evidence-based interventions and training to develop their knowledge and understanding of the contextual variables that can affect implementation in a supportive and empowering way.

### ***2.3.3 Implementation Science and Mediated Learning Training***

The preceding sections have demonstrated that the development and delivery of evidence-based interventions into everyday practice in schools is a challenging process. Using an implementation science framework assists researchers in the identification of the barriers and enablers that can either hinder or facilitate their successful application, ensuring the best outcomes for children and young people using interventions that are not only scientifically sound but also sustainable. In particular, developing autism specific interventions is a complex process due to the diverse profile of autistic learners. The effectiveness of these interventions is contingent on them being developed in naturalistic settings with inbuilt bespoke adaptations that enable teachers to deliver them with the intended fidelity but with the necessary flexibility to match the diverse needs of students receiving them.



Teacher *buy in* has also been identified as important for the successful introduction of new interventions. Training programmes for teachers need to gauge their openness to new methodologies as well as their previous training experiences to ignite their enthusiasm for the process. While dynamic assessment approaches such as mediated learning are acknowledged by educators as positive, person-centred approaches, they are not widely used in schools which suggests the need for targeted information that is informative but not overwhelming. The need for ongoing coaching for teachers and evaluation of the intervention have also been highlighted as key to the successful implementation and sustainability of an intervention. These factors will be important in the development and delivery of mediated learning experience training to teachers working in specialised autism classes to which we turn to in the following chapters.

## **Chapter 3: Study One Methodology**

### **3.1 Study One Rationale**

The aim of this study was to conduct an extensive exploration of research studies that have examined how interventions using a dynamic assessment methodology, in particular mediated learning strategies, have informed interventions for autistic children and young people. The review also sought to identify what the key factors that need to be borne in mind when developing autism specific interventions to be delivered by teachers in the classroom setting. It is intended that the findings from this review will provide the framework for the development of the mediated learning training programme for teachers working in specialised autism classes which is the focus of Study Two.

#### ***3.1.1 Methodology***

**3.1.1.1 Systematic Literature Review Methodology.** Webster and Watson (2002) propose that conducting a thorough review of existing literature is a key component of the research design process, establishing the firm foundations for expanding and advancing knowledge and identifying new areas of research through an in-depth exploration of previous research studies in a specific area. Through the review process, researchers can identify what aspects of a particular topic of interest have already been investigated and what needs to be considered for future research (Hart, 2018).

While Grant and Booth (2009) suggest a typology of fourteen different types of literature reviews, the methodology chosen for the current study is the systematic literature review (SLR) in its ability to identify, evaluate and synthesise the most up to date and relevant research on dynamic assessment and autism interventions. Moher et al. (2009) define a SLR as a review of a clearly defined research question using a set of systematic and explicit methods to identify, select and critically appraise relevant research studies using data from

the studies. The SLR follows a specific process that enables researchers to search for all the available knowledge on a topic, evaluate and synthesise the findings that is reported in a prescribed format that others can replicate, and follows a set of steps as outlined in Figure 5 below: (Dakduk & González, 2018; Parahoo, 2014).

**Figure 5:**

*Systematic Literature Review Process* (Moher et al., 2009)



While there are several SLR methodologies, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009) is the one chosen for this study. The PRISMA statement consists of a twenty-seven item checklist and a four-phase flow diagram and provides researchers with a well-defined framework to conduct and report the findings of SLRs in a clear and consistent format that can be replicated by others, as well as providing researchers with a helpful structure when conducting evaluations of interventions which is the main objective of the current study.

**3.1.1.2 Procedure.** Using the PRISMA methodology, the SLR aimed to answer the following research questions:

1. Do dynamic assessment approaches and interventions improve outcomes for autistic children and young people?

2. Are there specific areas of challenge within the autistic profile that respond best to dynamic assessment approaches?
3. Can dynamic assessment-based interventions such as mediated learning be implemented effectively in the classroom?

Following the search process, seven research papers were identified as meeting all the inclusion criteria.

The seven studies were evaluated using the three research questions with the findings synthesised to identify the key considerations regarding developing an autism specific intervention for teachers to use in their classrooms. These findings informed the development of the mediated learning training programme that is the focus of Study Two.

## **Chapter 4: Evaluating the Impact: A Scoping Review of Dynamic Assessment Interventions and Outcomes for Autistic Learners (Study One)**

### **4.1 Introduction**

This chapter presents the findings from Study One, which aimed to identify and synthesise research evidence on the effectiveness of dynamic assessment interventions in improving learning outcomes for autistic children and adolescents. Additionally, the review sought to highlight key considerations for developing autism-specific interventions, which will inform the development of the mediated learning training central to Study Two.

#### ***4.1.1 Autism***

While autism can be conceptualised from either a deficit or strengths based perspective, there is agreement that it can present with behavioural, social, emotional, language, communication and academic difficulties that occur across the lifespan and require ongoing, targeted support (Urbanowicz et al., 2019). Despite the increased prevalence or increased awareness of autism (Zeidan et al., 2022), researchers have shown that early identification and the implementation of evidence-based interventions are key (Fuller & Kaiser, 2020; Zwaigenbaum et al., 2014). While most interventions at the pre-school age are delivered in clinical settings, many interventions for school aged children and young people are delivered in schools by special education or class teachers which emphasises the need for specialised training for teachers to optimise their effectiveness.

#### ***4.1.2 Autism Interventions***

As interventions target the autistic child's specific areas of difficulty, it is incumbent on early years educators, teachers and other professionals who work closely with the child to identify effective interventions that will build on their profile of strengths, while providing

targeted support for their areas of need. While Paynter et al. (2020) reported the existence of approximately one thousand autism specific interventions, not all of these meet the criteria to be described as evidence based. Systematic Literature Reviews such as those carried out by Odom et al. (2021), Wong et al. (2015) and more recently, Hume et al. (2021) have sought to identify which evidence based interventions bring about the most effective outcomes for autistic children and young people. Hume et al (2021) updated and extended the findings from previous reviews and identified twenty-eight interventions that met the criteria for evidence-based practice with peer mediated interventions identified as one of them. The researchers also evaluated student outcomes as part of their review, and while communication, social and behaviour outcomes continue to present as priorities, they noted a small increase in studies where academic, vocational training and mental health were the focus, and suggested that these important skills for older students warranted targeted support and further research and development.

#### ***4.1.3 Developing Autism Interventions***

Researching the efficacy of autism-based interventions presents with a unique set of considerations that make it challenging for researchers to measure outcomes and establish causation between different variables (Davies, 1999). As research into autism encompasses several disciplines, e.g. medicine, education, psychology and language and communication, it results in the development of different perspectives and research methodologies that can produce different findings (Reichow et al., 2008).

Another challenge for researchers is the conflict between researching interventions in a clinical or laboratory-based setting where variables can be controlled and the more naturalistic setting of the classroom which is where the majority of interventions are

delivered (Weisz, 2000). While the lack of research in the classroom setting was highlighted by Kasari and Smith (2013) as a limitation in research design, Hume et al. (2021) reported in their review an increase of over 50% in studies carried out in educational settings. However, while this was a positive direction, they noted that these studies were conducted by research personnel rather than school staff or professionals working on the ground in these settings.

The importance of researching autism interventions in real classroom settings was also highlighted by Bond et al. (2016) in which they suggested that a broader evaluation framework was necessary to evaluate educational *effectiveness* which was more informative to teachers and other professionals working with autistic students. The inclusion of data from school staff regarding the usefulness of an intervention such as observations, questionnaires and, where possible, the direct involvement in the delivery of the intervention were identified as key information to be included in the research data. The central role of teachers in both the development and evaluation of interventions was highlighted by Howell et al. (2022) who reviewed assessment tools for autistic learners. Of the twenty-six assessment tools they reviewed, only three involved the input of teachers both in the design and evaluation of their effectiveness.

Another factor that requires careful consideration when undertaking research that measures the impact of autism specific interventions on outcomes is the research design used. Kasari and Smith (2013) indicated in their review that a high proportion of studies involved single case study designs in comparison to group designs that used either a randomised controlled or quasi experimental design. While the single case design has the potential to demonstrate immediate change, the benefits of a group design is its ability to evaluate longer term outcomes. They suggest that both approaches could be used in a complementary way

with a single case study forming stage one of the intervention design process and a group design used as stage two of the process, which would evaluate long term outcomes. This approach echoes the sentiments posited by Weisz (2000) who suggested the importance of researching interventions in the real-world classroom context from the beginning, as this was the setting where the intervention would be delivered.

#### ***4.1.4 Autism Interventions and Dynamic Assessment***

While there has been extensive research on dynamic assessment with specific populations of learners, to date, the research regarding dynamic assessment and autism is limited. In the Dynamic Assessment Bibliography & Repository in Vanderbilt University (Lidz, 2020) which holds a collection of dynamic assessment research, approximately 39% of studies which explored the efficacy of dynamic assessment-based interventions involved English as an additional language (EAL) and language and communication interventions in comparison with research on autism interventions that accounted for approximately 3% of the studies. Tzuriel (2021b) suggests that some of the challenges associated with dynamic assessment and autism may be attributed to communication and weaker central coherence difficulties as identified by Happé and Frith (2006) and Aljunied and Frederickson (2013). However, while research that explores the relationship between autism and dynamic assessment is limited, it is important to note that other research which has looked at intellectual disability, sensory difficulties, learning & cognition, literacy, Maths and giftedness may also form part of some autistic learners' profiles of strength and needs.



#### ***4.1.5 Challenges in Dynamic Assessment Research***

While the relationship between dynamic assessment and academic achievement has received considerable focus, to date, research findings have provided conflicting results. Sternberg & Grigorenko (2002) raised the important and ongoing question as to why dynamic assessment, and in particular dynamic testing, has not provided clear and unambiguous evidence for its utility in enhancing academic success over standardised methods.

However, while reviews of the research literature on dynamic assessment, such as Mahmud et al. (2019), found evidence for dynamic assessment improving students' cognitive abilities, a review carried out by Elliott et al. (2018) concluded that research to date has not provided substantive evidence about how the use of dynamic assessment in identifying deficient cognitive functions and providing targeted interventions impacts positively on academic attainment. They also highlighted that while some gains have been shown in laboratory training studies, these have not been translated in a meaningful way into real classroom contexts. A review of dynamic assessment research carried out by Tiekstra et al. (2014) concluded that there was still insufficient evidence for the extent to which understanding a learner's cognitive profile leads to more targeted, focused interventions. Finally, a recent review of the research between dynamic assessment and developmental language disorders concluded that the various findings, while positive, were still at an emergent level due to small sample sizes and varying research methodologies (Hunt et al., 2022).

A number of reasons have been posited as to why research studies have not produced substantive evidence for its ability to inform effective interventions that can effect meaningful change for learners. Frisby and Braden (1992)'s critique of Feuerstein's Learning

Propensity Assessment Device (LPAD) argued that the social theoretical underpinnings of the approach were subjective in nature and therefore challenging to assess, and the focus on measuring a learner's *potential* suggested that dynamic assessment was, in effect, trying to measure something that does not exist. While these criticisms were subsequently addressed in Tzuriel (1992), the subjective aspect of this approach has also raised questions regarding its reliability and validity as well as its ability to generalise findings to other learners and contexts. Haywood and Lidz (2006) suggest that the role of the examiner in the process also contributes to the reliability debate as the professional training and expertise of the examiner, which can vary from person to person, is central to the process and the resultant conclusions.

The lack of clarity regarding the definition of dynamic assessment has also been cited as a major reason for the inconsistent and inconclusive findings from research studies (Sternberg & Grigorenko, 2002), as well as the use of small sample sizes (Hunt et al., 2022). While many professionals have expressed their wish to use dynamic assessment approaches as part of their practice, the additional time needed for assessment, ongoing professional training as well as challenges in communicating the findings to parents and teachers have been cited as reasons for its inconsistent use (Deutsch & Reynolds, 2000; Hasson & Joffe, 2007).

However, despite the ongoing methodological issues that make research in this area challenging, Sternberg & Grigorenko (2002) suggest that dynamic testing and its application in assessments hold great promise for learners, their parents and the professionals who work with them but cite the need for greater rigour regarding research design to explore its

potential further and provide the clear, substantive evidence that is required, a sentiment also echoed in Tzuriel (2021).

#### ***4.1.6 Interventions Using a Mediated Learning Methodology***

While mediated learning skills form an integral aspect of many dynamic assessment approaches, the interaction approach itself has been used by therapists working with parents/caregivers as a methodology to develop a child's cognitive skills, (Isman & Tzuriel, 2008; Klein, 1991; Klein & Alony, 1993; Klein et al., 2003; Lebeer, 2005; Tzuriel & Hanuka-Levy, 2019; Tzuriel & Shomron, 2018) and has been incorporated into structured programmes that have been delivered in educational settings involving pre-school, primary and secondary school aged students and adult learners with additional needs. A summary of these interventions and programmes are outlined in Table 1.

**Table 1***Summary Of Programmes And Interventions Where Mediated Learning Is A Core Component*

Name	Target Population	Method of Delivery
Instrumental Enrichment (FIE) (Feuerstein et al, 1980)	Children and adolescents with learning difficulties	An individualised programme delivered approximately three times per week over two years
Bright Start (Haywood et al., 1992)	While developed for younger children, it can also be delivered to older children with learning difficulties	A programme of fifteen lessons, delivered approximately three times per week over one year to small or larger group settings
Peer Mediation with Young Children (PMYC) (Tzuriel & Shamir, 2002)	Young children and older more experienced peers	A programme consisting of seven lessons lasting fifty minutes each, delivered over three weeks.
Mediation in the Classroom: An Open Systems Approach (MiCOSA) ((Zanartu et al., 2015))	Primary School	A framework for teachers how to integrate 21 essential critical thinking skills into everyday classroom activities
Cognitive Education Advancement Programme (CEA) (Greenberg, 2005)	Students of all ages and abilities	An approach for teachers to integrate 12 cognitive processes and 8 tools for learning based on MLE across the curriculum to help students become more effective and independent learners

Name	Target Population	Method of Delivery
Working Memory-Cognitive Modifiability Programme (WM-CMP) (Tzuriel & Weiss 2020)	Early Primary School Aged Children	A computerised intervention completed twice a week for five weeks with each session lasting forty minutes
Seria-Think Programme (STP) (Tzuriel & Trabelsi, 2015)	Primary School Aged Children and older students with self-regulation and planning difficulties	The intervention consists of twelve lessons lasting forty-five minutes each that are delivered individually
Culturally Responsive Mediated Learning (CRML)	Primary and Secondary school	A framework to target students' thinking skills and transfer them to other classroom and broader life experiences and individual settings for students with diverse linguistic, cultural and socio-economic backgrounds Can be used in whole class, small group and individual settings for students with diverse linguistic, cultural and socio-economic backgrounds
The Executive Functions Mediation Model (Exefunmed) (Klimovič et al., 2017)	Children aged 9/10 years with educational needs	A framework to develop children's executive functions during reading tasks which is used in individual sessions
ProblemUp! (Greenberg et al., 2020)	Adolescents & adults with additional needs	A card game based on mediated learning theory that can be used by peers or teachers to develop learning and coping strategies informally. There is also an online version

## 4.2 Scope and Methodology

The aim of this review was to identify and synthesise the evidence for dynamic assessment interventions on improving the learning outcomes for autistic children and young people. A review of the research literature on dynamic assessment identified two systematic literature reviews, one that focused on the role of dynamic assessment in identifying language disorders in multi-lingual children (Hunt et al., 2022) and the other on the identification of specific dynamic assessment tools that promote cognitive development (Mahmud et al., 2019). While both reviews emphasised the potential benefits of dynamic assessment, Hunt et al. (2022) emphasised that research in this area, while promising, was still at the emergent stage due to a small number of research studies and sample sizes. To date, there is no review known to the author of the research that specifically explores the potential benefits of dynamic assessment approaches for improving the outcomes for autistic learners.

A further consideration in defining the scope and methodology of this review was evaluating the effectiveness in the educational context of the interventions being measured as a large number of research studies that evaluate the effectiveness of autism specific interventions are carried out in clinical settings and therefore the findings may not transfer to the naturalistic setting of the classroom (Bond et al., 2016; Kasari & Smith, 2013). As preliminary searches indicated a small number of research studies, a scoping review was therefore deemed the most appropriate methodology in its ability to analyse information from a wider range of sources in the field of dynamic assessment.

### 4.3 Search Process

The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). Research articles were reviewed according to the following inclusion criteria.

- The study includes children/young people whose ages were between four and eighteen years of age with a diagnosis of autism and attended either a primary or post-primary school setting.
- Journal articles that were peer reviewed and published in English between the year 2000 and 2022.
- The research study was in a clinical, school or home setting.
- Studies used a dynamic assessment measure as a key part of the intervention and had to report at least one outcome measure and used quantitative, qualitative, or mixed methods.
- As educational effectiveness has been identified in the literature as a key aspect of the effectiveness of interventions for children with autism (Bond et al., 2016; Kasari & Smith 2013), consideration of the following factors was also considered as an additional part of the review process:
  - I. Evidence of information provided from school staff regarding the effectiveness/utility of the intervention.
  - II. Evidence of the direct involvement of school staff in the intervention through the completion of questionnaires, evaluations or interviews by school staff

Six databases were searched including ERIC, Proquest, Psycinfo, Scopus, EBSCO and Google Scholar. The Endnote reference management software, EndNote 20, Clarivate, 2013) was used to manage and organise identified research articles for further screening.

Search strings focused on the following key areas; autism, dynamic assessment and outcomes using the following search strings:

Autism or autis\* or autism spectrum disorder or ASD or 'autis\* spectrum condition' or ASC or 'pervasive developmental disorder-not otherwise specified' or PDD-NOS or asperger\* or neurodiver\*

Dynamic Assessment or 'DA' or 'mediated learning experience\*' or MLE or 'mediated learning\*' or 'zone of proximal development' or 'ZPD' or 'scaffolding' or 'sociocultural learning'

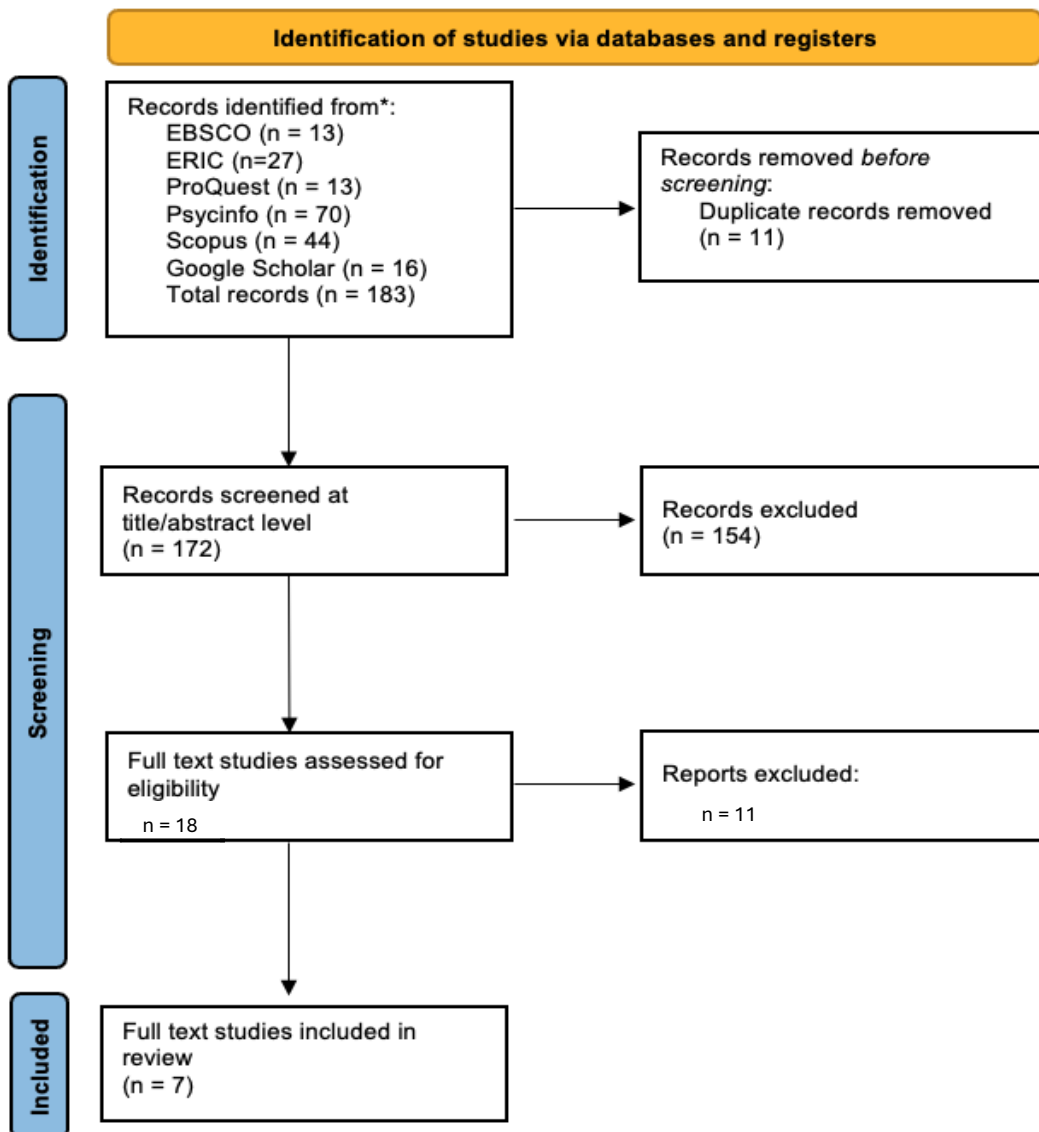
Outcome\* or attainment or 'learning outcome\*' or 'academic achievement' or 'learning performance' or 'academic engagement' or 'academic success' or 'learning effectiveness'

In phase one of the screening process, the title and abstract were screened according to the inclusion criteria and in phase two, the inclusion criteria were applied to the full text. Of the total number of 172 articles that were selected initially, 154 were excluded for not meeting the inclusion criteria in terms of the title and abstract. The full text of the remaining 18 articles was evaluated after which a total of 11 were removed (see [Appendix 18](#)) for not fulfilling all of the inclusion criteria, leaving a final total number of 7 articles.



Figure 6

PRISMA Flow Chart (Moher et al., 2009)



#### **4.4 Results**

The seven studies that met the inclusion criteria were located in Spain (1), USA (2), Egypt (1), Israel (1), Singapore (1) and Italy/Belgium/The Netherlands (1). Participating children which included both boys and girls all had a diagnosis of autism, were aged from five to seventeen years and attended either a mainstream or special school setting. In one study (Hegazi et al., 2012) while the participants were aged from two to five years of age, it was included in this review as primary school aged children were included in the study. Three studies were conducted in a school setting (Aljunied & Frederickson, 2013; Donaldson & Olswang, 2007; Tzuriel & Groman, 2017), three were conducted in a clinical setting, (Hegazi et al., 2012; Lebeer, 2005; Schoen Simmons et al., 2014) and it was unclear where one study took place (Calero et al., 2015). Four of the studies used a quasi-experimental design, (Donaldson & Olswang, 2007; Hegazi et al., 2012; Schoen Simmons et al., 2014; Tzuriel & Groman, 2017), two used a within subjects design, (Aljunied & Frederickson, 2013; Calero et al., 2015; Donaldson & Olswang, 2007) and one study used a case study design (Lebeer, 2005). All studies used quantitative data and a combination of static and dynamic assessment instruments. A summary of the studies is outlined in Table 2.

**Table 2***Summary of Studies Meeting Inclusion Criteria*

<b>Name of Study</b>	<b>Location</b>	<b>Sample Size</b>	<b>Research Design</b>	<b>Dynamic Assessment Instrument</b>	<b>Outcome</b>
Relations between learning potential, cognitive and interpersonal skills in Asperger Children (Calero et al., 2015)	Spain	45 children aged 7-13 with diagnosis of Autism	Quantitative	Wisconsin Card Sorting Test-Learning Potential (WCST-LP) (Wiedl & Wienöbst, 1999)	Analysis of WSCT-PL scores for whole group showed significant gains from pre to post-test scores which suggest the mediation aspect of the test produced significant improvements for the group. It also highlighted the benefits of using dynamic assessment in identifying subtle, individual differences that are key for intervention planning
Investigating Requests for information in children with autism spectrum disorders: Static versus dynamic assessment (Donaldson & Olswang, 2007)	USA	26 children 14 children with a diagnosis of autism and 12 neuro-typically developing peers	Quantitative	3 dynamic assessment sessions used in conjunction with a standardised assessment to support the production of requests for information (RI)	Using a dynamic assessment approach with children who demonstrate significant RI difficulties can indicate their true potential and which linguistic prompts work best for them that can be included in their classroom intervention plans. The study highlights the complementary role that static and dynamic assessment approaches can play
Does central coherence relate to the cognitive performance of children with autism in dynamic assessments?(Aljunied & Frederickson, 2013)	Singapore	52 children aged 8 to 12 years with a diagnosis of autism	Quantitative	Cognitive Modifiability Battery (CMB), (Tzuriel, 1995)	There was a significant increase in CMB scores from the pre to post-test scores for the whole group and suggests the need for further research that identifies the specific mediational strategies that are most effective for children with autism
Assessing pragmatic language in Autism Spectrum Disorder: the Yale in vivo	USA	118 children aged 9 to 17 77 children with a	Quantitative	YALE in vivo pragmatic protocol (YiPP)- a structured conversational task that incorporates a	The study highlighted the utility of the YiPP in identifying specific pragmatic language deficits in children which can result in individually targeted pragmatic language intervention programmes

Name of Study	Location	Sample Size	Research Design	Dynamic Assessment Instrument	Outcome
Pragmatic Protocol(Schoen Simmons et al., 2014)		diagnosis of autism 41 typically developing children		teaching/mediational phase	
Dynamic Assessment of Figurative Language of Children in the Autistic Spectrum: The Relation to Some Cognitive and Language Aspects(Tzuriel & Groman, 2017)	Israel	64 children aged 5-11 years 32 children with a diagnosis of higher functioning autism (HFA) 32 typically developing children (TD)	Quantitative	Children's Proverbial Understanding Test (CPUTO) (Tzuriel & Valdman, 2009) Children's Metaphorical Construction Test (CMCT) (Tzuriel et al., 2008) Children's Conceptual and Perceptual Analogical Modifiability Test- Constructions and Analogies version (Tzuriel, 2002) Children's Local/Central Coherence Test (CLCCT)(Tzuriel & Groman, 2017)	As predicted with findings like previous research, the typically developed children performed better than the autistic group in proverbial understanding and metaphorical construction. The autistic children struggled the most with the <i>application</i> aspect of proverbial understanding and benefitted from the 'graduated prompting' approach used in the study and suggests that a stronger focus on mediation of application could improve this area that presents as a significant challenge for this group of children
Assessment of non symbolic communication skills in children with Down Syndrome and Autism(Hegazi et al., 2012)	Egypt	60 children aged between 2-5 years 20 children with autism 20 children with Down Syndrome	Quantitative	The Dynamic Assessment of Nonsymbolic Communication (DANC) (Snell & Loncke, 2002)	Autistic children can demonstrate a severe deficit in the development of their non-verbal communication. As most traditional standardised tests underestimate the communication skills of children who rely only on verbal communication, they provide little information on non-verbal communication. Using the DANC provides detailed information into the development and progress of nonsymbolic language skills which can be used to develop targeted interventions as well as monitoring progress

Name of Study	Location	Sample Size	Research Design	Dynamic Assessment Instrument	Outcome
Shifting Perspective: Dynamic Assessment of Learning Processes in Children with Developmental Disturbances (Lebeer, 2005)	Italy, The Netherlands, Belgium	20 typically developing children  3 children, one child with Down Syndrome, porencephalic brain damage and autism	Quantitative	Learning Propensity Assessment Device (LPAD),(Feuerstein et al., 2002)	Conducting an assessment using the LPAD identified the cognitive deficiencies that had not been identified previously using standardised cognitive testing as well as their response to mediation. Following the completion of the Instrumental Enrichment programme, the child could attend better in class, developed a systematic and less impulsive approach to his work activities, developed better understanding of spatial concepts and demonstrated greater persistence when faced with challenges. Cognitive testing after a two-year dynamic assessment intervention programme indicated an increase in his FSIQ from 64 to 92. The child, who was expected to attend a special school setting could now attend a mainstream secondary school with support as required

## 4.5 Discussion

The aim of this review was to explore the research evidence that supports the use of dynamic assessment approaches and methodologies on improving outcomes for autistic learners using the following key questions:

1. Do dynamic assessment approaches and interventions improve outcomes for autistic children and young people?
2. Are there specific areas of challenge within the autistic profile that respond best to dynamic assessment-based approaches?
3. Can dynamic assessment-based interventions such as mediated learning be implemented effectively in the classroom?

*Do dynamic assessment approaches and interventions improve outcomes for autistic children and young people?*

Research has shown that dynamic assessment approaches are effective in making important links between assessment findings and interventions that match a learner's unique profile of strengths and needs. Lebeer et al. (2013) describes interactive assessment approaches such as dynamic assessment as key in enabling parents, teachers and other key professionals to look at the child with additional needs through a different lens, to understand better how the child learns and what are the barriers that may be hampering his full participation in all areas of his learning and school experiences. However, the potential of dynamic assessment to contribute to person-centred inclusive practices has not yet been fully realised with researchers citing theoretical and operational issues that impact on both its everyday use and the development of research studies that can provide substantive evidence

for both its efficacy and effectiveness (Deutsch & Reynolds, 2000; Elliott, 2003; Elliott et al., 2018; Hill, 2015; Lauchlan & Carrigan, 2013; Stringer, 2018).

The development of autism based interventions also presents with a unique set of challenges due to its heterogeneous presentation in which individuals with autism can present with varying levels and degrees of severity of impairment ranging from mild to severe and can experience a wide variety of developmental difficulties such as social, communication, cognitive ability and motor skills (Goldstein & Naglieri, 2014; Pellecchia et al., 2021; Waterhouse et al., 1996).

In this systematic literature review, seven studies were identified as meeting the inclusion criteria and were carried out in different countries, highlighting the applicability of the dynamic assessment approach across different cultures and traditions. All studies used quantitative data to measure outcomes and a combination of both static and dynamic assessment instruments, demonstrating the complementary role both approaches can play in developing effective intervention plans. The seven studies emphasised the benefits of dynamic assessment instruments in improving outcomes for autistic learners through their ability to identify the subtle but important individual differences that are key to informing targeted support.

However, Aljunied and Frederickson (2013), while demonstrating the significant improvements in dynamic assessment scores after mediation, also identified a possible challenge when using this approach and cited the weaker central coherence of autistic learners, in particular those presenting with additional learning needs as an important factor that may impact on the benefits of using the approach with this cohort of learners. They

suggest that the skills required during typical mediation places a greater demand on central coherence and may therefore not fully capture some autistic learners' potential and recommend the need for autism specific mediation strategies that can accommodate a weaker central coherence.

Analysis of the seven studies also highlight some research design considerations that result in possible limitations to their findings and applicability to other settings. All seven studies used small sample sizes and only four used a control group (Donaldson & Olswang, 2007; Hegazi et al., 2012; Schoen Simmons et al., 2014; Tzuriel & Groman, 2017). Bond et al. (2016) identified educational effectiveness as an important factor when evaluating autism-based interventions and was therefore included as an important criteria in the current review. Analysis of the seven studies did not identify evidence of input from teachers or other professionals working on the ground, e.g., school psychologist, speech and language therapist or occupational therapist in the early development stages of the interventions, their delivery or subsequent evaluation, and such factors have been identified as important when evaluating effectiveness (Howell et al., 2022; Hume et al., 2021).

*Are there specific areas of challenge within the autistic profile that respond best to dynamic assessment-based approaches?*

The seven studies focused on a number of key areas that can form part of the autistic profile; language and communication, executive functions, central coherence, cognitive abilities, academic attainment, interpersonal skills and non-intellective factors such as motivation and perseverance. Four of the seven studies focused on language and communication skills. The benefits of using a dynamic assessment approach to assess pragmatic language difficulties was highlighted by Schoen Simmons et al. (2014) as well as



its ability to assess and evaluate progress in the naturalistic setting, which a standardised approach is unable to do. Donaldson and Olswang (2007) investigated how dynamic assessment techniques could develop autistic children's requests for information (RI), skills which have been shown to be an area of difficulty for them and can hamper their social communication abilities. While their findings highlighted the benefits of combining information from both static and standardised assessment tools to inform effective intervention plans, the researchers noted that the information from the dynamic assessment identified the specific linguistic prompts that could be integrated into the child's classroom plan so teachers could use them in their daily interactions with the child. The utility of dynamic assessment approaches on assessing the non-verbal communication skills of autistic children with limited verbal skills was investigated by Hegazi et al. (2012). Findings indicated the benefits of using this assessment tool to inform targeted support plans as well as tracking the children's progress.

Pragmatic language skills in autistic children, in particular, proverbial understanding and metaphorical construction, were explored by Tzuriel and Groman (2017) with findings indicating the benefits of using dynamic assessment approaches to gather more detailed information about a child's learning potential and their specific areas of difficulty. While the approach benefitted both the autistic children and typically developing group, the teaching within the test-teach-test format of the dynamic assessment approach was reported to benefit the autistic group more and confirmed the findings from previous studies of this approach being of greatest benefit to children with additional learning needs (Haywood & Lidz, 2006; (Sternberg & Grigorenko, 2002); (Tzuriel, 2000)). Similar to the findings of the other studies, Tzuriel and Groman (2017) emphasises the benefits of using this approach to *dig deep* beneath the information standardised scores can provide and identify specific areas that will

require targeted support. In this study, the autistic children experienced more difficulty in their ability to transfer the concrete meaning of a proverb to a different context in comparison to the control group, but their response to the graduated prompts approach that was used in the study suggests that a stronger, more focused mediation for this identified area of difficulty could improve the children's deficits in this important skill in pragmatic language.

The effectiveness of Feuerstein's Learning Propensity Assessment Device (LPAD) on outcomes for children with additional needs on their cognitive abilities, academic skills and learning efficiency was explored in Lebeer (2005). This study involved three case studies: one child with Down Syndrome, one child with porencephalic brain damage and one child with autism, with the latter being the focus in this review. Conducting a dynamic assessment using the LPAD enabled the psychologist to identify the specific cognitive skills that needed more targeted support and provide in-depth information about the barriers to the child's learning. Through the process of mediation, the child's attention and focus improved and showed a reduction in *blocking* and impulsive behaviours that were impacting on his engagement in learning tasks. There was an improvement in his understanding of spatial concepts and, following a two-year intervention using the LPAD, standardised cognitive retesting using the Wechsler Intelligence Scale for Children (WISC-R) showed a significant improvement in standardised scores from 78 to 92. While the outcomes for this student were significant, the researchers acknowledge that the LPAD is time consuming and costly and is dependent on the mediator's knowledge of mediation and expertise in using it.

The role of dynamic assessment in identifying the causes underpinning some of the interpersonal difficulties observed in many autistic people was investigated in Calero et al. (2015) and focused on factors such as general intelligence, information processing, executive

functioning, emotional intelligence, flexibility of learning and interpersonal skills, in particular, the recognition of emotions in resolving interpersonal conflicts. The Wisconsin Card Sorting Test-Learning Potential (WCST-LP), which was used in this study, is a dynamic version of the original standardised version and assesses executive function skills. Analysis of WCST-LP pre to post test scores showed that the mediation aspect of the test produced significant improvements for the whole group but analysis of individual scores indicated that not everyone made the same improvements and highlighted the heterogeneity within the group of autistic learners. Again, the findings from this study highlights the benefits of dynamic assessment tools in identifying individual differences that can play a key role when developing bespoke interventions that respond to students' unique profiles.

Aljunied and Frederickson (2013) explored the links between central coherence and academic progress and whether this relationship was evident in both autistic children with average and below average nonverbal intelligence (NVI). While significant gains were made by both groups in the pre to post test scores, the children with below average NVI made smaller gains than those children with average NVI which suggests that they possess several compensatory strategies that they use to override any difficulties they have. While the study indicates that the teaching phase in the Cognitive Modifiability Battery (CMB) benefitted all the children, providing them with as much assistance as needed, these strategies may place additional demands on learners with weaker central coherence, and the development of autism specific mediation strategies may be more appropriate.

*Can dynamic assessment-based interventions such as mediated learning be implemented effectively in the classroom?*

As can be seen in Table 1, several intervention programmes have been developed that incorporate mediated learning strategies as a core component with the objective of developing an individual's cognitive skills. The scope of these programmes demonstrates the flexibility of them as some can be delivered to individuals, small groups and larger classroom settings. While the *Bright Start* programme (Haywood et al., 1992) was developed for younger children, it can also be used with older children who present with additional needs, which again demonstrates the adaptability of these programmes. While most of the programmes contain a set of structured lessons, the Working Memory-Cognitive Modifiability Programme (WM-CMP) is delivered as an individual online programme and *ProblemUp!* is a card game, again demonstrating the diversity of this approach in meeting the needs of a wide range of age groups with different needs.

Research studies have also shown that the mediated learning approach can be mutually beneficial for both the learner and the mediator. Michaeli (2018) examined the benefits of using the Peer Mediation for Young Children programme (PMYC) and found that not only the tutees' social skills were enhanced but also those of the tutors. Oreshkina and Greenberg (2010) examined the lived experience of teachers who used the Cognitive Education Advancement (CEA) programme and identified that the programme taught them the importance of their relationship with their students as being critical to understanding their students' needs better and how best to support them. The importance of providing teachers with in-depth training to develop their competence and confidence in integrating mediated learning into their everyday classroom practice was highlighted in Martin (2014) and the need to integrate the skills across all subject areas to maximise the benefits of the approach

was emphasised. The importance of intensive training in mediated learning for professionals working with a child with complex needs was again highlighted in Lebeer et al. (2019) and emphasises training in the approach for all adults in the child's life, thus developing a shared level of understanding and expertise and consistent approach in using mediated learning strategies.

#### **4.6 Conclusion**

The aim of this review was to explore the effectiveness of dynamic assessment approaches, and interventions that incorporate key aspects of it, specifically, how mediated learning can improve outcomes for children and young people with autism and what are the key factors that need to be borne in mind when developing effective autism interventions that can be delivered in a classroom setting. A systematic literature review of published research identified seven studies that used dynamic assessment approaches with primary school and secondary school aged autistic learners. While all seven reported positive outcomes, the small number of studies, varying sample sizes and different research designs limit their results and confirms the findings in Hunt et al. (2022)'s systematic review that dynamic assessment research, while promising, is at an early stage.

While teachers, parents and professionals have identified the many advantages of dynamic assessment in its ability to *drill down* into a diagnosis of autism and identify the specific areas of difficulty a child is experiencing and the interventions that best match those areas of need, research findings to date, while favourable, have not provided the substantive evidence required to ensure that the approach is used more widely in educational and clinical settings.

This review also highlights that research involving dynamic assessment and autism is a challenging and complex process due to the specific challenges that both dynamic assessment and the heterogenous nature of the autistic profile present. Elliott (2003) emphasised the need for dynamic assessment research to examine the impact of the approach in informing interventions that have a practical application by parents, teachers and other professionals that can demonstrate meaningful change for the children involved. Further studies using larger sample sizes with a shared definition of what dynamic assessment is and that are carried out in real classroom settings with input from teachers and other professionals will be necessary to develop interventions that are evidence based and can bring about long-term, meaningful outcomes for autistic learners.

Specifically, the findings from this review highlight several important factors that will inform the development of the mediated learning training programme, which is the focus of Study Two. Firstly, the review emphasises the need for ongoing input from teachers throughout the intervention design and implementation process, to optimise effectiveness and sustainability. Developing autism specific interventions in the naturalistic classroom setting has been shown to be a key factor, affirming the importance of teachers practising their mediated learning skills with students in their classrooms. Another key consideration is the provision of bespoke training and coaching on mediated learning for the teachers that will facilitate a deeper understanding of the approach and build their confidence in using it with their students.

The review demonstrates the versatility of the approach in that it can be used with different age groups, across different settings for a wide range of learning tasks. This indicates the usefulness of delivering the training to teachers who work in autism classes both

in primary and post primary school settings. Finally, the review highlights the mutual benefits of the mediated learning approach for both students and teachers, in its ability to impact positively on teacher self-efficacy that results in meaningful learning outcomes for students.

## **Chapter 5: Study Two Methodology**

### **5.1 Introduction**

This chapter provides a comprehensive overview of the research design and methodology for Study Two, which investigates the impact of teachers employing mediated learning skills in their interactions with students to enhance learning outcomes. It will detail the rationale, methodology, procedures, research measures and data analysis used in the study.

### **5.2 Research Paradigm**

The decisions on research design and methodology were informed by the epistemological, ontological and axiological assumptions of the pragmatic paradigm which does not view the world as an absolute unity. Instead, it suggests that knowledge and meaning are constructed through real world and socially shared experiences, with change occurring through actions that cannot be separated from the situations and contexts in which they occur (Kaushik & Walsh, 2019). The pragmatic paradigm is concerned with actions, consequences and finding solutions to problems, enabling researchers to focus on the research problem, using all available approaches to understand the complexities of a problem better (Creswell & Creswell, 2017; Patton, 1990; Rossman & Wilson, 1985; Teddlie & Tashakkori, 2010).

Research conducted with a pragmatic lens is committed to ethical and inclusive practices and values the insight and perspective of other stakeholders in the research design process. It rejects the traditional philosophical dualisms of positivism and interpretivism and advocates the use of both quantitative and qualitative methods when conducting research to minimise the limitations of both. It posits that the quantitative data collection methods of positivism while minimising bias, fail to recognise that many aspects of human experience



and contextual factors do not conform to this method of data collection, while the qualitative data methods of the interpretivist paradigm, while providing valuable and in-depth insights into human experience, emotions and behaviours are subjective and influenced by the researcher's viewpoints.

### **5.3 Study Two Rationale**

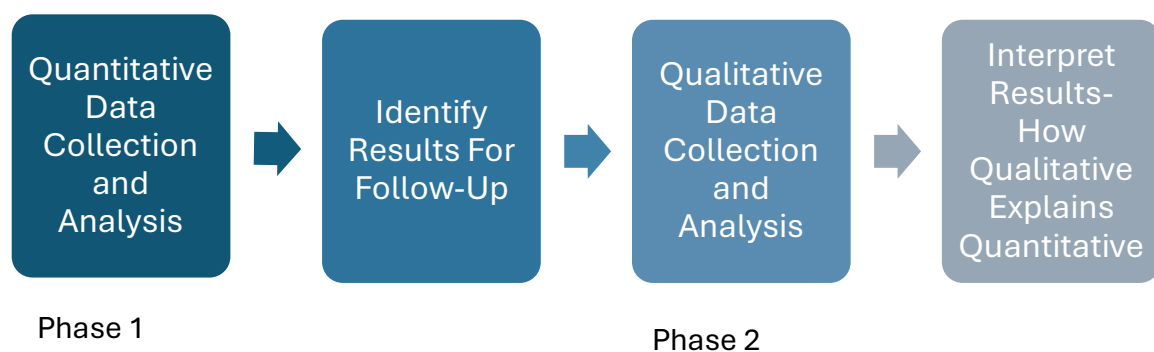
This study involved teachers who work in specialised autism classes in Irish primary and post-primary schools and investigated the potential benefits of them using mediated learning strategies to improve the learning experiences of their students. The research design used a mixed-methods approach (Creswell & Creswell, 2005, 2017) to gather a diverse range of data from questionnaires, interviews and focus group discussions to comprehensively answer the research questions.

### **5.4 Mixed Methods Methodology**

The mixed methods approach, which involves collecting both quantitative and qualitative data, is based on the assumption that the integration of both data sets provides more in-depth insight into a research problem beyond that provided by either approach alone (Creswell & Creswell, 2017). Johnson et al. (2007) identify the core characteristics of the mixed method approach as involving the collection of both quantitative and qualitative data that follows a well-defined set of procedures and uses rigorous methods for data collection and analysis. Employing a mixed methods approach enables researchers to integrate quantitative and qualitative information while minimising their limitations, thus developing a more comprehensive understanding of the research problem by acknowledging the role of context in experiments elicited through the perspective of individuals. This approach can be particularly effective when conducting research with complex or marginalised groups where the integration of quantitative and qualitative data can provide a deeper understanding of the

challenges to inform effective change. Data from interviews can be analysed in several ways; to elicit the lived experiences of participants as in Interpretative Phenomenological Analysis (IPA) (Eatough & Smith, 2017), to develop a data driven theory to explain a process, behaviour, experience or phenomenon as in Grounded Theory (Strauss & Corbin, 1994), exploring how language is used in real life contexts to construct meanings as in Discourse Analysis (Powers, 2001) and to examine data to identify common themes, ideas and patterns of meaning as in Thematic Analysis (Braun & Clarke, 2006). While each approach can provide a rich and nuanced interpretation of the data, the thematic analytic approach which is particularly effective for exploratory research questions was considered the most appropriate method for analysing data from the focus group and semi-structured interviews in the current study. The decision to use thematic analysis was further justified by its flexibility in accommodating the diverse range of data collected and its suitability for uncovering underlying patterns and themes. An explanatory sequential mixed-methods design was used which incorporates two phases of data collection as seen in Figure 7 below.

**Figure 7:**  
*Explanatory Sequential Design (Two-Phase-Design) (Creswell & Creswell, 2017)*



In phase one, the researcher collected quantitative data using rigorous sampling with analysis of the data used to plan the qualitative phase. In phase two, which used purposeful

sampling, qualitative data in the form of semi-structured interviews, explored the initial findings of the data from phase one.

This research study explored the potential benefits of teachers using a mediated learning approach to enhance the learning outcomes of children with autism under the following research questions.

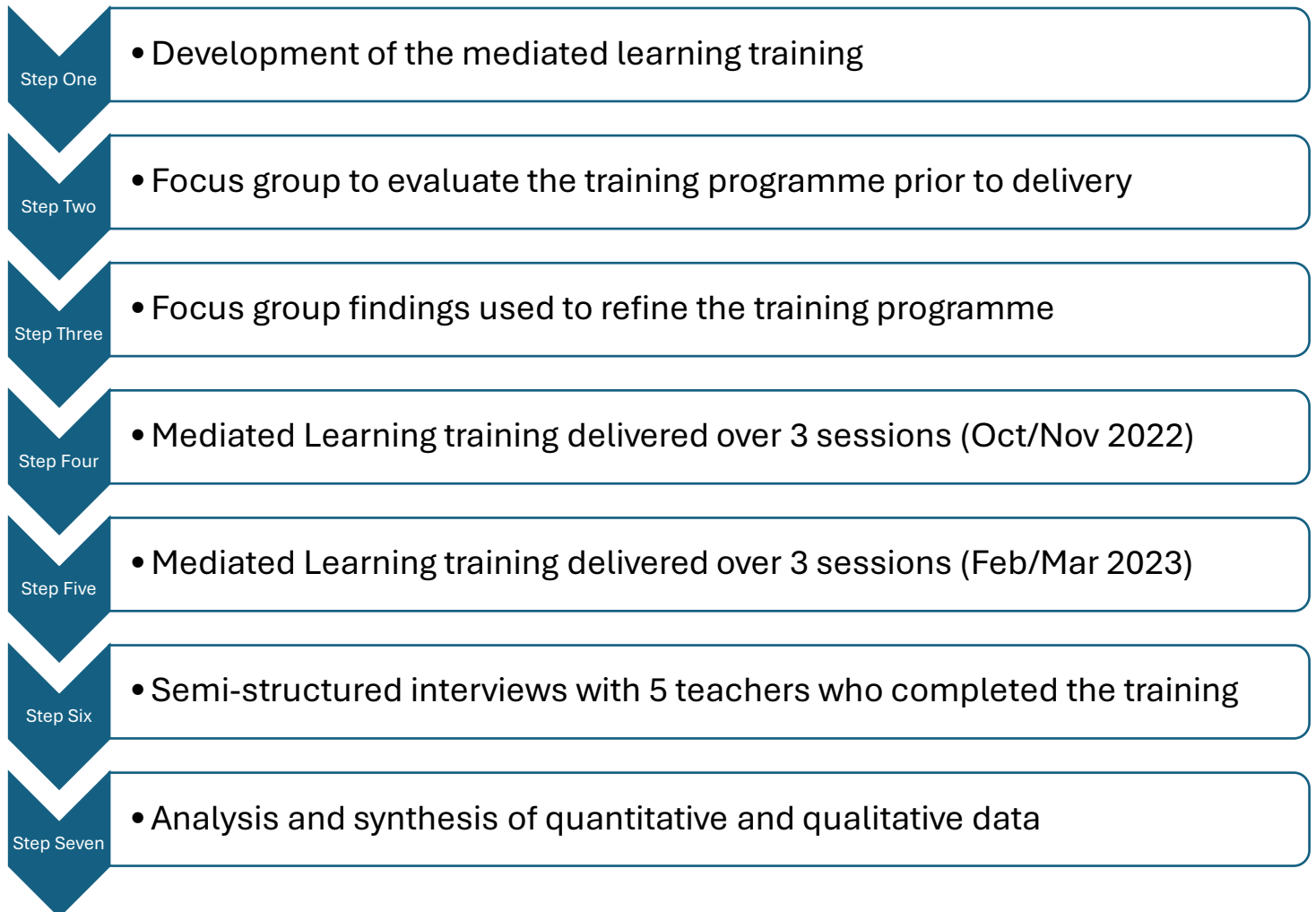
1. Does mediated learning enhance the learning outcomes for students with autism?
2. Does mediated learning as a teaching methodology impact positively on teacher self-efficacy?
3. Does attending and participating in mediated learning training increase teachers' knowledge and understanding of the approach and increase their confidence in using it with their students?
4. What key factors need to be considered when developing autism-based interventions to optimise their effective use and sustainability?
5. Does mediated learning enhance the quality of interactions between teachers and students with autism?

## **5.5 Intervention Procedure**

An overview of the intervention procedure is outlined in Figure 8. Following the development of the mediated learning training that incorporated the key findings from Study One, a focus group of teachers working in specialised autism class settings was facilitated by the researcher to evaluate the training. The findings from the focus group informed the refinements made to the training prior to its delivery. On completion of the training, semi-structured interviews were conducted with five of the participating teachers to gain their unique insight. Analysis and synthesis of the quantitative and qualitative data was carried out to address the research questions.

**Figure 8:**

*Intervention Procedure*



**5.6 Ethical Approval**

Ethical approval (see Appendix 1) for the research study was granted by the University of Strathclyde Ethics Committee (see Appendix 2) and the National Educational Psychological Service (NEPS) in Ireland (see Appendix 3) where the researcher works, and all procedures were informed by the Psychological Society of Ireland’s Code of Professional Ethics. Participating teachers, their school principals and parents of students involved in the research study were provided with written information on the study, the use of video technology and storage of data and their participation in the study was contingent on

providing written consent. Child assent was also obtained through the use of child friendly information documents. Alternative versions of all information and consent documents were made available to those with literacy or learning difficulties (Appendices [4,5](#), [6](#), [7](#), [8](#), [9,10,11](#)), (see Appendices 4,5,6,7,8,9,10,11).

## **5.7 Participants and Recruitment**

The participating teachers in the study worked in specialised autism classes in either primary or post-primary schools in Ireland. The training was delivered twice in October/November 2022 and February/March 2023 and participants were recruited through a [flyer](#) sent to schools in the Dublin Mid Leinster region by NEPS psychologists (see Appendix 12). Information on the training and research study was advertised on the Tralee Education Centre website ([www.edcentretralee.ie](http://www.edcentretralee.ie)). On registering their interest to participate in the training on mediated learning and the associated research study, teachers were provided with all the information and consent forms. While the focus of the training was on building teacher capacity in using mediated learning strategies with their students, participating teachers were invited to practise these skills between workshops one and three. Information and consent forms were also provided to parents and the students where applicable. All measures were accessed and completed by the participants through Microsoft Forms.

## **5.8 Research Measures**

### ***5.8.1. Autism Self-Efficacy Scale for Teachers (ASSET)***

The [ASSET](#) (Ruble et al., 2013) is a thirty item self-report questionnaire which uses a six-point Likert Scale and rates teacher confidence to conduct various assessment, intervention and classroom-based practices specific to the needs of students with autism (see Appendix 13). While the original scale required teachers to rate their professional skills from 1 to 100, the 6 point scale as used in the Irish study by Ryan and Mathews (2021) was

considered appropriate in the current study as it had been recently used in an Irish education research study with semantic edits used in the questions to suit the Irish context. Using guidance from Weir (2005) and the power analysis program, G\* Power, (Faul et al., 2009), a sample size of 61 was calculated. G\* Power offers a user-friendly mechanism for conducting power and sample size calculations and supports a wide range of commonly used statistical tests. This software, which is free and compatible with both Microsoft Windows and Mac OS, assists in optimising research design by determining the necessary sample size required for a specific study. However, it is important to note that G\* Power relies on statistical assumptions that may not always be met in *real world* research studies. Participants completed the ASSET questionnaire online at the start of workshop one and at the end of workshop three.

### ***5.8.2 Mediated Learning Experience Scale for Problem-Based Learning (MLESPBL)***

The [MLESPBL](#) (Chua, 2003; Tan et al., 2019) was designed to evaluate the quality of teachers' mediation skills during learning activities in the classroom and, through the process of reflection, enable teachers to identify possible refinements to their use of mediation to enhance the cognitive development of their students (see Appendix 14). The scale, which is theoretically and conceptually guided by theories of dynamic assessment and in particular mediated learning experience (Feuerstein et al., 1985; Feuerstein et al., 1991), consists of fifty nine items that measure eleven skills of mediation. For the purposes of this research study, a shortened version of the rating scale was used with the author's permission that focuses on the first three key and essential skills of *intentionality and reciprocity*, *transcendence* and *meaning*. The decision to use a shortened version of the scale was influenced by several factors. Firstly, the development, delivery, and evaluation of the mediated learning training in the current study constituted the initial implementation phase of

the intervention process (Bailey, 2012) and thus focused on the first three principles of mediated learning experience which Feuerstein et al. (1991) identified as essential and sufficient for effective mediated learning to take place. This decision aligns with previous research studies on mediated learning which used a shorter rating scale that focused on the first five principles (Klein, 1988; Tzuriel & Caspi, 2017; Tzuriel & Hanuka-Levy, 2019; Tzuriel & Shomron, 2018). It is anticipated that subsequent iterations of the mediated learning training will incorporate all twelve principles. Teachers were asked to rate their use of each of these skills using ratings from zero for *not observed* to four, where the skills were *very often used*. Participants completed the MLESPBL online questionnaire twice, after workshops one and two.

### **5.8.3 Workshop Evaluation**

Participants were asked to complete [a workshop evaluation questionnaire](#) (see Appendix 15). This was a fifteen item self-report survey in which participants were asked to evaluate the three workshops in terms of content and applicability to classroom practice and workshop delivery using a combination of open-ended questions and questions using a five-point Likert scale with 1= *Strongly Disagree* to 5= *Strongly Agree*. Questions using the critical incident framework (Brookfield, 2017; Flanagan, 1954; Keefer, 2009) were also included to identify what aspects of the training engaged them the most and least, to identify strategies to inform refinements to the training. Participants completed this online questionnaire at the end of workshop three.

#### **5.8.4 Qualitative Analysis**

As the insight from teachers both in the development and subsequent evaluation of autism specific interventions was identified as a key consideration in Study One, qualitative data gained from interviews, specifically a focus group and semi structured interviews formed part of the data gathering process in Study Two. Interviews form a core aspect of the qualitative research methodology, enabling researchers to understand lived experiences and personal perspectives directly from the participants, thus providing a deeper and richer insight to a specific context or situation (Alsaawi, 2014). However, while the information elicited from interviews and focus groups can provide diverse voices and opinions, there can also be some challenges that need to be considered; their subjectivity and the need for researchers to engage in reflexive practices to minimise researcher bias, the additional time required when conducting and analysing interviews studies and the anonymity of participants (Hennink et al., 2020).

**5.8.4.1 Focus Group Interview Schedule.** Prior to the delivery of the mediated learning workshops, the researcher facilitated a focus group of five teachers who work in specialised autism class settings similar to those of the participating teachers. Focus groups are interviews that involve small group discussions with participants who share common characteristics or experiences relevant to the research topic, with the aim of eliciting key information about their perceptions, opinions, beliefs and attitudes, providing nuanced and natural feedback (Millward, 2012; Smithson, 2008). In the current study, the aim of the focus group was to evaluate the workshops in terms of content, length, pace of delivery and accessibility of the measures being used and use this information to make key refinements to the workshops prior to their delivery.



The participants were selected from a different geographical area in Ireland from those teachers participating in the training workshops and research study and were offered the opportunity to complete the training at a future date if interested. The focus group was held online and the transcript was recorded and anonymised for [thematic analysis](#) , (Adu, 2019; Braun & Clarke, 2006). (See Appendix 17).

The teachers were asked open ended questions based on the following themes:

- Online vs in-person training
- The essential elements of an effective training course
- Critique the mediated learning workshops in terms of the content/knowledge, length of the workshops and time of the day for delivery, understanding of the different measures
- Suggest strategies to make the training more effective for teachers

**5.8.4.2 Semi-Structured Interview Schedule.** Five teachers who completed the mediated learning training were invited for interview to discuss in greater detail their opinions about the training and suggestions as to how it could be improved.

Purposeful sampling was used to ensure teachers with varying levels of experience and qualifications were included. The interviews were held online and were recorded and anonymised. The interviews were analysed using thematic analysis (Adu, 2019; Braun & Clarke, 2006). While these interviews followed a semi-structured format, the researcher used [a set of questions](#) (see Appendix 16) to ensure all participants were asked the same questions.

## 5.9 Analysis

Quantitative data in the current study were analysed using an *intention to treat* (ITT) analysis. Fisher et al. (1990); Hollis and Campbell (1999) describe ITT as an analytical strategy that includes all participants who were randomly assigned in the study regardless of their participation in it. Using ITT provides a pragmatic approach to analysing data in studies through its acknowledgement that protocol deviations and non-compliance are likely to occur in real world research. Using ITT avoids overoptimistic estimates of the efficacy of an intervention which can occur through the removal of non-complying participants and thus preserves the sample size and provides an unbiased estimate of a treatment effect (Gupta, 2011; Hollis & Campbell, 1999). Missing data is accounted for by imputing the last available measurement for each participant for subsequent analysis. ITT was considered an appropriate analytic approach for this study due to a modest teacher response. Missing data was accounted for by replacing teacher responses on the ASSET and the MLESPBL at the post intervention stage with their respective pre- intervention scores to account for attrition. Analysis of all quantitative data was carried out using the statistical software package, IBM SPSS 28 (IBM, 2021).

Qualitative data was analysed using thematic analysis (Adu, 2019; Braun & Clarke, 2006; Riger & Sigurvinsdottir, 2016), which is a method for analysing qualitative data that involves coding and categorising data and generating themes that can be used across a variety of different theoretical frameworks and worldviews. Using thematic analysis enables researchers to explore an issue in-depth and provides an understanding of issues within the complexity of real-world contexts. While a range of thematic analytic approaches were considered, the approach outlined in “*A Step by Step Guide to Qualitative Data Coding*” (Adu, 2019) was identified as the most appropriate in the current study, due to its comprehensive, step by step approach to qualitative analysis using both data analysis

software and manual coding. While data analysis software such as NVivo is an effective tool when analysing data, in particular, large data sets (Saldaña, 2021), the researcher on this occasion decided to code the data manually using Microsoft Word. This decision was based on the smaller amount of qualitative data in the current study which was favourable to manual coding as well as consideration of the additional time required to master using the software effectively.

## **Chapter 6: Study Two**

### **6.1 Introduction**

The aim of the study was to explore how mediated learning training impacts on teacher self-efficacy with a specific focus on how the use of these skills by teachers can enhance the learning outcomes of autistic students.

### **6.2 Method**

This study used a mixed-methods design that involved the collection of both quantitative and qualitative data.

The study involved sixty-seven teachers who currently teach in autism classes in Irish mainstream primary and post-primary schools. Sixty of the participants were female and seven were male. Fifty-three of the teachers worked in primary schools and fourteen worked in post-primary settings.

The use of both quantitative and qualitative data aimed to answer the following research hypotheses:

- There will be an increase in teachers' perception of self-efficacy on completion of the mediated learning training
- Mediated learning strategies in the classroom will enhance interactions between teachers and their students
- The application of the mediated learning framework can inform effective interventions for autistic students with complex needs

### **6.3 Intervention Procedure**

The intervention which is the focus of Study Two followed the procedure as outlined in Chapter 5, Section 5.5. Five teachers who work in specialised autism classes who were not

participating in the training took part in a focus group to evaluate the mediated learning training workshops in their early development stage. The findings, as summarised in Section 6.4.2 were used to refine the training before its delivery to the participating teachers.

The mediated learning workshops consisted of three sessions and were delivered online over two time periods. The first set of workshops were delivered on three afternoon sessions in October/ November 2022 and the second set were delivered in February/March 2023 in the late evenings. The decision to offer the training on two separate occasions was based on the focus group interview outcomes that identified training offered in the afternoons and early evenings as the preferred options. Delivering the workshops through two different platforms increased the sample size and provided a research sample that was drawn from a wider geographical area across Ireland. The workshops were delivered once a fortnight which enabled teachers to practise their mediated learning skills with a designated student in between the sessions.

Prior to the start of the workshops, participating teachers were emailed a copy of the [PowerPoint slides](#) (see Appendix 19) as well as an [information booklet](#) (see Appendix 20) on Mediated Learning that they could use as a reference guide. Teachers were also provided with a copy of the [MLESPBL](#) Rating Scale (see Appendix 14), [a Reflective Log](#) (Rolfe et al., 2001), (see Appendix 21) and a [task analysis worksheet](#). (see Appendix 22).

In session one, participants were introduced to dynamic assessment with a particular focus on Feuerstein's theory of mediated learning experience and the three key principles of mediated learning: *intentionality and reciprocity, meaning and transcendence*. Participants watched a series of video clips that demonstrated these specific skills and were provided with opportunities to critique, appraise and discuss the application of these skills in small groups. Participating teachers were introduced to the concept of using video technology as a method

to develop and practise new skills. As suggested by the focus group, teachers watched a video clip of the researcher using mediated learning skills with a student. On watching the video clip, they worked in small groups where they evaluated the researcher's use of mediated learning by completing the mediated learning rating scale (MLESPBL) and the reflective log together, thus providing them with an opportunity to experience each step of the practice session process they would complete with a student in their class before session 2. On completion of this practice session and reflection process, the teachers completed the rating scale and returned it to the researcher electronically.

Session two began with participants working in small groups reflecting on their experiences using the key mediated learning skills, using information from their reflective logs in their discussions, focusing on which of the skills they used the most/least, as well as what they learned about their student and possible next steps to develop these skills further. The remaining nine principles of mediated learning were explained and again teachers watched video clips to enhance their understanding of them which they discussed in small groups. Teachers were again invited to practise these skills with the same student, focusing primarily on the three key mediated learning skills and on completion of the task, they returned their completed rating scale to the researcher electronically.

As in session two, session three began with the participants discussing their second practice session of mediated learning in small groups using their reflective practice document to guide the discussion. The remainder of this final session focused on how teachers could use Feuerstein's mediated learning experience framework to develop an intervention plan for a student with complex needs. Participants learned about Feuerstein's three phases of thinking, *input*, *elaboration* and *output* as a method to identify the specific areas of thinking that were challenging for a learner. The teachers also learned about task analysis when

planning or reflecting on a learning activity that a student has particular difficulty with. Using the [task analysis document](#) (see Appendix 22) they watched a video clip of a teacher working with a young child who was experiencing a significant level of difficulty with a literacy task and were invited to critique the lesson and suggest possible interventions to make it more rewarding and enjoyable for the child. Session three concluded with a discussion on the teachers' opinions of the mediated learning workshops and suggestions regarding possible next steps to develop the training further. They completed the [workshop evaluation questionnaire](#) (see Appendix 15) which was returned electronically to the researcher. Teachers who were interested in participating in a semi-structured interviews to discuss the training in greater detail were invited to contact the researcher by email.

## **6.4 Results & Analysis**

### ***6.4.1 Focus Group Findings***

As noted in Chapter 5, Section 5.8.4.1, a focus group was facilitated by the researcher to evaluate the mediated learning workshops prior to their delivery. The focus group comprised five teachers who work in specialised autism class settings in a different geographical location to the teachers participating in the mediated learning training. Table 3 summarises the demographics of the focus group participants.

**Table 3:**

*Participants' Demographics*

Participant	Gender	School Setting	Years teaching	Years teaching in autism class
Teacher 1	Female	Post Primary	15 years	2 years
Teacher 2	Female	Primary	33 years	13 years
Teacher 3	Female	Special School	15 years	5 years
Teacher 4	Male	Primary	30 years	10 years
Teacher 5	Female	Primary	20 years	15 years

The data was analysed using the thematic analytic approach indicated by (Adu, 2019) and shown in Figure 9 and coded manually using Microsoft Word.

**Figure 9:**

*Qualitative Data Analysis Process (Adu,2019)*



The following themes were identified:

**6.4.1.1 Theme 1: Training Preferences.** The first question asked was: “Which do you prefer, online or in-person training?”. Three of the five teachers interviewed stated a preference for in-person training, explaining that it provides a better platform



to engage better with the content as well as participate in discussions with colleagues, "...talking to other people is sometimes the best training maybe that you can get because they can point you in the direction of ...different courses and different books and things that you can do" (Teacher 3). Two of the teachers reported a preference for online training as they had become used to this platform during the Covid 19 pandemic where in-person training was not available. These teachers felt that online training was family friendly as many teachers with young families were able to access training in the evenings, "I don't like travelling far for courses...easier to manage childminding and things like that" (Teacher 1). They also felt that online training enabled teachers to access training from a wider geographical area on topics of specific interest to them. All five teachers stated that it was more challenging to sustain adequate attention at online events and thus the need for such training to be shorter than in-person events, "if you're doing it via zoom, though...I find an hour and a half is really my max".

**6.4.1.2 Theme 2: Ideal Training Event for Teachers.** Two teachers emphasised the need for autism specific training to be made available to all teachers both in the mainstream and special classes as the strategies learned would benefit all autistic students regardless of which class setting they were attending, "...all mainstream teachers need to become much more educated about autism and how to handle it in their classroom" (Teacher 1). Two of the teachers believed that effective training needs to include special needs assistants (SNAs) to ensure a consistent approach being used by all school staff "...other staff need to have the same knowledge as you do to understand why you're doing what you're doing or why you've implemented a certain approach with children" (Teacher 2). One teacher stated that training events work best when delivered in person during the school day when teachers are less tired

and can engage better with the content “...sometimes I used to enjoy getting out of the classroom for a day, you know, just to get a bit of headspace and be with other teachers” (Teacher 3).

**6.4.1.3 Theme 3: Evaluation of the Mediated Learning Training Workshops.** The researcher explained the content of the workshops to the five teachers using the PowerPoint slides from the proposed workshops and they were provided with copies of the measures. They were asked to evaluate the workshops under the following headings.

a) What is your opinion of the content & knowledge?

Four teachers suggested providing the PowerPoint slides and preparatory reading materials beforehand which would help teachers to engage better with the content, “...so you have a deeper understanding before you do the course, and then to refer back to” (Teacher 1).

Two teachers felt that there was a need for more theory to be included, “Not enough...give more information, (about) different psychologists...” (Teacher 4), with two other teachers suggesting providing links to additional reading materials for independent reading, “... links to further material” (Teacher 5). One of the teachers liked the use of video clips to explain mediated learning experience, as the practical examples made it more meaningful, “...a decent range of clips is handy because we work with so many different types of children...that can be very helpful. Then you have that bank of resources for when you get a different child or a behaviour changes” (Teacher 2).

- b) Are the workshops the correct length of time?

All five teachers felt that the workshops were the correct length of time, explaining that online training events are more challenging to sustain adequate attention levels, "...an hour and a half, that's long enough" (Teacher 4).

- c) What is the best time for the delivery of the workshops?

Two of the teachers stated that training during the daytime was preferable to optimise teacher engagement and participation, "Personally I'd be too tired in the evening". Two teachers felt that training straight after school was preferable, "...straight away after work" (Teacher 4) and one teacher preferred training in the evenings as it suited teachers with young children better, "I like half past eight ...as I'm busy with my kids in the early evening" (Teacher 3).

- d) Can you understand the measures being used in the research study?

All five teachers found the ASSET questionnaire easy to follow and complete, "I thought it was reasonably okay to follow".

All five teachers found the mediated learning rating scale difficult to follow and suggested changing the format to a simpler one that teachers could complete quickly, "...it is a bit "old world" language and difficult to understand quickly" (Teacher 4).

**6.4.1.4 Theme 4: Suggestions to Improve the Training.** One teacher explained the importance of telling participating teachers about the commitment required as

the training workshops were intensive, "...there is quite a big commitment and it's quite an intense training" (Teacher 1). Another teacher suggested that if the training was to remain online, the sessions needed to be focused and no longer than one and a half hours in length, "...if you're doing it via zoom and it's after school...I find an hour and a half is really my max" (Teacher 3). Two of the teachers suggested that the training would be most effective if delivered in person during the school day and one teacher suggested that the training needed to have a practical focus to pique teachers' interest and commitment ("I'd be kind of excited to try the training, because I think it's sounds very beneficial. And, yeah, very practical" (Teacher 4).

#### ***6.4.2 Summary of Focus Group Findings.***

Using the information from the focus group, the researcher re-appraised the content of the three workshops and replaced the proposed mediated learning rating scale with the Mediated Learning Experience Scale for Problem Based Learning (MLESPBL) (Chua, 2003; Tan et al., 2019) (Appendix 14), which was considered to align more closely with Feuerstein's theory of mediated learning experience (Feuerstein et al., 1985; Feuerstein et al., 1991), which underpinned the theory of the workshops and was in a format that teachers would find easier to use. A shortened version of the scale which focused only on the first three principles of mediated learning; *intentionality and reciprocity, meaning and transcendence* was used.

#### ***6.4.3 Quantitative Analysis***

As noted in Chapter 5, Section 5.9, analysis of quantitative data using SPSS 28 employed the intention to treat methodology (Fisher, et al., 1990; Hollis & Campbell, 1999).

A primary objective of this study was to investigate the impact of mediated learning training on teachers' self-efficacy. The research hypothesis was as follows: "There will be an increase in teachers' perception of self-efficacy on completion of the mediated learning training". Teachers completed the Autism Self-Efficacy Scale for Teachers (ASSET) before and after completing the training workshops.

**6.4.3.1 Analysis of the ASSET scores.** The internal consistency of the ASSET scale was assessed using Cronbach's Alpha coefficient ( $\alpha=.941$ ) providing strong evidence for the robustness of the scale. Analysis of ASSET scores used mean scores as per the previous studies by Ryan & Mathews (2021) and Ruble et al. (2013) in which the mean scores for all thirty items were calculated, with a higher mean reflecting higher perceptions of teacher self-efficacy (TSE). While multiple imputation would have been the preferred option to account for missing data, imputation using the *intention to treat* methodology (Hollis & Campbell, 1999) was considered an appropriate option due to a modest teacher response. As noted in Chapter 5, Section 5.9, this methodology involved replacing post-intervention scores on the ASSET with their corresponding pre-intervention scores to account for attrition. Mean scores for pre and post ASSET data and the intention to treat data set are summarised in Table 4.

**Table 4***Descriptive Statistics*

Measure	N	Minimum	Maximum	Mean	Std Deviation	Skewness Statistic	Skewness Std.Error	Kurtosis Statistic	Kurtosis Std.Error
MT1ASSET	67	2.07	5.50	4.07	.67	-.58	.29	.99	.58
MT2ASSET	6	3.80	5.23	4.73	.52	-1.35	.85	1.72	1.74
MT2ASSETITT	67	2.07	5.50	4.14	.70	-.61	.29	.81	.58

Note: MT1ASSET= Pre-intervention mean ASSET score  
 MT2ASSET= Post-intervention mean ASSET score  
 MT2ASSETITT= Post-intervention intervention to treat mean ASSET score

As can be seen in the above table, the absolute values for skewness and kurtosis for the T1 and ITT T2 ASSET scores were within the  $\pm 1$  range, z-scores for skewness and kurtosis (-1.96 and -2.07 respectively) were within the  $\pm 3.29$  cut-off appropriate for a sample size of 67, and the Kolmogorov-Smirnov tests were both non-significant (all p-values  $>.05$ ), all indicating that the scores are normally-distributed.

A paired-samples t-test was carried out on MT1 ASSET and MT2ASSETITT scores to compare teachers' perceptions of self-efficacy beliefs before and after completing the mediated learning training.

Analysis revealed a significant change in mean self-efficacy scores from pre-intervention ( $\bar{x}=4.07$ ,  $SD=0.67$ ) to post-intervention ITT score ( $\bar{x}=4.14$ ,  $SD=0.70$ ) conditions,  $t(67)=2.50$ ,  $p=.008$  (one-tailed), Cohen's  $d$  standardized effect size= 0.30 (95% CI 0.059/0.549), confirming the research hypothesis. Additionally, examination of both data sets confirms a noteworthy increase in teachers' scores on the Autism Self-Efficacy Scale for Teachers (ASSET) following the completion of mediated learning training workshops, providing robust support for the research hypothesis.

Table 5 summarises the descriptive statistics for the thirty items that comprise the ASSET scale. Items with the highest mean scores were, ‘Use visual supports to increase your students’ performance’ ( $\bar{x}$ = 4.82), ‘Help your students feel successful’ ( $\bar{x}$ = 4.62) and ‘Communicate and work effectively with your students’ parents/caregivers’ ( $\bar{x}$ = 4.51). Conversely, the items that yielded the lowest mean scores were, ‘Train peer models to improve the social skills of your students’ ( $\bar{x}$ =3.28), ‘Conduct an assessment of your students’ developmental skills/learning  $\bar{x}$ =3.80), ‘Sustain your students’ attention’ ( $\bar{x}$ =3.82) and ‘Train peer models to improve the social skills of your students’ ( $\bar{x}$ =3.82).

**Table 5**

*Descriptive Statistics for Individual ASSET Items*

	N	Minimum	Maximum	Mean	Standard Deviation
Use visual supports to increase your students' independence.	67	1	6	4.82	1.11
Help your students feel successful.	66	1	6	4.62	0.96
Communicate and work effectively with your students' parent(s) or caregiver(s).	67	1	6	4.51	1.04
Provide opportunities for communication in the classroom throughout the day for your students.	67	1	6	4.37	0.96
Describe your students' characteristics that relate to Autism.	67	1	6	4.34	1.17
Generate teaching activities for your students.	67	1	6	4.31	1.18
Teach your students' academic skills.	66	1	6	4.30	1.12
Motivate your students	66	1	6	4.26	1.09

	N	Minimum	Maximum	Mean	Standard Deviation
Implement positive behavioural supports for your students.	67	1	6	4.21	1.15
Write a teaching plan for your students based on goals and objectives	67	1	6	4.16	1.11
Organise the classroom to increase opportunities for learning for your students.	67	1	6	4.10	1.09
Describe parental priorities for learning with regard to your students.	66	1	6	4.08	1.03
Write measurable objectives for your students.	67	1	6	4.07	1.03
Assess your students' social interaction skills.	67	1	6	4.06	1.07
Teach your students social interaction.	67	2	6	4.06	0.10
Design positive behavioural supports for your students.	66	1	6	4.10	1.04
Help your students remain engaged.	67	2	6	4.04	0.94
Assess the causes of problematic behaviours of your students.	66	1	6	4.00	1.18
Describe parental concerns regarding your students.	67	1	6	4.00	1.12
Collect data to monitor your student's progress toward objectives.	67	1	6	3.93	1.15
Help your students understand others.	67	1	6	3.91	1.22
Help your students be understood by others.	67	1	6	3.88	1.04
Assess your students' play skills.	67	1	6	3.87	1.19
Make use of data to re-evaluate your students' goals or objectives.	67	1	6	3.87	1.06
Describe educational interventions for students with Autism.	67	2	6	3.85	0.99
Translate assessment information into teaching	67	1	6	3.84	0.99



	N	Minimum	Maximum	Mean	Standard Deviation
goals and objectives for your students.					
Teach your students play skills.	67	1	6	3.82	1.03
Sustain your students' attention.	66	1	6	3.82	1.11
Conduct an assessment of your students' developmental skills/learning skills.	66	1	6	3.80	1.13
Train peer models to improve the social skills of your students.	67	1	6	3.28	1.22

**6.4.3.1.1 Influences on Teacher Self-Efficacy.** The relationship between teacher self-efficacy and factors such as teaching experience, qualifications, teacher age and gender were also examined. Given the small sample size (N=9) and reduced statistical power, it is important to emphasise that while the findings offer insights, they have limited utility in drawing generalised conclusions.

**6.4.3.1.2 Teacher Self-Efficacy and Years Teaching Experience.** The relationship between teacher self-efficacy and years teaching experience was explored. As the Kolmogorov-Smirnov test of normality identified that both data sets were normally distributed, analysis was conducted using a two-tailed Pearson's correlation test which identified a weak negative correlation that was not statistically significant ( $r = -.208$ ,  $p = .21$ ).

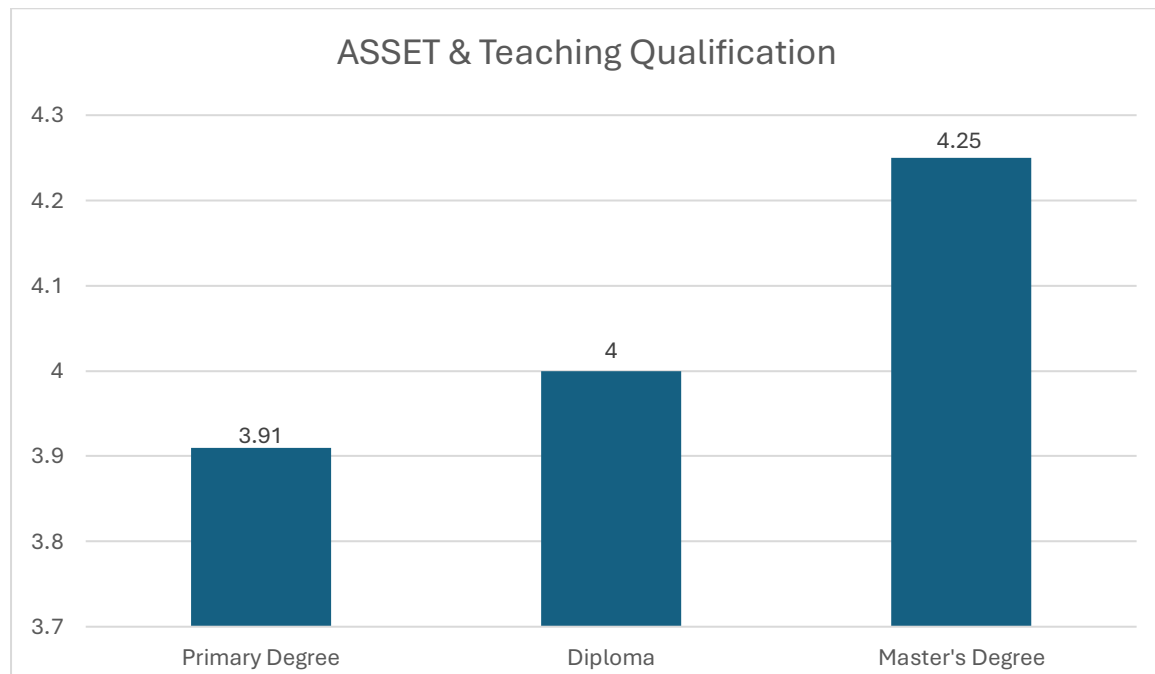
**6.4.3.1.3 Teacher Self-Efficacy and Years Teaching in a Specialised Autism Class**  
The correlation between years teaching in a specialised autism class and teacher self-efficacy was examined. As the Kolmogorov-Smirnov test identified that the years teaching in a specialised autism class was not normally distributed, analysis was conducted using a two-

tailed Spearman's rho which identified a small, positive correlation that was not statistically significant ( $r=.171$ ,  $p=.31$ ).

**6.4.3.1.4 Teacher Self-Efficacy and Teaching Qualifications.** The relationship between teacher self-efficacy and teaching qualifications was examined and their mean scores are summarised in Figure 10. Analysis was conducted using a two-tailed Kruskal-Wallis as the teaching qualifications data was not normally distributed. However, while there was a numerical difference between the mean scores, analysis identified that it was not statistically significant ( $KW=1.77$ ,  $p=.42$ ).

**Figure 10**

*Teacher Self-Efficacy and Teaching Qualification*

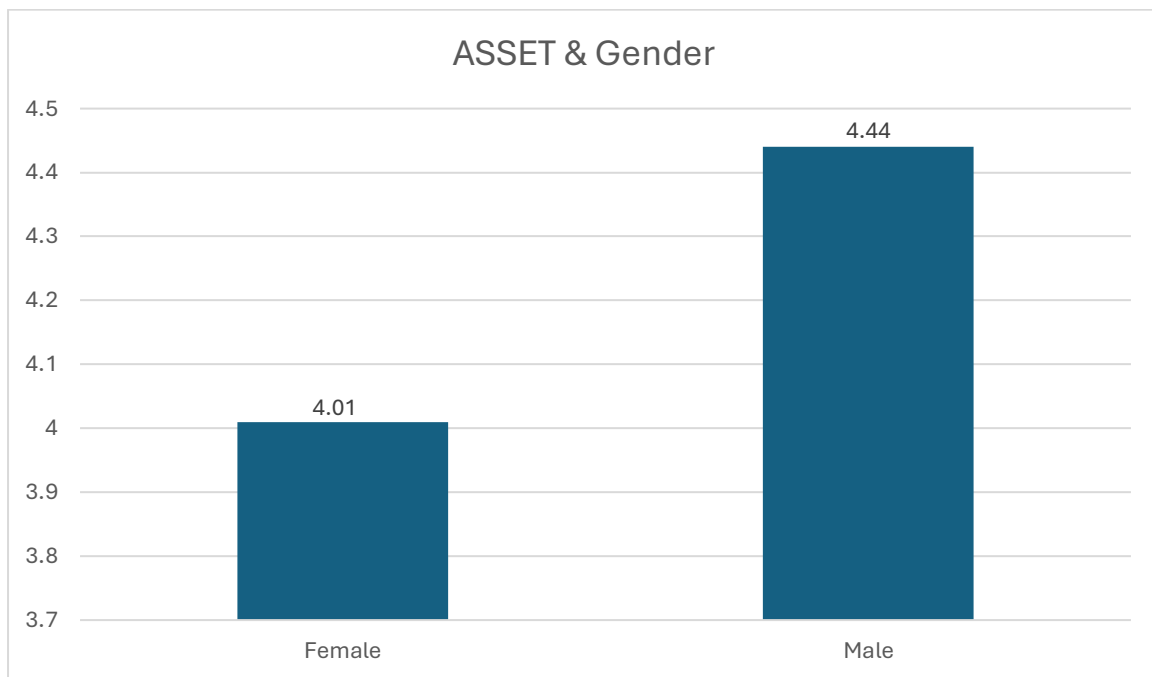


**6.4.3.1.5 Teacher Self-Efficacy and Gender.** The relationship between teacher self-efficacy and gender was examined and their mean scores summarised in Figure 11. While there was a difference in mean scores for males and females, with males displaying higher

levels of teacher self-efficacy, a two-tailed Mann-Whitney U identified that this difference was not statistically significant ( $U=40.5$ ,  $p=.27$ ).

**Figure 11**

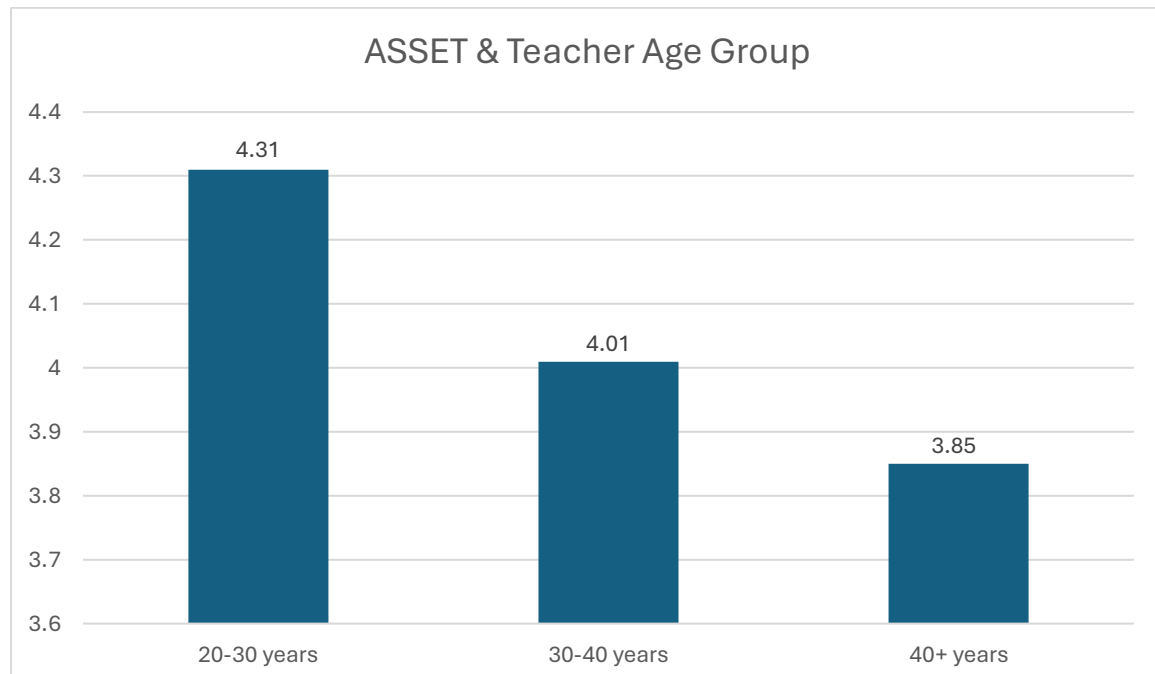
*Teacher Self-Efficacy and Gender*



**6.4.3.1.6 Teacher Self-Efficacy and Age.** The relationship between teacher self-efficacy and teachers' ages was examined and their mean scores are summarised in Figure 12. Initial analysis of the data using the Kolmogorov-Smirnov test identified that it was not normally distributed. While there was a difference in mean scores between the three age groups, with teachers in the 20-30 age group displaying higher levels of self-efficacy, a two-tailed Kruskal-Wallis identified that the difference was not statistically significant, ( $KW=2.44$ ,  $p=.30$ ).

**Figure 12**

*Teacher Self-Efficacy and Teacher Age*



#### **6.4.3.2 Mediated Learning Experience Scale for Problem Based Learning (MLESPBL).**

The objective of this study was to investigate the impact of the training workshops on teachers' use of the mediated learning strategies in their interactions with students. The research hypothesis was as follows:

“Teachers' use of mediated learning strategies (ML) in student interactions will remain the same or increase following the completion of the mediated learning training workshops”.

Teachers rated their use of these strategies after working with a student by completing the mediated learning experience scale for problem based learning (MLESPBL), (Chua, 2003).

Analysis of MLESPBL scores used mean scores as per Chua (2003) in which the mean scores for the eleven principles of mediated learning were calculated with a higher mean reflecting higher use of each principle. While the instrument measures eleven principles

of mediated learning experience, the current study focuses on analysis of the three key principles of *intentionality & reciprocity*, *meaning* and *transcendence* as primary outcome measures which aligns with Feuerstein et al. (1991) contention that these three principles are essential and sufficient for effective mediated learning to take place. The *intention to treat* methodology (Hollis & Campbell, 1999) was deemed the most appropriate option to account for attrition. Mean scores for pre and post MLESPBL data are summarised in Table 6.

**Table 6**

*Descriptive Statistics for the MLESPBL*

Measure	N	Minimum	Maximum	Mean	Std Deviation	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
IRMnT1	17	2.00	3.71	2.93	.53	-.002	.550	-1.102	1.063
MEMnT1	17	1.00	3.50	2.60	.84	-.470	.550	-1.000	1.063
TMnT1	17	1.33	4.00	2.36	.80	.506	.550	-.451	1.063
IRMnT2ITT	17	2.29	5.57	3.50	.97	.791	.501	-.374	.972
MEMnT2TT	17	1.50	4.00	2.90	.75	-.339	.616	-.822	1.191
TMnT2ITT	17	1.33	4.00	2.42	.78	.362	.550	-.241	1.063

Note: IRMnT1= Pre-intervention mean score for *intentionality & reciprocity*  
MEMnT1= Pre-intervention mean score for *meaning*  
TMnT1= Pre-intervention mean score for *transcendence*  
IRMnT2ITT= Post-intervention intention to treat mean score for *intentionality & reciprocity*  
MEMnT2TT= Post-intervention intention to treat mean score for *meaning*  
TMnT2ITT= Post-intervention intention to treat mean score for *transcendence*

The distribution of the mean scores for *intentionality/reciprocity* (IR), *meaning* (ME) and *transcendence* (T) for time 1 was assessed by inspection of the skewness and kurtosis coefficients and their associated z-scores and the Kolmogorov-Smirnov (KS) test which identified that all mean scores were normally distributed, (IRMNT1, D(10)=.167, p=.200; MEMnT1, D(10)=.161, p=.200; TMnT1, D(10)=.191, p=.200). The T2 *intention to treat* mean scores for *intentionality/reciprocity* (IR), *meaning* (ME) and *transcendence* (T) were also found to be normally distributed, (IRMnT2ITT, D(10)=.202, p=.200; MEMnT2ITT, D(10)=.186, p=.200 and TMeT2ITT, D(10)=.279, p=.206).

A planned paired-samples t-test was performed to evaluate if there was a difference in teachers' use of *intentionality & reciprocity* (IR) with their students from practice session one to practice session two. Results indicate that there was no significant increase in the use of IR from practice session one ( $\bar{x}=2.93$ ,  $SD=.53$ ) to practice session two, ( $\bar{x}=3.50$ ,  $SD=.97$ ),  $t(16)=1.45$ ,  $p=.083$  (one-tailed hypothesis), Cohen's effect size,  $d=.35$ , 95% CI (-0.84, 1.4).

A further planned paired-samples t-test was performed to evaluate if there was a difference in teachers' use of *meaning* (ME) with their students from practice session one to practice session two. Results indicate that there was no significant increase in the use of ME from practice session one ( $\bar{x}=2.60$ ,  $SD=.84$ ) to practice session two, ( $\bar{x}=3.50$ ,  $SD=.97$ ),  $t(16)=1.40$ ,  $p=.097$  (one-tailed hypothesis), Cohen's effect size,  $d=.44$ , 95% CI (-1.09, .22).

Finally, a planned paired-samples t-test was performed to evaluate if there was a difference in teachers' use of *transcendence* (T) with their students from practice session one to practice session two. Results indicate that there was no significant increase in the use of T from practice session one ( $\bar{x}=2.36$ ,  $SD=.80$ ) to practice session two, ( $\bar{x}=2.42$ ,  $SD=.78$ ),  $t(16)=1.37$ ,  $p=.095$  (one-tailed hypothesis), Cohen's effect size,  $d=.33$ , 95% CI (-.82,.16).

The findings from this analysis indicate that while there was an improvement in the teachers' use of the key principles of mediated learning, this improvement was not statistically significant and does not support the research hypothesis.

To further explore the intricate relationship between teachers' utilisation of mediated learning strategies and its impact on teacher self-efficacy, an exploratory hierarchical regression analysis was employed given the small sample size. This statistical method is

designed to investigate the degree to which specific variables can elucidate the variance in an outcome, with these variables systematically introduced in a predetermined sequence (Field, 2013). In this study, the independent variables of interest were the three principles of mediated learning, while the outcome of interest is the observed change in teacher self-efficacy.

Two distinct models were constructed using hierarchical regression to assess which predictors could account for the variance in the change in teacher self-efficacy. Table 7 provides a summary of these models. Model 1 uses only MT1ASSETT scores as a predictor of MT2ASSETITT scores, and the final Model 2 adds IRMnT2ITT, MEMnT2ITT, TMnT2ITT scores in a second block of predictors.

**Table 7**

*Hierarchical Regression Results: Model Summary and ANOVA (n=9)*

Regression Model Summary	R	R Square	Adjusted R Square	Standard error of the estimate	R square change	F Change	df1	df2	Sig. F change
1 <sup>a</sup>	.87	.75	.71	.37	.75	20.73	1	7	.003*
2 <sup>b</sup>	.99	.98	.96	.15	.23	13.80	3	4	.014*

ANOVA Model		Sum of squares	df	Mean Square	F	Sig.
1	Regression	2.86	1	2.86	20.73	.003 <sup>b</sup>
	Residual	.97	7	.14		
	Total	3.83	8			
2	Regression	3.75	4	.94	43.97	.001 <sup>c</sup>
	Residual	.09	4	.02		
	Total	3.83	8			

a. Dependent Variable: MT2ASSETITT

b. Predictors: (Constant), MT1ASSETITT

c. Predictors: (Constant), MT1ASSETITT, IRMnT2ITT, MEMnT2ITT, TMnT2ITT

\*p<.05

In the first model, teachers' perceptions of self-efficacy prior to beginning the training explains a statistically significant 71% of the adjusted variance  $F(1,7)=20.73, p=.003$ .

In the second model, the mediated learning principles of *intentionality & reciprocity* (IR), *meaning* (ME) and *transcendence* (T) were added, and increased the adjusted variance accounted for to 96%;  $F(3,4) = 43.97, p < .001$ ).

An examination of the individual contributions of all four predictors are summarised in table 8 with results indicating that only teacher self-efficacy prior to the training ( $\beta = .70, t = 6.90, p = .002$ ) and *intentionality & reciprocity* (IR), ( $\beta = .48, t = 5.74, p = .005$ ) increased the adjusted variance accounted for to 96% (all p-values  $< .006$ ).

**Table 8**

*Hierarchical Regression Results: Coefficients*

Variable	B	95% CI for B		SEB	$\beta$	R <sup>2</sup>	$\Delta R^2$	t	Sig.
		LL	UL						
Step 1									
MT1ASSET	1.08	.52	1.64	.24	.87	.75	.75	4.55	.003
Step 2						.98	.23		
MT1ASSET	.88	.52	1.23	.13	.70			6.90	.002
IRMnT2ITT	.36	.19	.53	.06	.48			5.74	.005
MEMnT2ITT	.09	-.24	.42	.12	.10			.76	.490
TMnT2ITT	-.16	-.41	.10	.09	-.16			-1.70	.17

Note: MT1ASSEITT= Pre-intervention intention to treat mean ASSET score  
 IRMnT2ITT= Post-intervention intention to treat mean score for *intentionality & reciprocity*  
 MEMnT2ITT= Post-intervention intention to treat mean score for *meaning*  
 TMnT2ITT= Post-intervention intention to treat mean score for *transcendence*

These findings suggest that teachers' prior levels of self-efficacy and their use of intentionality and reciprocity during the training positively accounted for the change in teacher self-efficacy overall. However, a cautious interpretation of the results is advised due to the small sample size of nine and the limited number of predictors used in the analysis. Further analysis using a larger sample size could explore these relationships further.

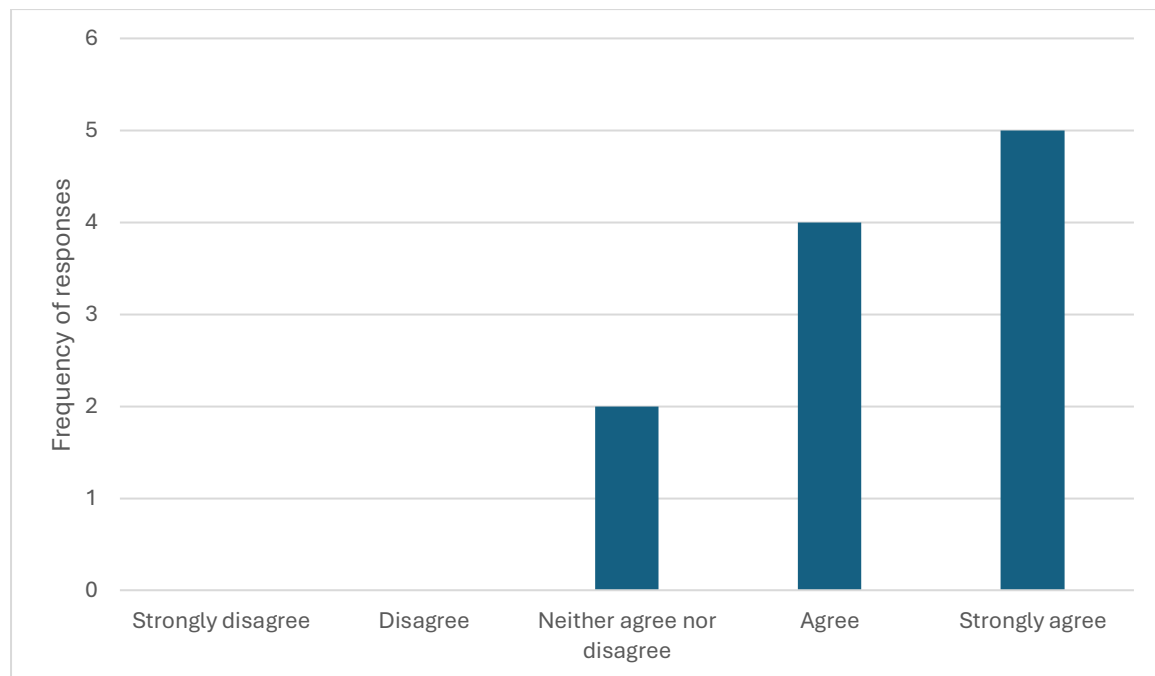


#### 6.4.4 Workshop Evaluation Questionnaire.

As part of the workshop evaluation questionnaire, teachers were asked to evaluate the effectiveness of the training regarding its impact on their professional development, their willingness to use it and how they perceive its practical application with their students using a rating scale from 1 (*strongly disagree*) to 5 (*strongly agree*). For the purposes of analysis, *agree* and *strongly agree* responses were combined with the findings summarised below. However, given the small sample size (N=11), it is important to emphasise that while the findings provide interesting insights, they have limited utility in drawing generalised conclusions.

**Figure 13**

*Using Mediated Skills will Enhance my Interactions with my Students*

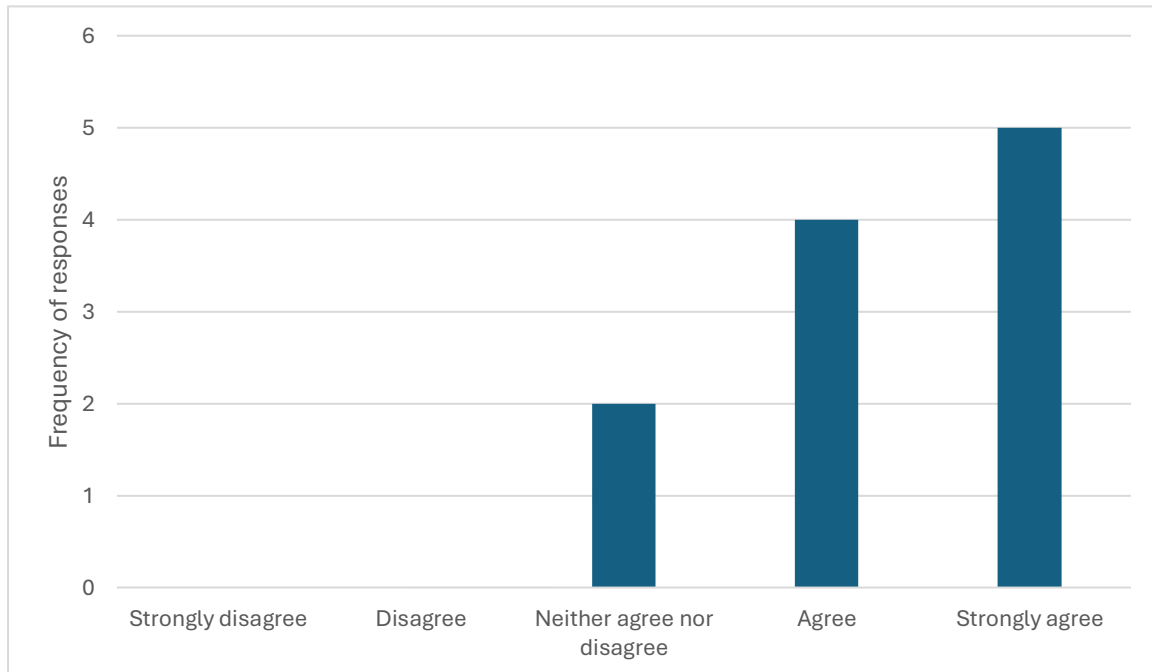


As shown in Figure 13, teachers reported a favourable response about how using mediated learning strategies with their students could impact positively on their relationship with them. Integrating these skills into learning activities fostered a partnership between

teachers and students, and the opportunity of working closely with students enabled teachers to acquire a deeper understanding of their learning strengths and needs.

**Figure 14**

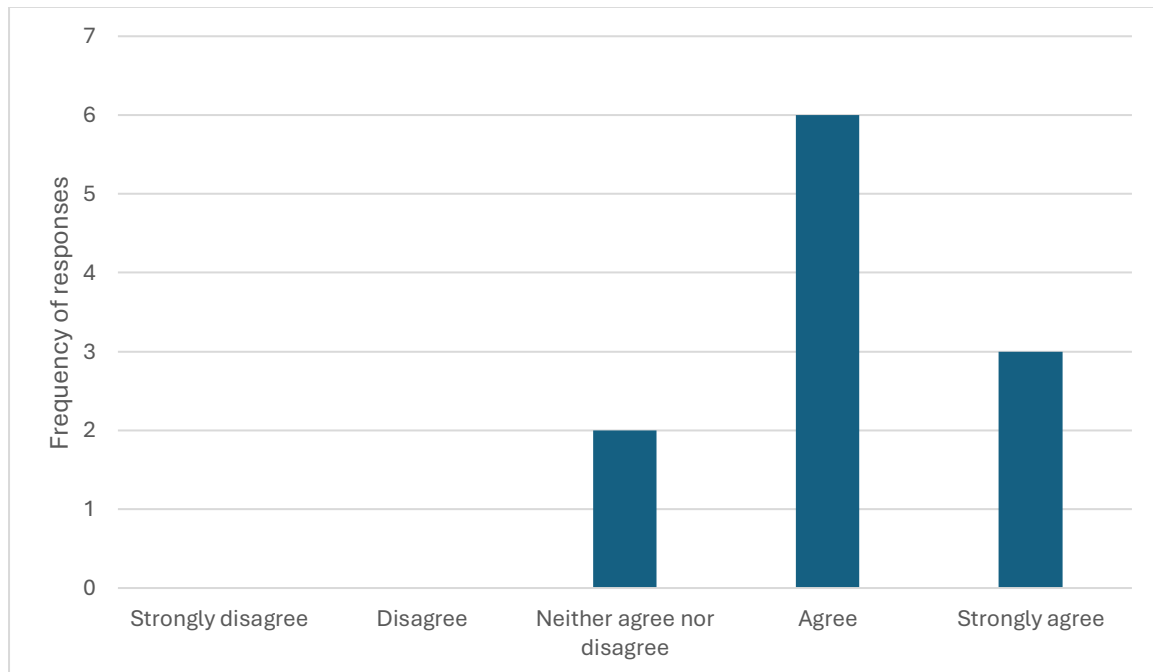
*Intention To Use Mediated Learning Skills In My Class*



81% of teachers who completed the workshop evaluation questionnaire stated that they intended using mediated learning skills in their classrooms (Figure 14). They reported that the mediated learning framework provided them with a user-friendly template to help them identify the specific mediated learning skills they would use when working with their students. Teachers also reported that the mediated learning approach complemented other methodologies they were already using in their classrooms, making it easy to integrate into their daily teaching.

**Figure 15**

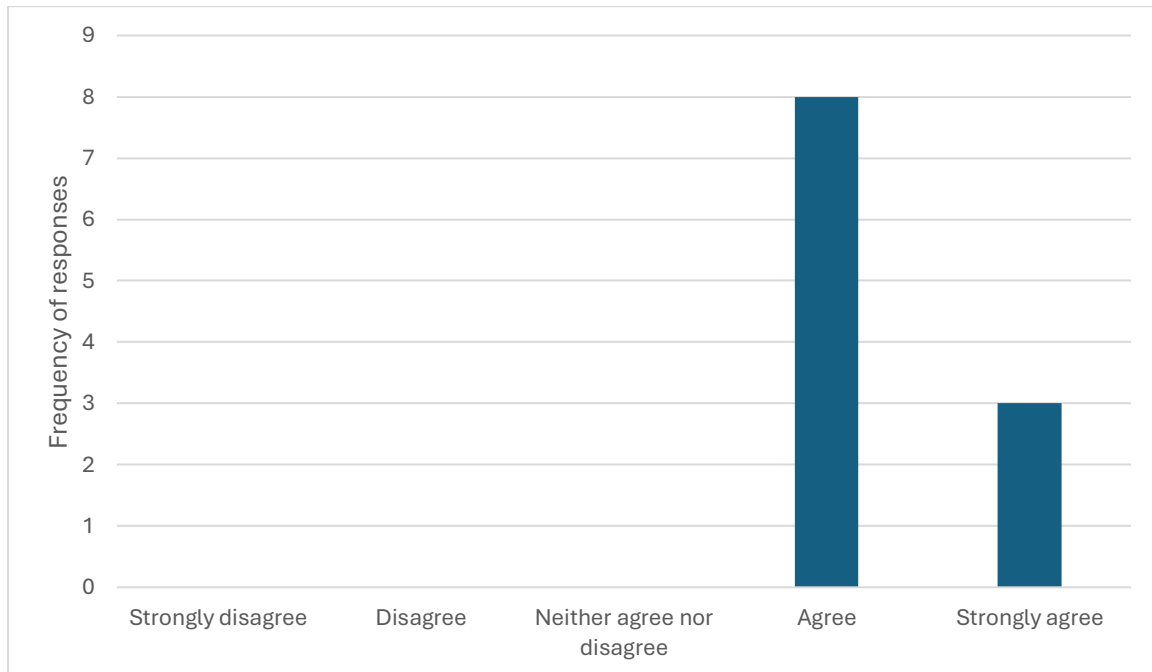
*Confidence Using Mediated Learning Skills In Class*



Regarding teachers' confidence levels in using the mediated learning approach, 18% of teachers reported no change to their confidence in using these skills. Furthermore, 55% of teachers reported that the training did positively impact their confidence and 27% strongly agreed that completing this training increased their professional confidence. Teachers reported that completing the training identified specific skills they could integrate into their teaching methodologies that had the potential to enrich and enhance their students' learning experiences.

**Figure 16**

*The Impact of Mediated learning Training On Professional Development*



As shown in Figure 16, all teachers who completed the questionnaire believed that the completion of the mediated learning experience training had impacted positively on their professional development as teachers who work in specialised autism class settings. Using the mediated learning framework enabled them to plan learning tasks that responded to each student’s own unique learning profile.

### **6.5. Qualitative Analysis**

As noted in Chapter 5, Section 5.9, qualitative data was analysed using thematic analysis (Adu, 2019).

#### **6.5.1 Overview.**

Five semi-structured interviews were conducted with teachers who completed the training workshops on mediated learning experience. The purpose of these interviews was (i) to gain a

deeper understanding of the challenges teachers encounter when developing effective education plans for their autistic students with complex needs, (ii) to gather opinions about the potential role that mediated learning strategies could play in optimising students' learning experiences and (iii) to receive suggestions to make the training more accessible for teachers.

From this analysis, readers will be able to:

- I. Understand the challenges teachers working in specialised autism classes experience when developing education plans for their students.
- II. Recognise the impact of teacher confidence on learning outcomes for students.
- III. Evaluate the potential value of mediated learning as a framework for teachers to enhance learning activities.
- IV. Identify what are the next steps required for mediated learning training to be applied effectively in classrooms.

### **6.5.2. Context.**

Creswell and Poth (2016) posit that in qualitative research, there is an important connection between the phenomenon being studied and the context in which it occurs, which needs to be borne in mind when analysing data and identifying key themes. The increased prevalence rate of autism both in Ireland and internationally (Boilson et al., 2016), highlights the need for developing teaching methodologies and interventions that support the diverse range of needs of autistic students. Research into the effectiveness of autism specific interventions highlights the limited involvement of professionals working on the ground such as teachers in their early development stage (Bond et al., 2016; Kasari & Smith, 2013) Research findings have also identified the importance of eliciting the views of teachers through interviews and questionnaires (Howell et al., 2022; Weisz, 2000) and building teacher confidence through the delivery of effective training programmes that respond to their

current level of understanding and specific training needs (Fixsen, 2005; Robinson, 2017) It is within this context that these interviews were conducted.

### ***6.5.3 Disclosure of Preconceptions, Perspective and Expectations.***

As summarised in Chapter 5, Section 5.2, the researcher, using a pragmatic lens is concerned with exploring possible solutions to presenting problems using a variety of quantitative and qualitative data (Creswell & Creswell 2018 & Patton, 1990), acknowledging the importance of collaborating with key stakeholders to elicit their perspective and opinions, ensuring that the research is relevant and of benefit to those it aims to serve. Awareness of one's own experiences and attitudes is important in qualitative research as it can influence data analysis (Adu, 2013). To reduce the impact of any personal biases and preconceptions, the researcher in the current study engaged in the reflective process of *bracketing* (Tufford & Newman, 2010) at various stages of the analysis with the aim of analysing data in an objective manner.

The researcher was aware of her current role as an educational psychologist and previous role as a teacher in shaping her knowledge and understanding of the challenges teachers can face when working with students with complex needs and how this training could contribute to building teacher self-efficacy. The researcher has also acquired considerable experience delivering training workshops to teachers and some of the teachers who attended the mediated learning training were known to her professionally. This unique blend of academic insight and practical familiarity enhances the study's credibility and positions the researcher as well-versed in both the theoretical and real-world aspects of teacher training in the context of complex educational needs.

#### 6.5.4 Data Analysis Process.

The data analysis process used the following procedure as indicated by Adu (2019) and shown in Figure 17.

**Figure 17**

*Qualitative Data Analysis Process (Adu, 2019)*



#### 6.5.5 Prepare the Data.

The preparation stage began by developing questions based on information provided by teachers on the [workshop evaluation questionnaire](#). (see Appendix 15). On completion of the mediated learning workshops, all teachers were invited to attend an online interview and five were chosen randomly from those who contacted the researcher by email. The interview transcripts were saved and each one was assigned an ID to protect the anonymity of the teachers. [Transcripts](#) (see Appendix 24) were read to get an overall understanding of the content and manual coding of them was carried out using the Microsoft Word review function. The incorporation of *bracketing* into the different stages of the data analysis process ensured that the researcher's perspectives, preconceptions and expectations did not influence the coding process and subsequent development of key themes.

### 6.5.6 Data Coding

**Table 9**

*Demographics Of Semi-Structured Interviewees*

Participant ID	School Setting	Gender	Teaching Experience in Special Class
Teacher 1	Primary	Female	2
Teacher 2	Primary	Female	4
Teacher 3	Primary	Female	2*
Teacher 4	Post-Primary	Female	1
Teacher 5	Primary	Female	15

*\*Note:* Teacher also had 12 years' experience working as a special needs assistant in an autism class setting

### 6.5.7 Data Analysis

Reflecting on the four research questions as noted in Chapter 5, Section 5.4 and the purpose of these interviews, the description focused coding methodology was identified as most appropriate, allowing the data to speak for itself, without interpretation or inference from the researcher. Coding was done manually using Microsoft Word. Themes that represent each of the research questions, were generated as follows (Adu, 2019):

1. Does mediated learning enhance the learning outcomes for students with autism?  
(Theme 1: Challenges for Teachers)
2. Does mediated learning as a teaching methodology impact positively on teacher self-efficacy? (Theme 2: Opinions of Mediated Learning)
3. Does attending and participating in mediated learning increase teachers' knowledge and understanding of the approach and increase their confidence in using it with their students? (Theme 3: Building Teaching Confidence)



4. What key factors need to be considered when developing autism-based interventions to optimise their effective use and sustainability? (Theme 4: Optimising training programmes)

Reading each transcript, empirical indicators were identified, which are defined as sections of the data that are relevant to each of the anchor codes. Upon analysing all five interviews using this methodology, [frequency tables](#) (see Appendix 26) were created for each of [the anchor codes](#) (see Appendix 25) indicating the number of participants (cases) and associated empirical indicators (counts) associated with each one.

#### 6.5.8 Themes.

The results of the data analysis indicated four principal themes: building teacher confidence, challenges for teachers, opinions of the mediated learning methodology and optimising training programmes, with several sub themes located within each of those.

**Table 10**

*Themes and their Features*

Theme	Cases	Counts	Empirical Indicator
Building teacher confidence	5	16	“I think what I've learned over the years is to be so flexible, and you know the way you always follow the child's lead”
Challenges for teachers	5	13	“Like it's not where you can set out your targets in a mainstream class. Here, the targets keep changing as the needs become more apparent”

Opinions of mediated learning	5	27	“A lot of teachers said to me afterwards, you know, doing this has made me be consciously aware when I'm doing a lesson that I need to engage more with the students”
Optimising training programmes	5	46	<p>“I think face to face is fantastic..., talking to other teachers that also really support you”</p> <p>“I really liked the videos. It really reinforced it for you and put it into a realistic situation”</p>

Note: “Count” represents the number of times a code is assigned to empirical indicators found in the data. “Cases” represents the number of participants’ transcripts connected to a particular code.

**6.5.8.1 Theme 1: Building Teacher Confidence.** All five interviewees reported that while the autism class is a challenging setting to work in, they enjoy it and cited the importance of time working in the specialised setting as important for building confidence and competence in their role as class teacher:

Teacher 2: “First of all, I have a very, very positive experience of teaching autistic children. I really know my job, and I would find it very difficult, I think, to leave the autism classroom setting and go back to mainstream”

Teacher 4: “It’s exhausting...but then so satisfying”

Teacher 1: “And then with planning, I feel very confident. Now I can see that, but I never thought I would say that. But I do feel very comfortable planning.”

Teacher 3: “I feel I have the confidence to stick with it”

The five interviewees acknowledged the need for teachers to be flexible and adaptable when developing education plans for their students, with one teacher suggesting that this confidence in trusting one's professional judgement developed over the years, "*I think what I've learned over the years is to be so flexible, and you know the way you always follow the child's lead*" (Teacher 5).

**6.5.8.2 Theme 2: Challenges for Teachers.** All interviewees reported that developing effective education plans for their students was an ongoing area of challenge for them, explaining that the diverse range of needs and their evolving nature made it difficult to plan and prioritise:

Teacher 2: "Like it's not where you can set out your targets in a mainstream class. Here, the targets keep changing as the needs become more apparent".

Teacher 3: "I suppose, every day is different. It's all trial and error. What works today mightn't work tomorrow. You're just constantly having to re-invent the wheel"

Having adequate time for planning and evaluating targets was also identified as a challenge for teachers, "...you know you're given two hours of your timetable to plan. I feel like I'm not planning my lessons, all my time goes into the admin side of it, and then my lessons fall down". (Teacher 4)

One teacher who was new to the role cited the isolation from colleagues in the mainstream classes as challenging,

Teacher 4: "You're on your own and schools are so busy and there's so many issues in schools that you know. But you are kind of on your own, and you're trying to manage" and cited the importance of having a good team as key to making the

classroom a positive experience for both the students and the staff, "...who you have on your team is so important, I'm so lucky to have X, she is just amazing".

**6.5.8.3 Theme 3: Opinions of Mediated Learning Training.** All five teachers reported that one of the strengths of the mediated learning training was how it provided teachers with a framework to develop their reflective practice skills, as a method of understanding a child's profile of learning strengths and the teaching methodologies that are most appropriate; "the framework, the pictures gave me a way to kind of reflect and think about what I was doing" (Teacher 1). Using the framework enabled teachers to evaluate their interactions with students, reflecting on which principles they used on a regular basis but also the principles they needed to give more attention to when working with their students, "...doing this has made me be consciously aware when I'm doing a lesson that I need to engage more with the students", "...definitely the intentionality and reciprocity I wasn't doing enough of that"(Teacher 3).

One teacher cited the strengths-based approach of mediated learning as one of its most powerful aspects, focusing on building students' confidence, using the visual representation of the framework to communicate with them about how they learn, what their challenges are and what the next steps are to support their difficulties. Interviewees also reported that one of the main advantages of this training was its impact on their professional confidence, as the framework highlighted to them many of the skills they were already doing but not consciously aware of," ...But like we're doing so many of them like the intentionality, ...giving purpose to the kids. And we're doing the meaning, like I'm, explicitly teaching things all the time and the transcendence, you know you're constantly as a teacher connecting the past with the future" (Teacher 4).

Teachers reported that the mediated learning framework was empowering for teachers as it put them “in charge” of their students’ learning, choosing the content and what specific skills they would focus on to ensure the learning was a rewarding and positive experience for them, “...the teacher feels that he or she is in control and that they're the expert here setting up this little activity. And you know they're not following a book. It's all about themselves, setting up and deciding what activities they're going to do is much more satisfying because it's coming from yourself as a teacher rather than just following something in a book” (Teacher 2).

One teacher explained that by using the mediated learning skills methodology in her class enhanced her relationship with her students as the approach emphasised a team approach to learning, “I really think the emphasis on building the relationship...it's a lovely way, of feeding back to the child, “these are strategies to help you learn best. And this is what you take forward in life. This is what you're good at. This is what you're not as good at. But this is what helps you with these. And if there's negatives there's a solution” (Teacher 4).

Regarding some of the challenges the teachers experienced with the training, two of the interviewees found that the theory and language of mediated learning made it difficult to fully understand the approach and thus apply it successfully in their classrooms, “You lost me on the theory”, some of the language doesn't reflect what it is, and it could be changed to be more like Irish language” (Teacher 5). One significant challenge to the effective use of mediated learning in the classroom highlighted by the interviewees was the difficulty in using the approach with non-verbal children, “I think the bit that I'm struggling with is trying to explain to children. Why, we need to do that. You have children who are maybe minimally verbal, and it's hard to do that with children who are non-verbal” (Teacher 3).

**6.5.8.4: Theme 4: Optimising Training Programmes.** Interviewees were asked to identify the key components required in autism specific training programmes to ensure effective and sustainable outcomes for students.

While the interviewees understood the benefits of online training, they agreed that in-person training with other teachers away from the school building where they can immerse themselves in the training, sharing ideas and practising the skills in a supportive environment was the optimum, “I think face to face is fantastic, you know, and that would be the bonus, talking to other teachers that also really support you” (Teacher 2). Accessing additional training through professional learning communities was highlighted as key to developing the skills after the training with coaching and mentoring provided by an “expert” in the field, “...an expert to come in and guide teachers and allow them, I suppose, to air their questions and give some practical tips” (Teacher 3). One teacher suggested the importance of whole school training so that the language of mediated learning experience becomes integrated across the school community, “... I think maybe start off where it's just the autism class teachers but then it needs to be integrated into mainstream as well, to teach it the whole school...” (Teacher 4), with the training of one or two teachers as ‘experts’ in each school first as a possible way to ensure the approach becomes used by all staff members.

The use of video technology in training programmes was cited as important both in the initial training stage and for ongoing professional development opportunities. While teachers preferred in person training, they suggested the possibility of using a ‘hybrid’ approach where the theory aspect could be delivered online or as a recorded webinar that teachers could watch at their convenience prior to the training, “If the webinar did the theory

bit, then people have the choice. You can actually zoom along, or you can go back and replay it if you're very interested” (Teacher 1). Using video clips to demonstrate examples of good practice were highlighted by the teachers as a really useful methodology as it brought the mediated learning skills into the real classroom context, “I really like the videos...really reinforces it for me and puts it into a realistic situation” (Teacher 3). Teachers also reported that while making videos of themselves practising the mediated learning skills with a student was a new and challenging experience, they found it a beneficial method of developing their skills, “I would have been taking photographs, and maybe the odd video of the children, but not videoing myself. So, I think. Yeah, I think that's very good” (Teacher 5). Interviewees also suggested that video clips of a teacher using mediated learning skills with a non-verbal child would be a helpful way for teachers to learn strategies/approaches they could use with their own non-verbal students, “...one thing that came up for me was just because the children are mostly pre-verbal, and you know all the questioning, that is really hard for them so I think if you're training again, try and find an example of somebody who actually is working with the pre-verbal child doing it. I think that would be good” (Teacher 3).

The interviewees suggested several resources that they felt could enhance the mediated training for the future:

- The language of mediated learning was highlighted as a barrier for teacher’s understanding of the approach and thus impacts on its successful implementation in classrooms, “I think the language that's used is probably not representing what we're doing,...is difficult to understand and could be changed to more of our Irish words ” (Teacher 4). The use of acronyms to facilitate the easy recall of the principles in class was also suggested.

- Teachers suggested the need for a training manual that they can refer to afterwards to develop their competence and confidence that includes a user-friendly mediated learning rating scale and reflective log, “...develop some form of programme or a booklet... it will be really good if there's like a tick box where you have your rating scale” (Teacher 5).
- A recorded webinar of the training was also highlighted as helpful for teachers to refer back to afterwards. Interviewees also emphasised the importance of linking the skills of mediated learning with resources such as the *Autism Good Practice Guidance for Schools – Supporting Children and Young People* (Department of Education, 2022) and autism specific interventions which are used in Irish schools.

## **6.6 Integration of Quantitative and Qualitative Data**

The aim of this study was to explore the potential benefits for teachers working in specialised autism class settings using mediated learning as an interaction approach to enhance their students’ learning. The study also sought to investigate the impact of mediated learning training on their professional self-efficacy. Using a mixed-study design enabled the researcher to probe beneath the quantitative findings using qualitative data elicited from the participating teachers. The key findings from the integration of both data sets are organised under the following two key sections; teacher self-efficacy and mediated learning training, and indicate that training in mediated learning has the potential to impact both on teacher and student outcomes.



### **6.6.1 Teacher Self-Efficacy**

**6.6.1.1 Quantitative.** Results from analysis of the ASSET mean scores in the current study indicate that teachers in Irish autism classes demonstrate satisfactory levels of professional confidence which aligns with findings from previous research (Ryan & Mathews, 2021), which also explored teacher self-efficacy in Irish schools. Analysis of the thirty items that comprise the ASSET indicate that in both the current study and in the Ryan and Mathews (2021) study, teachers identified *using visual supports to increase students' independence* as their strongest skill with *train peer models to improve the social skills of students* as their weakest one. The relationship between teacher confidence and teaching experience, in particular, teaching in a special class setting, as well as qualifications and the gender of the teachers were also explored in the current study with results identifying some differences that were not statistically significant. Two correlations that generated particular interest were the relationships between teacher age, gender and self-efficacy which identified that younger teachers and male teachers displayed higher levels of self-efficacy, however both were not statistically significant.

While the observed trends hint at potential patterns, the absence of statistical significance suggests that these relationships may be influenced by other factors or may require a larger sample size for more conclusive insights. Further exploration into the nuanced interplay of age, gender, and teacher self-efficacy could offer valuable insights into the complex dynamics at play in the teaching profession.

**6.6.1.2 Qualitative.** Participating teachers in the current study indicated that while teaching in the autism class setting was challenging, they found it rewarding. They reported that confidence levels increased with the number of years they had spent teaching in the

autism class, adjusting their teaching methodologies to meet the needs of the students in their class as well as developing confidence and trust in their own professional judgements.

Teaching confidence in the special class setting was not related to number of years teaching experience they had overall as they reported that the special class setting required them using different teaching methodologies as well as the setting of learning targets that were constantly evolving, requiring a higher level of flexibility from them. While the relationship between teacher confidence and level of teaching qualifications identified a small difference that was not statistically significant, teachers cited attending autism specific training events rather than their level of teaching qualifications as important, because the training events helped them to build their knowledge of effective approaches and resources to use in their classes. They noted the importance of liaising and collaborating with colleagues in similar teaching roles as key to learning about autism specific interventions and developing their expertise in using them in their classrooms.

**6.6.1.3 Integration.** Findings from both data sets confirm that the provision of targeted training that addresses some of the specific challenges encountered by teachers working in specialised autism class settings impacts positively on their professional self-efficacy. Teaching confidence is also optimised by opportunities to collaborate with colleagues and that confidence grows with increased experience of teaching in the specialised class setting. The opportunity to explore the relationship between the gender of teachers and self-efficacy was not possible due to all five teachers who participated in the semi-structured interviews being female.

## **6.6.2 Mediated Learning Training**

**6.6.2.1 Quantitative.** Analysis of the MLESPBL ratings scale did not provide statistical evidence for teachers' increased use of mediated learning strategies following the training, due to the small sample size and low statistical power. A further study with a larger sample size could help clarify whether there might be effects of practical significance with regards to the effect of mediated learning training. In the workshop evaluation questionnaire, teachers reported that the mediated learning training impacted positively on their professional development and motivated them to use it in the classroom. They also highlighted how using this approach would improve the quality of interactions with their students.

**6.6.2.2 Qualitative.** In the semi structured interviews, teachers reported that attending mediated learning training was a positive experience for them and posited a number of reasons. Firstly, learning about the twelve mediated learning principles highlighted that they were already doing some of them, without being consciously aware, which bolstered their self-esteem. Secondly, the mediated learning framework provided them with a template to plan and reflect on learning activities to ensure they matched students' unique learning profiles, empowering them as teachers to trust their own professional decisions. Thirdly, teachers reported that using the mediated learning skills enhanced their relationship with their students.

**6.6.2.3 Integration.** Integration of the quantitative and qualitative findings indicate the benefits to teachers on applying the key principles of mediated learning in their classrooms that can impact positively on their professional development, improving the quality of interactions with their students and optimising their learning experiences.

## **6.7 Summary**

The study found that while teacher self-efficacy increased following completion of the mediated learning training and supported the research hypothesis, the change was not statistically significant. However, effect sizes ranging from 0.35 to 0.44 suggest that further research with a larger sample might reveal a practical significance. The mediated learning principle of *intentionality and reciprocity* was shown to positively impact teacher self-efficacy. Teachers reported that using the mediated learning approach in their classrooms enhanced the quality of their interactions with students, impacting positively on learning outcomes. In addition, teachers reported that the mediated learning approach provided a framework to better understand students' learning profiles and develop tailored interventions. They highlighted the need for more training, in particular, bespoke training on using the approach with autistic learners with limited verbal skills. They also highlighted the importance of in-person training, ongoing expert coaching, and the provision of user-friendly resources such as a training manual, reflective log and mediated learning rating scale using contemporary language. Finally, teachers noted that their professional confidence in specialised autism classes was not dependent on age or qualifications but increased with years of experience, adapting teaching methodologies to meet diverse student needs, accessing ongoing autism specific training and opportunities to collaborate with colleagues working in similar settings.

## **6.8 Limitations of the Study**

There were a number of limitations in the study that may have impacted on the study findings and will be discussed in the next chapter.

## **Chapter 7: Discussion**

### **7.1 Summary of the Research Studies**

The aim of the two studies reported in this thesis was to investigate how the use of mediated learning strategies by teachers working in specialised autism classes could enhance the learning outcomes of their students. While learning outcomes can be impacted by a variety of factors (Chapter 2), the focus in this research study was on teacher self-efficacy, which has been identified as a key factor for student achievement. While dynamic assessment has been acknowledged by parents, teachers and professionals as a person centred, strengths-based approach, research findings have not provided consistent evidence to encourage its widespread use.(Elliott et al., 2018; Stringer, 2018; Tiekstra et al., 2014)

Study One (Chapter 4) examined previous research into dynamic assessment and autism, with a particular focus on the use of mediated learning strategies in clinical and educational settings. The study also carried out an in-depth analysis of autism intervention design. The findings from this study had two outcomes. Firstly, they informed the development and delivery of mediated learning training to teachers, which is the focus of Study Two and secondly, they provided a framework for the researcher to evaluate the training on mediated learning and thus identify areas that may require further consideration to optimise effectiveness.

Study Two (Chapter 6) built on the insight gained from study one and involved the delivery of three workshops on mediated learning to teachers working in specialised autism classes in primary and post primary schools in Ireland. Analysis of data focused on teacher self-efficacy and the development of teachers' understanding and application of mediated

learning strategies on completion of the training. Results of data collected in Study Two indicated that teachers' self-efficacy improved following completion of the training, with teachers citing it as a positive and empowering training experience that had a practical application in their classrooms.

## **7.2 Key Findings**

A synthesis of the findings from both Study One and Study Two indicated a high level of consensus which provides promising evidence for the benefits of teachers integrating the skills of mediated learning into their interactions with students and highlights the following specific findings regarding the value of mediated learning training for teachers that merit acknowledgement.

### ***7.2.1 Factors that Impact on Teacher Self-Efficacy***

While the findings from the ASSET indicated an increase in teacher self-efficacy following the mediated learning training, analysis of the qualitative information gained through interviews with teachers and their subsequent evaluation of the training identified the specific factors that contribute to teacher confidence with regards to teaching in a specialised autism class setting. Teachers cited the opportunity to collaborate with colleagues as a key aspect of effective training, where they can problem solve and share good practice and resources in a supportive and empathic setting. This aligns with Monsen and Woolfson (2012) who suggest that a key aspect of effective implementation of any intervention in a school setting requires teachers and researchers working collaboratively using problem-solving, decision making frameworks to guide decision making. The mediated learning framework gave them a structured approach to reflect on how they interact with each of their students, affirming what they were already doing well while motivating them to improve

other areas that needed more focus. Using the framework enabled them to plan learning activities that matched each student's unique profile, empowering them to feel confident with their professional decisions.

### ***7.2.2 A Flexible and Adaptable Approach***

Research studies on mediated learning have highlighted the flexibility of the approach as one of its strengths, in that it can be used by parents, teachers and professionals working with a broad range of age groups in individual and group settings to target a diverse range of skills. This flexibility was evidenced in the current study where participating teachers worked in both primary and post primary school settings and practised the mediated learning skills in academic, social and project-based tasks. Therefore, the application of mediated learning extends beyond academic realms, encompassing social interactions and practical activities. This adaptability highlights the potential of dynamic assessment approaches, such as mediated learning to address a broad spectrum of skills and contexts, thereby maximising their utility in the support of children and young people with autism. Understanding and harnessing this flexibility can contribute to the development of interventions that cater to the diverse needs of individuals on the autism spectrum.

### ***7.2.3 A Strengths-Based Approach***

The heterogeneous presentation of autism indicates that autistic students benefit most from targeted interventions that match their unique profile of strengths and needs. One of the strengths of dynamic assessment, of which mediated learning is a core component, is its ability to identify how individuals learn best and thus develop interventions that target specific areas of need (Klimovič et al., 2017). In the current study, teachers reported that using the mediated learning framework helped them to understand individual students'

learning profiles better, which informed their teaching methodologies and setting of learning targets. This enhanced understanding, facilitated by dynamic assessment, played a pivotal role in informing teaching methodologies and the establishment of targeted learning objectives. By recognising and accommodating the diverse ways in which autistic students process information and acquire skills, dynamic assessment interventions, anchored in approaches like mediated learning, contribute to more effective and individualised educational strategies. This tailored approach aligns with the call for interventions that go beyond a *one-size-fits-all* model, offering promising avenues for enhancing the educational experiences and outcomes of students with autism.

#### **7.2.4 Building Positive Relationships**

Oreshkina and Greenberg (2010) report how using a mediated learning interaction style can foster a cooperative relationship between teacher and student which results in learning being a rewarding, positive experience. Similar findings were evidenced in the current study as teachers reported that using mediated learning strategies, in particular, *intentionality & reciprocity, meaning and transcendence* encouraged them to reflect more on how they were *connecting* with their students. It also helped them to identify tasks they would use to engage and sustain their students' interest resulting in more meaningful learning experiences. Teachers also noted that through this reflective process, they got to know their students better which improved the quality of their relationships in addition to an enhanced educational experience.



### ***7.2.5 Mediated Learning, Student Engagement and Improved Outcomes***

Findings from the current study identified that teachers' increased use of *intentionality and reciprocity* had a strong association with the improvements in teacher self-efficacy. A more contemporary definition of *intentionality and reciprocity* as provided by Lauchlan and Daly (2023) is engagement and there is considerable evidence that highlights the importance of student engagement on achievement outcomes (Lei et al., 2018). While research studies have identified a number of factors that influence student engagement such as the quality of curriculum content, the use of effective pedagogical approaches, the provision of professional learning communities for teachers and the development of personalised learning environments that match learners' needs (Klem & Connell, 2004), the quality of teacher/student interactions has been highlighted as key in promoting student engagement (Engels et al., 2021).

While engagement impacts on outcomes for all learners, it has a significant impact on outcomes for autistic students. Roorda et al. (2021) examined the student/teacher relationship for autistic boys compared to their neurotypical peers and attributed lower engagement levels and higher levels of conflict to their social interaction difficulties. This finding emphasises the need for teachers to develop more targeted ways to interact with their autistic students, which can have a positive impact on their learning outcomes. Pianta et al. (2012) identified four components of student/teacher interactions that teachers need to be cognisant of; (i) knowledge and awareness of the quality of their interactions with students, (ii) access to ongoing professional support, (iii) the use of reflective practices to evaluate their interactions and (iv) the use of reflective practices to target the development of effective skills. In the current study, the mediated learning training integrated all four components and teachers reported that the training reminded them that meaningful learning occurs in a collaborative

space, and that new learning could be facilitated through the application of mediated learning skills. These findings suggest the benefits of integrating mediated learning skills into everyday classroom interactions as a methodology to improve autistic students' engagement, which has the potential to impact positively on their learning.

### **7.3 Implications for Further Research**

Evaluation of the mediated learning training in Study Two has also highlighted several key factors in relation to future development and delivery of the training that will require careful consideration to ensure its effectiveness and sustainability in autism classes.

#### ***7.3.1 Teacher Input***

Weisz (2000) identified that autism interventions need to be developed and tested in real classroom settings with input from professionals working on the ground at the different stages of the process. In the current study, teachers' views were key to the success of the training and were elicited at different stages of the process, which included a focus group to review the training content prior to delivery as well as participating teachers' insight gained through the use of semi-structured interviews and workshop evaluations. The inclusion of teacher insight into the mediated learning training provided an invaluable *on the ground* perspective to ensure that it was meeting the professional needs of teachers by providing them with a framework of strategies they could use flexibly to improve the learning of their students. Using the mediated learning framework enabled teachers to recognise students' *islets of normalcy* which Feuerstein et al. (1991) describe as the small but significant learning strengths that can form the basis of targeted interventions that not only benefit the students but also impact positively on teacher attitude, morale and motivation.

### ***7.3.2 Mediated Learning Training***

The importance of providing teachers with comprehensive, in-depth training in mediated learning was highlighted by Lebeer et al. (2019) as essential for building teacher confidence and competence in using these skills, and teachers in the current study confirmed that the provision of bespoke training with ongoing support was crucial. Integrating the language of mediated learning into the wider school community was identified by Martin (2014) as key for effectiveness and this was highlighted as important by teachers in this study to optimise its successful and sustained use in schools.

The *dynamic school* approach outlined in Lauchlan and Daly (2023) demonstrates the impact of the mediated learning approach on children's learning when embedded in the culture of the school and is used by all staff members, providing evidence for schools adopting a *whole school* approach to optimise its effectiveness. This requires a whole school approach led by the school principal in collaboration with school staff and other stakeholders to develop a shared vision and ethos in which the skills of mediated learning are fully understood and applied by all staff members and thus integrated seamlessly into teaching and learning across the school community. Adopting an implementation science framework that includes audits of current practices to identify areas of strength and possible barriers, as well as providing school staff with whole school training and ongoing opportunities to develop and sustain their skills, in addition to the necessary allocation of time and resources are key strategies to successfully embed the mediated learning approach across the school community.

### ***7.3.3 Does Mediated Learning work for all Autistic Learners?***

While teachers in the current study reported a positive attitude to the use of mediated learning skills with their students, they noted that the approach was particularly challenging to use with children who presented with significant language difficulties and emphasised the need for additional, bespoke training to enable them to use the framework with students who are non-verbal or have limited communication skills. Concerns regarding the effectiveness of traditional mediated learning approaches for some autistic students were highlighted in Aljunied and Frederickson (2013). They hypothesised that autistic children with additional learning needs may not have sufficient compensatory strategies to mitigate against the effects that mediated learning skills place on their weaker central coherence system. These findings suggest that while mediated learning benefits most autistic learners, a range of autism specific mediated learning skills that address some of these identified challenges are needed to ensure the approach is effective for all.

While research to date has not identified autism specific mediated learning experience skills, the mediated learning approach has been successfully integrated with other autism specific interventions to enhance outcomes such as those used in speech and language therapy (Donaldson & Olswang, 2007; Tzuriel & Valdman, 2009). Fox (2020) extols the complementary nature of Feuerstein's dynamic assessment methods with the DIRFloortime intervention that results in an "...effective, synergistic assessment and treatment combination" (p.127).

### ***7.3.4 The ASSET and the Irish Education Context***

Results from the ASSET indicate that teachers working in Irish autism classes demonstrate satisfactory levels of professional confidence and these findings align with Ryan

and Mathews (2021) which also explored teacher self-efficacy in the same setting. As both studies indicate higher perceptions of teacher self-efficacy amongst Irish teachers than the findings in Ruble et al. (2013a), future research that explores the appropriateness of the ASSET as a measure of teacher self-efficacy in the Irish school context may be helpful.

### **7.3.5 Future Training**

Suggestions to improve the training for future use were elicited through semi-structured interviews and questionnaires, with the findings indicating a preference for in-person training, the provision of a training manual and resources using language that is easily understood. The complex language of dynamic assessment has been cited by EPs as one barrier to its successful application in educational settings (Deutsch & Reynolds, 2000) with Yeomans (2008) suggesting the need for the development of a shared language between EPs, teachers and caregivers to optimise its effectiveness. Lauchlan and Daly (2023) have used contemporary language to explain Feuerstein's mediated learning principles to make them easier for practitioners to understand and apply them successfully.

Teachers in this study emphasised the need for ongoing coaching sessions with colleagues facilitated by an *expert* who can support and guide them in their use of mediated learning with their students, reiterating the findings from Joyce and Showers (2002). The provision of professional learning communities (Stoll et al., 2006; Watson, 2014) provide teachers with a structured format to critically reflect on their practice, share ideas and problem solve challenges they encounter, enhancing teacher effectiveness that also benefits student outcomes. The small group discussions which formed an important aspect of the mediated learning training in the current research study mirror the structure and format of cluster meetings for teachers working in the specialised autism classes organised and

facilitated by psychologists working in NEPS and this format could be used to support teachers in developing their mediated learning expertise.

### **7.3.6 Further Research**

While teachers' use of the key principles of mediated learning improved in the current study, the improvement was not statistically significant. However, the presence of small effect sizes, which are an important measure of how an intervention can exert change (Christodoulos et al., 2006), indicated a practical significance that warrants further exploration. Furthermore, the use of the intention to treat analytic approach while mitigating for significant levels of attrition in the current study, may have provided a conservative analysis (Gupta, 2011) and further research using the MLESPBL scale with a larger sample size would explore changes to teachers' use and understanding of mediated learning in more detail. As teachers cited the benefits of using video technology as an effective tool to develop their understanding and use of mediated learning and embed the approach into their daily classroom interactions, it may be helpful to explore the potential of how this resource can be integrated into mediated learning teacher training programmes.

### **7.4 Implications for Educational Psychologists**

As chapter two outlines, the effective implementation of evidence-based interventions is a complex process as it not only requires rigorous research design in their development stage as evidenced in Study Two, but their success is also contingent on teachers receiving optimum training with ongoing coaching opportunities, and regular monitoring and evaluation of their effectiveness. This would require educational psychologists to be confident in their own understanding and practice of the mediated learning approach to enable them to deliver effective training to teachers and provide the ongoing mentoring

needed to develop sustainable practice in schools. While many educational psychologists acknowledge the benefits of using dynamic assessment approaches to inform meaningful interventions for children (Hill, 2015; Hussain & Woods, 2019; Lawrence & Cahill, 2014; Yeomans, 2008), it is not used widely in assessment work (Murphy & Maree, 2009) and opportunities to access training can vary in the different professional training programmes (Stringer et al., 1997). Deutsch and Reynolds (2000) found that the underuse of dynamic assessment could be attributed to insufficient training and supervision for practitioners as well as the additional hours contact time that it requires when compared to other traditional static approaches. The provision of bespoke training and supervision in dynamic assessment would provide educational psychologists with the necessary training and support to ensure more widespread use and confidence in using these approaches in casework and in professional training courses with teachers. The delivery of training by educational psychologists on mediated learning to trainee teachers as part of their undergraduate programme could also be a worthwhile and effective way to introduce all teachers to the approach from the beginning of their professional training.

While teachers value evidence-based interventions, they may not fully grasp the importance of faithful implementation and educational psychologists, as scientist-practitioners are well positioned in their role to support teachers in this process. As discussed in Chapter 2 “Factors that affect Implementation”, teacher *buy in* is crucial for the introduction of any new intervention in a school community, and knowledge of the key phases of the implementation science framework is key to facilitate and support that process (Moir, 2018; Robinson, 2017). A clear understanding of teachers’ beliefs, attitudes and previous training experiences are also critical factors that can hamper or hinder the successful implementation process.

While the findings from this study provide evidence that supports the potential value of using the mediated learning approach to enhance the learning experiences of autistic students, the educational psychologist's role will be central in developing this training further, providing ongoing coaching and mentoring to teachers as well as assisting schools in evaluating its effectiveness to support its sustainability.

## **7.5 Limitations**

While the results from the current study provide evidence for mediated learning as an effective approach to improve the quality of student/teacher interactions that can result in better outcomes for them, there are several limitations that may have impacted on the overall findings and will require careful consideration for further research in this area.

### **7.5.1 Attrition**

There was a high level of attrition in the current study and there are a number of factors that may have contributed to this.

**7.5.1.1 Online Training.** The training was delivered online to access the maximum number of teachers over a wide geographical area. While there has been a significant increase in the availability of online training for teachers in recent years, providing them with opportunities to access a wide variety of training opportunities outside of their own geographical area, teacher engagement and learning continuity in such training events has been inconsistent (Zhang & Liu, 2019). The provision of in person training in mediated learning where teachers can interact with colleagues may optimise teacher engagement and motivation levels. However, a *hybrid* model of teacher training that combines in-person and



online sessions may be optimal in its ability to provide a learning experience that incorporates the benefits of the in-person experience with the convenience and accessibility of the on-line training platform.

**7.5.1.2 Data Collection.** Challenges pertaining specifically to the collection of research data may also have been a contributory factor to the inconsistent response rate of participating teachers in the current study. As the use of online questionnaires in research studies has increased, the response rate has decreased (Van Mol, 2017) and may be attributed to what is commonly called *survey fatigue* (de Koning et al., 2021). Another factor that may have impacted on the data analysis and findings is the use of the *intention to treat* analytic strategy, while deemed appropriate to account for attrition, may have provided a conservative analysis of the data (Gupta, 2011; Hollis & Campbell, 1999).

**7.5.1.3 Teacher Wellbeing.** The impact of the Covid 19 Pandemic school closures on teacher wellbeing and burnout is well documented (Marshall et al., 2022; Ozamiz-Etxebarria et al., 2023) with similar outcomes reported for Irish teachers (Winter et al., 2022) as teachers continue to grapple with the academic and emotional fallout of the extended closures and the increased use of technology in the classroom. These ongoing challenges for teachers, especially those working within the special education sector may have contributed to the small numbers of teachers who completed all three workshops and the accompanying measures.

**7.5.1.4 Gender Imbalance.** The gender imbalance of the participating teachers may have impacted on the findings of the study as only seven male teachers of the total sample of sixty-seven took part. While analysis of the data identified a small relationship between

gender and teacher self-efficacy that was not statistically significant, this finding may have been impacted by the very small sample size. In addition, the five teachers who took part in the semi-structured interviews were all female and limited the perspective of male teachers to explore this finding further.

**7.5.1.5 Primary and Post Primary Imbalance.** Another factor that may have limited the findings of the research was the imbalance of teachers working in autism classes at the primary and post-primary setting. Of the sixty-seven teachers who took part in the study, fifty-three of them teach in primary schools and fourteen in post primary schools. As the operationalising of the special autism class can differ greatly in both settings within the Irish education sector, it would be important for future research studies to include a more balanced perspective from teachers who work in both school settings.

**7.5.1.6 Qualitative Analysis.** Thematic analysis was employed as the qualitative methodology to analyse the data from semi-structured interviews with teachers working in specialised autism classes. While the methodology is effective in identifying common themes, ideas and patterns of meaning, it may overlook deeper, more nuanced insights (Vaismoradi et al., 2013). Given the diverse professional experiences and varying levels of teacher self-efficacy amongst the five teachers, the decision to use other qualitative methods like interpretative phenomenological analysis (IPA) may have provided a richer understanding of each teacher's lived experience (Larkin et al., 2021). By integrating this in-depth analysis, the unique voices and perspectives of the teachers would be emphasised, resulting in a deeper understanding of the challenges and complexities they encounter when developing effective educational plans for students with diverse learning needs.

## **7.6 Conclusion**

This study set out to investigate the potential benefits for teachers and autistic students when a mediated learning approach is used in the classroom setting. Working in a specialised autism class is a demanding role due to the diverse learning profiles of students attending them and these demands can be a contributor to teacher burn out and low self-efficacy. The study hypothesised that teachers' self-efficacy would increase after completing the mediated learning training and would improve the quality of teacher/student interactions, resulting in more positive and rewarding experiences for learners. The findings from the study indicate that teachers' professional confidence levels did increase on completion of the training and using the skills of mediated learning improved the quality of teacher/student interactions and student engagement.

While research into the benefits of interventions based on dynamic assessment have indicated positive findings, there has been little research that has examined the relationship between the approach and autism. This study makes a valuable contribution in this regard by integrating the essential elements of an autism intervention with the principles of dynamic assessment. This study has shown how autism interventions in the school setting need input from teachers to optimise their effectiveness, and the high level of teacher involvement in this study provides strong evidence for its value. One of the strengths of the dynamic assessment approach is its ability to understand how individuals learn best by identifying their unique areas of strength and need and using that in-depth knowledge to help learners become independent and autonomous. The heterogeneous profile of autism requires that level of understanding, and while researchers have hypothesised the appropriateness of dynamic assessment approaches, research findings have been inconsistent due to the number of research studies and small sample sizes (Gevarter et al., 2020; Hunt et al., 2022; Trembath et

al., 2021). However, the findings from this study provide evidence to support the value and appropriateness of using dynamic assessment approaches with autistic learners who present with a wide range of complex needs.

There is an extensive range of autism specific interventions available to teachers which can be expensive and costly for schools and may not always deliver the intended outcomes see Chapter 4, section 4.1.2 “[Autism Interventions](#)” and Chapter 2, section 2.3.2.1 “[Evidence based Interventions](#)”. The mediated learning training demonstrates that the principal resources in this intervention are the teachers themselves and the relationship they have with their students. Using the mediated learning framework enables teachers to acquire an in-depth knowledge of their students, and by applying specific mediated learning skills, they can enrich students’ learning experiences.

In addition, this research study outlines the necessary steps involved in the development and delivery of an autism specific intervention and the importance of involving teachers from the outset to optimise its effectiveness for students and ensure its sustainable use in the classroom and school community. Aligning with Lebeer et al. (2019) and Martin (2014), the research emphasises that integrating the language and strategies of interventions into the broader school community is crucial for sustained effectiveness.

In essence, this research contributes not only to our understanding of effective interventions for autism but also establishes a blueprint for their successful implementation. By involving teachers and prioritising comprehensive training and community integration, the study provides valuable insights for educators, researchers, and policymakers striving to create impactful, sustainable, and inclusive learning environments for autistic students.

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## Appendices:

Appendix 1:

# Ethics Application Form

Please answer all questions

### 1. Title of the investigation

*An investigation into the impact of Mediated Learning Experience strategies on the learning outcomes for students with autism*

Please state the title on the PIS and Consent Form, if different:

N/A

### 2. Chief Investigator (must be at least a Grade 7 member of staff or equivalent)

Name: Dr Clare Daly

Professor

Reader

Senior Lecturer

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### 3. Other Strathclyde investigator(s)

Name: Helen Finnegan

Status (e.g. lecturer, post-/undergraduate): Post-graduate: Professional Doctorate Educational Psychology

Department: School of Psychological Science and Health

Telephone: 07792326599

E-mail: Helen.Finnegan@strath.ac.uk

### 4. Non-Strathclyde collaborating investigator(s) (where applicable)

Name:

Status (e.g. lecturer, post-/undergraduate):

Department/Institution:

If student(s), name of supervisor:

Telephone:

E-mail:

Please provide details for all investigators involved in the study:

### 5. Overseas Supervisor(s) (where applicable)

Name(s):

Status:

Department/Institution:

Telephone:

Email:

I can confirm that the local supervisor has obtained a copy of the Code of Practice: Yes  No

Please provide details for all supervisors involved in the study:

### 6. Location of the investigation

At what place(s) will the investigation be conducted

The research study will be carried out with teachers who work and live in the Republic of Ireland. Teachers will complete the training workshops on line either in their school or at home and will complete the surveys on line

If this is not on University of Strathclyde premises, how have you satisfied yourself that adequate Health and Safety arrangements are in place to prevent injury or harm?

The workshops will be delivered on line and teachers can attend in their location of choice

**7. Duration of the investigation**

Duration(months) : 8

Start date (expected): 05 / 09 / 2022 Completion date (expected): 31 / 05 / 2023

**8. Sponsor**

Please note that this is not the funder; refer to Section C and Annexes 1 and 3 of the Code of Practice for a definition and the key responsibilities of the sponsor.

Will the sponsor be the University of Strathclyde: Yes  No 

If not, please specify who is the sponsor:

**9. Funding body or proposed funding body (if applicable)**

Name of funding body:

Status of proposal – if seeking funding (please click appropriate box):

 In preparation Submitted Accepted

Date of submission of proposal: / / Date of start of funding: / /

**10. Ethical issues**

Describe the main ethical issues and how you propose to address them:

1. Anonymising of participant information and data. All participants will be given a code at the beginning of the study which they will use when completing the pre and post intervention surveys. Consent forms and raw data will be stored electronically on the University's secure cloud storage, *OneDrive for Business* and the sharing of files with research supervisors will be encrypted using *Gpg4win*. The workshop will be delivered online, however, it will not be recorded to protect the anonymity of all participants and they will be sent a separate recorded webinar of the workshop afterwards that they can use as a resource to support their classroom practice.

2. The right to withdraw from the research. Participation in this research study is voluntary and participants will be informed beforehand that they can leave the research, with no negative consequences, up to the point before their data has been anonymised. If, they decide to leave at any time up to this point, they will be informed that their data will be destroyed and their participation will end. The decision to not participate will not impact their attendance at the mediated learning strategies workshop.

3. Video editing. As part of the training workshops, the teachers will watch videos that demonstrate examples of the key principles of mediated learning. As it will not be possible to record video clips of teacher/children interactions the researcher will use a combination of video clips already accessible through YouTube as well as recordings of the researcher interacting with a family member whose face will be pixelated using video editing software, e.g. *Kinemaster* ([www.kinemaster.com](http://www.kinemaster.com))

4. Parents with EAL or learning difficulties. As English may be the second language of some parents of students who attend the specialised autism class or may have low literacy levels, it will be important that they are provided with information forms that are written in their first language or can be listened to as an audio. This will ensure that any parents whose child may be part of a video recording are fully informed and give their consent for their child to be recorded for training purposes. Teachers will be asked to contact the researcher should either option be required by a parent.

**11. Objectives of investigation (including the academic rationale and justification for the investigation)** Please use plain English.**Background**

The focus of my research study is in the area of autism, specifically, how assessment tools and interventions based on the principles of dynamic assessment can enhance outcomes for children/young people who present with complex needs arising from their diagnosis.

Autism is a life-long, neurodevelopmental disorder that is characterised by impairments in social interaction and communication, as well as restricted, repetitive and stereotyped patterns of

behaviour. It is a spectrum disorder with difficulties that can range from mild to severe and current prevalence rates have increased significantly in the last twenty years to approximately 1.5% of students in our schools. While the effects of autism are pervasive, they are not uniform in how they manifest and students can present with a diverse range of learning, communication, social and emotional needs that require individualised programmes and interventions that are flexible and respond to their changing needs. This can be challenging for the class teacher who may or may not have specialised training or experience in this area and this can result in poorer outcomes for students as well contributing to lower teacher confidence and increased burn out. In Ireland, children with autism are educated within a continuum of educational services that encompass mainstream class settings to special classes within the mainstream school and special school settings. At present, there are 2,118 special classes for children with autism that cater for approximately 13,000 students with each class consisting of 6 children, 1 teacher and 2 special needs assistants and it is this class setting that is the focus of this proposed study.

The research aims to answer the following research questions:

- 5 Does the mediated learning experience approach enhance the learning outcomes of children with autism?
- 6 Does mediated learning experience as a teaching methodology impact on teacher self-efficacy?
- 7 Does mediated learning experience enhance the quality of interactions between teachers and students with autism?
- 8 Does mediated learning experience approaches inform effective interventions for children with autism?

The research will employ a mixed methods design using both quantitative and qualitative data.

#### **Purpose**

While many working within the field of special education acknowledge the potential benefits of using dynamic assessment approaches to inform intervention planning for students with complex needs, it is not used extensively due to the insufficient evidence that confirms its merits and lack of confidence in using it. The purpose of this research study is to conduct an in-depth exploration of a component of dynamic assessment, i.e. mediated learning experience, specifically, how teachers through the use of deliberate strategies can help children to develop cognitive abilities that can be applied across different areas of their learning. This study would also like to explore the indirect benefits of mediated learning experience strategies, how they can motivate teachers, help promote a positive learning partnership between teacher and learner and how these factors can then impact on learning outcomes.

#### **Possible Benefits of the investigation**

As the recommendation of interventions/strategies that have a strong evidence base is a key aspect of educational psychologists' (EP) work with students and teachers, it is hoped that the findings of this proposed research study will provide evidence for the use of mediated learning experience strategies for teachers when working with students with complex needs arising from their autism diagnosis. It is also hoped that the findings will help to demystify some aspects of dynamic assessment for EPs and increase their confidence when using it in casework and support & development work with teachers and schools.

## **12. Participants**

Please detail the nature of the participants:

The participants in this study are all teachers who teach students with complex learning, social and emotional needs arising from their diagnosis of autism in small, specialised classes in mainstream primary and secondary schools in Ireland

Summarise the number and age (range) of each group of participants:

Number: 50      Age (range) 22-60

Please detail any inclusion/exclusion criteria and any further screening procedures to be used:

Teachers must be currently teaching in an autism class and attend cluster group meetings facilitated by a school psychologist who works for the National Educational Psychological Service in Ireland. The researcher also works as an educational psychologist for this service.

Participants will be informed of the training workshops and research study by their school psychologist and if interested they will be invited to contact the researcher directly by email to register their interest.

### 13. Nature of the participants

Please note that investigations governed by the Code of Practice that involve any of the types of participants listed in B1(b) must be submitted to the University Ethics Committee (UEC) rather than DEC/SEC for approval.

Do any of the participants fall into a category listed in Section B1(b) (participant considerations) applicable in this investigation?: Yes  No

If yes, please detail which category (and submit this application to the UEC):

### 14. Method of recruitment

Describe the method of recruitment (see section B4 of the Code of Practice), providing information on any payments, expenses or other incentives.

Participants will be recruited as follows:

1. The researcher who is also an Educational Psychologist working in the National Educational Psychological Service in Ireland (NEPS) will email colleagues who organise and facilitate cluster group meetings for teachers of autism classes to explain the rationale for the proposed research (**Appendix A & B**). NEPS psychologists organise these consultation meetings for teachers of autism classes approximately three times per school year and information about upcoming training workshops is circulated by means of a flyer (**Appendix C**). Information and consent forms for school principals & teachers will be included for EPs to forward to their schools (**Appendix D & Appendix E**). The researcher's email address will be included for interested teachers to communicate directly with the researcher.
2. Participants and school principals will be informed by the researcher in the *Invitation to Participate* letter that their participation in both the training workshop and research study is voluntary and while there is no financial benefit to their participation, it will benefit their professional development.
3. There will be a consent form attached to the *Invitation to Participate* letter for both the teachers and school principals which they will forward to the researcher by email.

### 15. Participant consent

Please state the groups from whom consent/assent will be sought (please refer to the Guidance Document). The PIS and Consent Form(s) to be used should be attached to this application form.

Teachers who would like to participate in the study will be asked to sign the consent form (**Appendix D**) and return it to the researcher by email. School principals of teachers who would like to participate in the study will also be asked to sign and return their consent form by email (**Appendix E**). As participants will be asked to use video recordings as part of their training, participants, school principals and the parent/guardian of a student that will be recorded during an interaction with the teacher will be provided with information and consent forms to be returned to the researcher (**Appendices F, G & H**)

On completion of the study, teachers will be provided with a debriefing document that outlines the purposes of the study, where their data will be stored and their right to withdraw from the study up to the point where it has been anonymised and merged with other data. Information about support services will also be included (**Appendix I**)

**16. Methodology**

Investigations governed by the Code of Practice which involve any of the types of projects listed in B1(a) must be submitted to the University Ethics Committee rather than DEC/SEC for approval.

Are any of the categories mentioned in the Code of Practice Section B1(a) (project considerations) applicable in this investigation?  Yes  No  
If 'yes' please detail:

Describe the research methodology and procedure, providing a timeline of activities where possible. Please use plain English.

The proposed research study will use an *Explanatory Sequential Mixed Methods Design* which will involve the collection and analysis of both quantitative and qualitative data.

This research design was chosen for the following reasons:

1. Its strength of drawing on both quantitative and qualitative data while minimising the limitations of both
2. To provide a more in depth understanding of the factors, both direct and indirect which can impact on the learning outcomes of autistic students with complex needs
3. It allows the researcher to examine closely both the processes and outcomes of *Mediated Learning Experience* as an intervention

Data will be collected over two phases:

Phase 1: Quantitative data collected and analysed with the results used to plan the second phase which will collect qualitative phase. The measures are as follows:

*The Autism Self-Efficacy Scale for Teachers (ASSET), Ruble et al, 2013 (Appendix J)*

The ASSET is a 30 item self-report questionnaire which uses a 6 point Likert Scale and rates teacher confidence to conduct various assessment, intervention and classroom based practices specific to the needs of students with autism. Examples of the questions in this questionnaire are as follows:

*Rate your degree of confidence in completing the following tasks by recording a number from 1 to 6 with 1=cannot do at all to 6=highly certain can do.*

*Conduct an assessment of your students' developmental skills/learning skills.*

1                      2                      3                      4                      5                      6

*Describe your students' characteristics that relate to Autism.*

1                      2                      3                      4                      5                      6

*Describe educational interventions for students with Autism.*

1                      2                      3                      4                      5                      6

*The Mediated Learning Experience Rating Scale (MLERS), Lidz, 1991 (Appendix K & L)*

This is a direct observational tool that rates the 12 key components of MLE that may be observed in an interaction with a teacher and student. The questionnaire is divided into 12 sections that describes each of the key principles of Mediated Learning Experience and uses a 4 point Likert scale to rate performance in each area. Examples of the questions are as follows:

**1. Intentionality**

*Did the mediator make a conscious attempt to improve the child's learning, e.g. communicating the purpose of the activity, give small hints and prompts or detailed information and explicit instructions to improve performance?*

*0=no evidence*

*1=inconsistent evidence*

*2= some evidence*

*3=strong evidence*

**2. Transcendence**

*Did the mediator make links to previous or future learning tasks?*

*0= no evidence*

*1=Simple, non-elaborated reference to past or future learning experiences*

*2=Elaborated reference*

*3= Elaborated reference that includes hypothetical, inferential or cause and effect thinking*

***Workshop Evaluation Questionnaire (Appendix M)***

This is a 15 item self-report questionnaire to evaluate the three workshops in terms of content and applicability to classroom practice and workshop delivery using a combination of open ended questions and questions using a 5 point Likert scale with 1=Strongly Disagree to 5= Strongly Agree. Examples of questions are as follows:

*I knew a lot about mediated learning experience before this workshop*

1                      2                      3                      4                      5

*I know more about mediated learning experience after this workshop*

1                      2                      3                      4                      5

*What aspect of the course engaged you the most?*

Phase 2: Qualitative data. Semi structured interviews that will help explain in more detail the initial quantitative results from Phase 1. Participants for phase 2 will be selected from the participants who took part in phase 1.

What specific techniques will be employed and what exactly is asked of the participants? Please identify any non-validated scale or measure and include any scale and measures charts as an Appendix to this application. Please include questionnaires, interview schedules or any other non-standardised method of data collection as appendices to this application.

- The participants will complete the *ASSET* questionnaire at the beginning of Workshop 1 and at the end of Workshop 3.
- Participants will complete the *Workshop Evaluation Questionnaire* at the end of Workshop 3.
- The *MLERS* will be divided into 2 sections with participants completing Section 1 after Workshop 1 and section 2 after Workshop 2

All questionnaires will be completed online

- Questions for the semi-structured interviews will be developed from the data from Phase 1. It is likely that questions will explore some of the following themes
  1. The length and breadth of teaching experience working with autistic children with complex needs
  2. Teacher confidence in developing individualised educational programmes to match learners' specific strengths and difficulties
  3. Teacher competence and confidence in assessing learners' needs
  4. Teacher experience of using Mediated Learning Experience strategies before and after completing the workshops
  5. Do they see a role/value in using MLE in their daily interactions with students?
  6. How does attending the MLE workshops impact on their professional development ?

Where an independent reviewer is not used, then the UEC, DEC or SEC reserves the right to scrutinise the methodology. Has this methodology been subject to independent scrutiny? Yes   
No

If yes, please provide the name and contact details of the independent reviewer:

**17. Previous experience of the investigator(s) with the procedures involved.** Experience should demonstrate an ability to carry out the proposed research in accordance with the written methodology.

The investigator for the proposed study holds a Master of Arts in Educational Psychology from University College Dublin, Ireland and as part of that programme conducted research that evaluated the effectiveness of the FRIENDS for Life resilience programme in reducing anxiety in a group of primary school children (n=96) who attend a special school for children with reading difficulties. This study used a quasi-experimental, pre and post-test design with two groups, an intervention and wait-list control group. The children were tested on measures of



anxiety (Spence Childhood Anxiety Scale), self-esteem (Beck Self-Concept Inventory for Youth) , word reading and spelling (WRAT-IV) before and after the intervention with the data analysed using SPSS. The findings were written up in a journal article format.

#### **18. Data collection, storage and security**

How and where are data handled? Please specify whether it will be fully anonymous (i.e. the identity unknown even to the researchers) or pseudo-anonymised (i.e. the raw data is anonymised and given a code name, with the key for code names being stored in a separate location from the raw data) - if neither please justify.

Participant information and raw data will be pseudo-anonymised. Participants will be given a code at the beginning of the study which they will use when completing the pre and post intervention surveys.

Explain how and where it will be stored, who has access to it, how long it will be stored and whether it will be securely destroyed after use:

Consent forms and raw data will be securely stored electronically on the researcher's laptop using *OneDrive for Business* which is the University of Strathclyde's secure cloud storage application. The sharing of emails or sensitive data with research supervisors will be encrypted using Gpg4win. The researcher has sole access to all data which will be stored for the duration of the study, i.e. 18 months and will be securely destroyed on completion of the study.

Will anyone other than the named investigators have access to the data? Yes  No   
If 'yes' please explain:

#### **19. Potential risks or hazards**

Briefly describe the potential Occupational Health and Safety (OHS) hazards and risks associated with the investigation:

While it is not anticipated that participants' attendance at the three workshops and in the research study will impact negatively on their welfare, the discussions regarding the challenges of teaching students with complex needs with opportunities to reflect on professional practice may impact on the teacher self-efficacy of some participants. To mitigate against this unintended consequence of the study, teachers will be reminded at the beginning and conclusion of the workshops of the availability of free, confidential counselling for all teachers through the *Employee Assistance Scheme (EAS)* which is available 24 hours a day, 7 days per week. Teachers can access this service by contacting Spectrum Life at 1800 411 057. Teachers will also be reminded to consult with their respective teaching unions, INTO, ASTI or ASTI who also provide information on wellbeing and peer support to members.

Please attach a completed eRisk Assessment for the research. Further Guidance on Risk Assessment and Form can be obtained on [Occupational Health, Safety and Wellbeing's webpages](#)

#### **20. What method will you use to communicate the outcomes and any additional relevant details of the study to the participants?**

The participants will be provided with a debriefing document at the end of Workshop 3 (**Appendix I**) which outlines the purposes of the study, the safe storage and processing of data, their right to withdraw from the study and the signposting of confidential counselling services.

**21. How will the outcomes of the study be disseminated (e.g. will you seek to publish the results and, if relevant, how will you protect the identities of your participants in said dissemination)?**

The findings of the research can be circulated to any school/ teacher who request such information by emailing the researcher. It is also anticipated that the findings of the study will be written up as a journal article which will be circulated to all participating schools/ teachers by email. The names of participants and their schools will not be identified in this article.

Checklist	Enclosed	N/A
Participant Information Sheet(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Consent Form(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample questionnaire(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample interview format(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample advertisement(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
OHS Risk Assessment (S20)	<input type="checkbox"/>	<input type="checkbox"/>
Any other documents (please specify below)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Information on the use of video technology for participants, school principals and parents	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Debriefing document for participants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Measures	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## 22. Chief Investigator and Head of Department Declaration

Please note that unsigned applications will not be accepted and both signatures are required

I have read the University's Code of Practice on Investigations involving Human Beings and have completed this application accordingly. By signing below, I acknowledge that I am aware of and accept my responsibilities as Chief Investigator under Clauses 3.11 – 3.13 of the [Research Governance Framework](#) and that this investigation cannot proceed before all approvals required have been obtained.

Signature of Chief Investigator

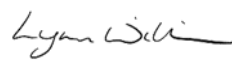


Please also type name here:

Dr Clare Daly

I confirm I have read this application, I am happy that the study is consistent with departmental strategy, that the staff and/or students involved have the appropriate expertise to undertake the study and that adequate arrangements are in place to supervise any students that might be acting as investigators, that the study has access to the resources needed to conduct the proposed research successfully, and that there are no other departmental-specific issues relating to the study of which I am aware.

Signature of Head of Department



Please also type name here

Dr Lynn Williams

Date:

28 / 03 / 22

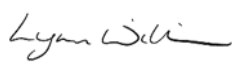
## 23. Only for University sponsored projects under the remit of the DEC/SEC, with no external funding and no NHS involvement

### Head of Department statement on Sponsorship

This application requires the University to sponsor the investigation. This is done by the Head of Department for all DEC applications with exception of those that are externally funded and those which are connected to the NHS (those exceptions should be submitted to R&KES). I am aware of the implications of University sponsorship of the investigation and have assessed this investigation with respect to sponsorship and management risk. As this particular investigation is within the remit of the DEC and has no external funding and no NHS involvement, I agree on behalf of the University that the University is the appropriate sponsor of the investigation and there are no management risks posed by the investigation.

If not applicable, tick here

Signature of Head of Department



Please also type name here

Dr Lynn Williams

Date:

28 / 03 / 2022

For applications to the University Ethics Committee, the completed form should be sent to [ethics@strath.ac.uk](mailto:ethics@strath.ac.uk) with the relevant electronic signatures.

**24. Insurance**

The questionnaire below must be completed and included in your submission to the UEC/DEC/SEC:

<p>Is the proposed research an investigation or series of investigations conducted on any person for a Medicinal Purpose?          Medicinal Purpose means:</p> <ul style="list-style-type: none"> <li>▪ treating or preventing disease or diagnosing disease or</li> <li>▪ ascertaining the existence degree of or extent of a physiological condition or</li> <li>▪ assisting with or altering in any way the process of conception or</li> <li>▪ investigating or participating in methods of contraception or</li> <li>▪ inducing anaesthesia or</li> <li>▪ otherwise preventing or interfering with the normal operation of a physiological function or</li> <li>▪ altering the administration of prescribed medication.</li> </ul>	Yes / No
--	----------

If “**Yes**” please go to **Section A (Clinical Trials)** – all questions must be completed

If “**No**” please go to **Section B (Public Liability)** – all questions must be completed

<b>Section A (Clinical Trials)</b>
------------------------------------

<p>Does the proposed research involve subjects who are either:</p> <ul style="list-style-type: none"> <li>i. under the age of 5 years at the time of the trial;</li> <li>ii. known to be pregnant at the time of the trial</li> </ul>	Yes / No
---	----------

If “**Yes**” the UEC should refer to Finance

<p>Is the proposed research limited to:</p> <ul style="list-style-type: none"> <li>iii. Questionnaires, interviews, psychological activity including CBT;</li> <li>iv. Venepuncture (withdrawal of blood);</li> <li>v. Muscle biopsy;</li> <li>vi. Measurements or monitoring of physiological processes including scanning;</li> <li>vii. Collections of body secretions by non-invasive methods;</li> <li>viii. Intake of foods or nutrients or variation of diet (excluding administration of drugs).</li> </ul>	Yes / No
---	----------

If “**No**” the UEC should refer to Finance

<p>Will the proposed research take place within the UK?</p>	Yes / No
---	----------

If “**No**” the UEC should refer to Finance

Title of Research	
Chief Investigator	
Sponsoring Organisation	
Does the proposed research involve:	
a) investigating or participating in methods of contraception?	Yes / No
b) assisting with or altering the process of conception?	Yes / No
c) the use of drugs?	Yes / No
d) the use of surgery (other than biopsy)?	Yes / No
e) genetic engineering?	Yes / No
f) participants under 5 years of age (other than activities i-vi above)?	Yes / No
g) participants known to be pregnant (other than activities i-vi above)?	Yes / No
h) pharmaceutical product/appliance designed or manufactured by the institution?	Yes / No
i) work outside the United Kingdom?	Yes / No

If **“YES”** to **any** of the questions a-i please also complete the **Employee Activity Form** (attached).

If **“YES”** to **any** of the questions a-i, and this is a follow-on phase, please provide details of SUSARs on a separate sheet.

If **“Yes”** to any of the questions a-i then the UEC/DEC/SEC should refer to Finance ([insurance-services@strath.ac.uk](mailto:insurance-services@strath.ac.uk)).

<b>Section B (Public Liability)</b>	
Does the proposed research involve :	
a) aircraft or any aerial device	Yes / No
b) hovercraft or any water borne craft	Yes / No
c) ionising radiation	Yes / No
d) asbestos	Yes / No
e) participants under 5 years of age	Yes / No
f) participants known to be pregnant	Yes / No
g) pharmaceutical product/appliance designed or manufactured by the institution?	Yes / No
h) work outside the United Kingdom?	Yes / No

If **“YES”** to any of the questions the UEC/DEC/SEC should refer to Finance ([insurance-services@strath.ac.uk](mailto:insurance-services@strath.ac.uk)).

**For NHS applications only - Employee Activity Form**

Has NHS Indemnity been provided?	Yes / No
Are Medical Practitioners involved in the project?	Yes / No
If YES, will Medical Practitioners be covered by the MDU or other body?	Yes / No

This section aims to identify the staff involved, their employment contract and the extent of their involvement in the research (in some cases it may be more appropriate to refer to a group of persons rather than individuals).

<b>Chief Investigator</b>		
<b>Name</b>	<b>Employer</b>	<b>NHS Honorary Contract?</b>
		Yes / No
<b>Others</b>		
<b>Name</b>	<b>Employer</b>	<b>NHS Honorary Contract?</b>
		Yes / No
		Yes / No
		Yes / No
		Yes / No

Please provide any further relevant information here:

Appendix 2:

**From:** Ethics <[ethics@strath.ac.uk](mailto:ethics@strath.ac.uk)>

**Sent:** Friday, May 13, 2022 3:09:05 PM

**To:** Helen Finnegan <[helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk)>

**Cc:** Clare Daly <[clare.daly@strath.ac.uk](mailto:clare.daly@strath.ac.uk)>; Ethics <[ethics@strath.ac.uk](mailto:ethics@strath.ac.uk)>

**Subject:** Approval: UEC22/39 Daly/Finnegan: An Investigation into the impact of Mediated Learning Experience strategies on the learning outcomes for students with autism

Dear Helen

**ETHICAL AND SPONSORSHIP APPROVAL**

**UEC22/39 Daly/Finnegan: An Investigation into the impact of Mediated Learning Experience strategies on the learning outcomes for students with autism**

I can confirm that the University Ethics Committee (UEC) has approved this protocol and appropriate insurance cover and sponsorship have now also been confirmed.

I remind you that the UEC must be informed of any changes you plan to make to the research project, so that it has the opportunity to consider them. Any change of staffing within the research team should be reported to UEC.

The UEC also expects you to report back on the progress and outcome of your project, with an account of anything which may prompt ethical questions for any similar future project and with anything else that you feel the Committee should know.

Any adverse event that occurs during an investigation must be reported as quickly as possible to UEC and, within the required time frame, to any appropriate external agency.

The University agrees to act as sponsor of the above mentioned project subject to the following conditions:

1. That the project obtains/has and continues to have University/Departmental Ethics Committee approval.
2. That the project is carried out according to the project protocol.
3. That the project continues to be covered by the University's insurance cover.
4. That the project complies with Scottish Government restrictions and University guidance in relation to Covid-19 procedures and permissions.
5. That the Director of Research and Knowledge Exchange Services is immediately notified of any change to the project protocol or circumstances which may affect the University's risk assessment of the project.
6. That the project starts within 12 months of the date of this letter.

As sponsor of the project the University has responsibilities under the Scottish Executive's Research Governance Framework for Health and Community Care. You should ensure you are aware of those responsibilities and that the project is carried out according to the Research Governance Framework.

On behalf of the Committee, I wish you success with this project.

Kind regards  
Angelique



Angelique Lavery  
University Ethics Committee Manager  
Research & Knowledge Exchange Services (RKES)  
University of Strathclyde  
Room 3.01, Graham Hills Building  
50 George Street  
Glasgow  
G1 1QE

[ethics@strath.ac.uk](mailto:ethics@strath.ac.uk)

<http://www.strath.ac.uk/rkes>

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**THE QUEEN'S ANNIVERSARY PRIZES  
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2020**

The Times & The Sunday Times

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Please consider the environment before printing this e-mail.

Appendix 3:

**Form A: Research Ethics Application form  
for all NEPS Personnel and  
Trainee Educational Psychologists on placement**

**TO BE COMPLETED BY Applicant/Lead Researcher\***

**SECTION 1:**

<b>Date of application</b>	<b>22/05/2022</b>
<b>Title of project</b>	<i>An investigation into the impact of Mediated Learning Experience strategies on the learning outcomes of students with autism</i>
<b>Proposed start date of data collection</b>	September 2022
<b>Does this research study have prior ethical approval : yes/ no</b>	Yes. University of Strathclyde
<b>Name and Position of Lead Researcher</b> (please delete as appropriate and complete A or B below)	NEPS Psychologist Helen Finnegan

**A. To be completed by NEPS Psychologist**

<b>Name</b>	Helen Finnegan
<b>Phone number</b>	087 7104154
<b>Email address</b>	helen_finnegan@education.gov.ie
<b>Research collaborators within NEPS</b>	<b>N/A</b>
<b>Research collaborators external to NEPS</b> (name, position & institution)	Dr Clare Daly, Senior Lecturer, University of Strathclyde, 16 Richmond St, Glasgow G1 1XQ,Scotland

**B. To be completed by Trainee Educational Psychologist**

<b>Name</b>	
<b>Phone number</b>	
<b>NEPS email address</b>	

<b>Alternative email address</b>	
<b>NEPS placement supervisor</b>	
<b>University programme</b>	
<b>Research collaborators within NEPS</b>	
<b>Other research collaborators</b> (name, position & institution)	

## SECTION 2: Study Details

Please provide a brief description of the following

<p><b>Rationale and aims of this research study (include research question(s))</b></p> <p>The focus of my research study is in the area of autism, specifically, how assessment tools and interventions based on the principles of dynamic assessment can enhance outcomes for children/young people who present with complex needs arising from their diagnosis. Autism is a life-long, neurodevelopmental disorder that is characterised by impairments in social interaction and communication, as well as restricted, repetitive and stereotyped patterns of behaviour. It is a spectrum disorder with difficulties that can range from mild to severe and current prevalence rates have increased significantly in the last twenty years to approximately 1.5% of students in our schools. While the effects of autism are pervasive, they are not uniform in how they manifest and students can present with a diverse range of learning, communication, social and emotional needs that require individualised programmes and interventions that are flexible and respond to their changing needs. This can be challenging for the class teacher who may or may not have specialised training or experience in this area and this can result in poorer outcomes for students as well contributing to lower teacher confidence and increased burn out. In Ireland, children with autism are educated within a continuum of educational services that encompass mainstream class settings to special classes within the mainstream school and special school settings. At present, there are 2,118 special classes for children with autism that cater for approximately 13,000 students with each class consisting of 6 children, 1 teacher and 2 special needs assistants and it is this class setting that is the focus of the proposed study. The research aims to answer the following research questions:</p> <ol style="list-style-type: none"> <li>9 Does the mediated learning experience approach enhance the learning outcomes of children with autism?</li> <li>10 Does mediated learning experience as a teaching methodology impact on teacher self-efficacy?</li> <li>11 Does mediated learning experience enhance the quality of interactions between teachers and students with autism?</li> <li>12 Does mediated learning experience approaches inform effective interventions for children with autism?</li> </ol> <p>The research will employ a mixed methods design using both quantitative and qualitative data.</p>
<p><b>Please explain how your research will align with the aims of NEPS, it's research directions and contribute to the field of educational psychology in general</b></p> <p>While many working within the field of special education acknowledge the potential benefits of using dynamic assessment approaches to inform intervention planning for students with complex needs, it is not used extensively due to the insufficient evidence that confirms its merits and lack of confidence in using it. The purpose of this research study is to conduct an in-depth exploration of a</p>

component of dynamic assessment, i.e. mediated learning experience, specifically, how teachers through the use of deliberate strategies can help children to develop cognitive abilities that can be used across different areas of their learning. This study will also explore the indirect benefits of mediated learning experience strategies, how they can motivate teachers, help promote a positive learning partnership between teacher and learner and how these factors can then impact on learning outcomes.

The delivery of these workshops align closely with the support & development work that NEPS psychologists offers to schools. The current piloting of the School Inclusion Model as well as the increase in special school settings being supported by NEPS psychologists requires psychologists to explore the potential benefits of using both standardised and dynamic assessment approaches when supporting learners who present with complex needs

As the recommendation of interventions/strategies that have a strong evidence base is a key aspect of educational psychologists' (EP) work with students and teachers, it is hoped that the findings of this proposed research study will provide evidence for the use of mediated learning experience strategies for teachers when working with students with complex needs arising from their autism diagnosis. It is also hoped that the findings will help to demystify some aspects of dynamic assessment for EPs and increase their confidence when using it in casework and support & development work with teachers and schools

### **Study Design**

The proposed research study will use an *Explanatory Sequential Mixed Methods Design* which will involve the collection and analysis of both quantitative and qualitative data.

### **Sample** (including size and composition, inclusion & exclusion criteria)

**Participants:** The participants in the proposed study are all teachers who teach students with complex learning, social and emotional needs arising from their diagnosis of autism in small, specialised classes in mainstream primary and secondary schools that are supported by NEPS psychologists

**Sample Size:** Number: 50      Age (range) 22-60

#### **Inclusion/exclusion criteria:**

Teachers must be currently teaching in an autism class and attend cluster group meetings facilitated by NEPS psychologists.

### **Recruitment procedures**

Participants will be recruited as follows:

The researcher who is also an Educational Psychologist working in NEPS will email colleagues who organise and facilitate cluster group meetings for teachers of autism classes a flyer which they can forward to their schools. The flyer will outline the content of the workshops, details about the training dates/times as well as information about the proposed research project in which participation is voluntary. Interested teachers can register their interest by emailing the researcher directly using the email address listed on the flyer (**Appendix C**)

### **Participant information, consent and debriefing**

#### **1. Teachers & School Principals**

Teachers who would like to participate in the study will be provided with an *Invitation to Participate* document which will outline the rationale for the study, the voluntary nature of their participation, how data will be stored and used as well as participants' right to

withdraw from it. School principals of teachers who would like to participate in the study will also be provided with an *Invitation to Participate* document that both will be asked to sign and return their consent forms by email. **(Appendices D & E)**

As participants will be asked to use video recordings as part of their training after Workshops 1 & 2, both participants and their school principals will be provided with information on the use of video technology and consent forms to be signed and returned to the researcher. **(Appendices F & G)**

Teachers and school principals will be provided with a debriefing document which will outline the purposes of the research, how data will be collected, processed and stored, the voluntary nature of their participation and their right to withdraw. Counselling services will also be signposted. **(Appendix I)**

## 2. Parent/Guardian

While the focus of this research is on building teacher capacity in using mediated learning strategies, participating teachers will be asked to practise the key skills after workshops 1 & 2 and rate their use of them using a rating scale. To ensure that a child's parent/guardian understands fully how their child will be involved in this process, they will be provided with an information form regarding the use of video technology and how their child's anonymity will be protected and a consent form which must be signed and returned to the researcher. The video recordings are used exclusively by the teacher alone to rate his/her use of mediated learning strategies and will not be seen by anyone else including the researcher. **(Appendix F)**

## 3. Child Assent

Every attempt will be made to ensure that children understand their participation in the research and the process of obtaining their consent to participate in the study will be managed as follows:

- A parent information letter that explains the importance of their child giving permission to be involved in this study and suggestions as to how the parents can support their child in understanding the information provided about the study and completing the assent form. **See Appendix E (I)**
- There will be two versions of the *Child Information* and *Child Assent* form, a version deemed suitable for younger children and one for older children. However, both versions will be provided to parents and they are advised to choose the version which they feel matches their child's level of understanding and language skills. A video version of the *Child Information* will also be provided to parents as this format may be more appealing to some of the children. The parents/guardians will be provided with a *Child Assent* form which they can support their child completing it. The parents/guardians will be asked to give the completed form to the class teacher who will forward it to the researcher. **(Appendices E (II), E (III), E (IV), E (V) E(VI)).**
- Information on the importance of child consent and the necessary steps to obtain it will be signposted in the parent and teachers' *Information and Invitation to Participate* letters as follows:

*'The consent of participating students and their parents will also be sought and your advice may be required to support parents giving consent when their child is unable to do so independently'*

*'Should your child not be in a position to engage with the information contained in this document/video or you are concerned that s/he may not fully understand the nature of his/her involvement, the decision for your child to participate in this activity is at your discretion. You may wish to consult with the class teacher in making this decision'*

**Appendices D & E (I)**

**Methodology** (including, for example, measures, experimental procedures or interventions)

The proposed research study will use an *Explanatory Sequential Mixed Methods Design* which will involve the collection and analysis of both quantitative and qualitative data. This research design was chosen for the following reasons:

4. Its strength of drawing on both quantitative and qualitative data while minimising the limitations of both
5. To provide a more in depth understanding of the factors, both direct and indirect which can impact on the learning outcomes of autistic students with complex needs
6. It allows the researcher to examine closely both the processes and outcomes of *Mediated Learning Experience* as an intervention

Data will be collected over two phases:

**Phase 1: Quantitative data** collected and analysed with the results used to plan the second phase which will collect qualitative data. The measures are as follows:

*The Autism Self-Efficacy Scale for Teachers (ASSET), Ruble et al, 2013*

The ASSET is a 30 item self-report questionnaire which uses a 6 point Likert Scale and rates teacher confidence to conduct various assessment, intervention and classroom based practices specific to the needs of students with autism. Examples of the questions in this questionnaire are as follows:

*Rate your degree of confidence in completing the following tasks by recording a number from 1 to 6 with 1=cannot do at all to 6=highly certain can do.*

*Conduct an assessment of your students' developmental skills/learning skills.*

1                      2                      3                      4                      5                      6

*Describe your students' characteristics that relate to Autism.*

1                      2                      3                      4                      5                      6

*The Mediated Learning Experience Rating Scale (MLERS), Lidz, 1991*

This is a direct observational tool that rates the 12 key components of MLE that may be observed in an interaction with a teacher and student. The questionnaire is divided into 12 sections that describes each of the key principles of Mediated Learning Experience and uses a 4 point Likert scale to rate performance in each area. Examples of the questions are as follows:

**4. Intentionality**

*Did the mediator make a conscious attempt to improve the child's learning, e.g. communicating the purpose of the activity, give small hints and prompts or detailed information and explicit instructions to improve performance?*

*0=no evidence*

*1=inconsistent evidence*

*2= some evidence*

*3=strong evidence*

*Workshop Evaluation Questionnaire*

This is a 15 item self-report questionnaire to evaluate the three workshops in terms of content and applicability to classroom practice and workshop delivery using a combination of open ended questions and questions using a 5 point Likert scale with 1=Strongly Disagree to 5=Strongly Agree

**Phase 2: Qualitative data.** Semi structured interviews that will help explain in more detail the initial quantitative results from Phase 1. Participants for phase 2 will be selected from the participants who took part in phase 1. Examples of questions to be used are as follows:

1. How many years have you been teaching in special education and specifically in an autism class?
2. What was your experience of mediated learning before completing these workshops?
3. Do you see a value of using mediated learning strategies in your interactions with your students?
4. Was there any aspect of the delivery of the content that you feel engaged your interest?

**Analytical approach** (please describe the nature of data to be collected and how you will approach the analysis)

Both quantitative and qualitative data will be collected and analysed separately with the quantitative results used to plan the qualitative phase. The quantitative results will not only inform the sampling procedure but can also point towards the type of qualitative questions that participants will be asked in the semi-structured interviews in Phase 2. Interviews will be analysed using thematic analysis

### SECTION 3: Data Protection

**Please describe the nature of personal data to be collected** (e.g. contact details, demographic information, interview recordings / transcripts, measures used and results)

Participants' names, years of teaching experience, email addresses  
 Raw data from completed rating scales (ASSET & MLERS) & results  
 Workshop Evaluation Questionnaires  
 Transcripts from semi-structured interviews

**Will any of the following special categories of data be collected, stored or processed?**  
*Please tick*

Racial or ethnic origin	<b>No</b>
Political opinion	<b>No</b>
Religious or philosophical beliefs	<b>No</b>
Trade union membership	<b>No</b>

Health	<b>No</b>		
Genetic or biometric data	<b>No</b>		
Sex life or sexual orientation	<b>No</b>		
<b>Please choose the option that describes the nature of the data to be stored <i>Please tick below.</i></b>			
<b>Anonymous</b> Data is collected without any personal identifiers	<b>Anonymised</b> Personal identifiers are permanently removed from data prior to storage	<b>Pseudonymised</b> Personal identifiers are replaced with a unique code which can be linked back to original identifiers stored separately	<b>Identifiable</b> Personal identifiers remain present within the data to be stored
		<b>Yes</b>	
<b>Please provide details of the following:</b>			
<b>Named People who will have access to the raw data</b>			
Helen Finnegan & Dr Clare Daly (Research Supervisor/ University of Strathclyde)			
<b>Person who will be responsible for storage and destruction of data</b>			
Helen Finnegan			
<b>Format in which data will be stored</b>			
All data will be stored securely online using <u>OneDrive for Business</u> which is the University of Strathclyde's secure cloud storage system			
<b>Measures in place to ensure security of data during storage and processing</b>			
Participant information and raw data will be pseudonymised. Participants will be given a code at the beginning of the study which they will use when completing the pre and post intervention surveys			
Consent forms and raw data will be securely stored electronically on the researcher's laptop using <i>OneDrive for Business</i> which is the University of Strathclyde's secure cloud storage application. The sharing of emails or sensitive data with research supervisors will be encrypted using Gpg4win.			
The researcher and supervisor will have sole access to all data which will be stored for the duration of the study, i.e. 18 months and will be securely destroyed on completion of the study.			
Participants' email addresses will be retained for the purpose of providing them with a brief summary of the research findings and will be deleted once the summary document has been sent.			
<b>Length of data storage</b>			
18 months			
<b>Method of data destruction after period of data storage</b>			
All paper documentation will be shredded			



Digital data will be deleted from the recycle bin of <i>OneDrive for Business</i> to ensure that the data is completely irretrievable
<b>Communication of results to participants</b>
When the research is completed, participants will be provided with a brief summary document to inform them of the project outcomes. Participants' email addresses will be retained for this purpose and deleted once the summary document has been sent. The findings from the research will be written up as part of a thesis which can be made available to participants on request from the researchers.
<b>Dissemination of findings to wider research communication or public</b>
It is also anticipated that the findings of the study will be written up as a journal article which will be circulated to all participating schools/ teachers by email. The names of participants and their schools will not be identified in this article.
<b>Measures in place to ensure confidentiality of research participants in context of dissemination of findings</b>
The preliminary dissemination of findings to participating teachers and the school principals will be done using their email addresses. The email addresses will be deleted from the researcher's once the summary document has been sent

#### SECTION 4: Risk Assessment

##### Does this research study involve vulnerable groups?

Please select all that apply:

Children or young people under the age of 18	<b>Yes</b>	No
People with a diagnosed learning difficulty	<b>Yes</b>	No
People with a diagnosed mental health difficulty or psychological disorder	<b>Yes</b>	No
People dependent on the care of others (e.g. people residing in care home or special education setting)	Yes	<b>No</b>
People in an unequal relationship with the researchers- (e.g., therapist-client, manager-employee)	Yes	<b>No</b>
People with a language difficulty or who are not proficient in English	<b>Yes</b>	No
Other populations who are potentially vulnerable	Yes	<b>No</b>

##### Does this research study deal with any sensitive issues or involve procedures which could induce stress, anxiety or discomfort? Please choose the appropriate response

Sensitive personal issues (e.g., bereavement, suicide, sexuality, bullying, illegal activities, substance abuse, race or ethnic background)	Yes	<b>No</b>
Materials or procedures which could be offensive or evoke distress	Yes	<b>No</b>
Deception of participants	Yes	<b>No</b>
Physically-invasive methods (e.g., physiological scans or measurements, blood-taking, procedures inducing physical strain)	Yes	<b>No</b>

Other potentially distressing issues or procedures	Yes <b>No</b>
<b>If any of the above were chosen, please elaborate below and outline the steps that will be taken to mitigate the risk of harm to participants.</b>	
<p><b>Is there any identified conflict of interest involved in this research?</b> <i>Note: A conflict of interest may arise when there is a risk that the running, analysis or interpretation of a research study may be influenced by a secondary interest on the part of the researcher, such as financial gain or career advancement. An example would be where a researcher receives a grant from the company which owns the training programme that the researcher is evaluating.</i></p> <p><i>If yes, please elaborate below</i></p>	Yes <b>No</b>
<p><b>Are there any other known ethical issues?</b></p> <p><i>If yes, please elaborate below and explain how risk to participants will be mitigated.</i></p>	Yes      No
<p><u>Anonymising of participant information and data.</u> All participants will be given a code at the beginning of the study which they will use when completing the pre and post intervention surveys. Consent forms and raw data will be stored electronically on the University's secure cloud storage, <i>OneDrive for Business</i> and the sharing of files with research supervisors will be encrypted using <i>Gpg4win</i>. The workshops will be delivered online, however, they will not be recorded to protect the anonymity of all participants and they will be sent a separate recorded webinar of the workshop afterwards that they can use as a resource to support their classroom practice.</p> <p><u>The right to withdraw from the research.</u> Participation in this research study is voluntary and participants will be informed beforehand that they can leave the research, with no negative consequences, up to the point before their data has been anonymised. If, they decide to leave at any time up to this point, they will be informed that their data will be destroyed and their participation will end. The decision to not participate will not impact their attendance at the mediated learning strategies workshop.</p> <p><u>Video editing.</u> As part of the training workshops, the teachers will watch videos that demonstrate examples of the key principles of mediated learning. As it will not be possible to record video clips of teacher/children interactions the researcher will use a combination of video clips already accessible through YouTube as well as recordings of the researcher interacting with a family member whose face will be pixelated using video editing software, e.g. <i>Kinemaster</i> (<a href="http://www.kinemaster.com">www.kinemaster.com</a>)</p> <p><u>Teachers' using video technology to develop practice.</u> To develop their competence in using mediated learning strategies in their classrooms, teachers will be asked to record themselves working with a student in their class and rate their use of the different principles using the Mediated Learning Experience Rating Scale. To ensure that the anonymity of students is protected, the school principal, class teacher and parents will be provided with detailed information through the <i>Information about the use of video technology</i> document which includes a consent form that. The <i>Child Assent</i> information form also includes information about video recordings to ensure that students are also fully informed. <b>See Appendices F,G &amp; H and E(ii), (iii) &amp; (iv)</b></p>	

Should teachers be unable to record themselves with one of their students, they can complete the same task with a family member as the focus is not on the child but on the teacher practising the skills which and reflecting on their use of the specific skills.

Parents with EAL or learning difficulties. As English may be the second language of some parents of students who attend the specialised autism class or may have low literacy levels, it will be important that they are provided with information forms that are written in their first language or can be listened to as an audio. This will ensure that any parents whose child may be part of a video recording are fully informed and give their consent for their child to be recorded for training purposes. Teachers will be asked to contact the researcher should either option be required by a parent.

Obtaining child assent to participate in the study. As autistic children can present with a range of complex communication/language and learning needs, obtaining their consent to participate will be managed as follows:

- A parent information letter that explains the importance of their child giving permission to be involved in this study and suggestions as to how the parents can support their child in understanding the information provided about the study and completing the assent form. For children who have difficulty giving their permission due to significant language difficulties and/or intellectual disability, parents are advised to consider the appropriateness of their child participating in the study and to only provide parental consent if they believe that their child's involvement will be a positive experience for him/her. **(See Appendix E (I))**
- There will be two versions of the assent form, a version deemed suitable for younger children and one for older children. However, both versions will be provided to parents and they are advised to choose the version which they feel matches their child's level of understanding and language skills. Providing the information in a video format was deemed appropriate as the visual format is appealing to many autistic children and can be replayed a number of times making the information more accessible. Children will watch the short video and can replay it as many times as needed to optimise understanding and facilitate decision making. The parents/guardians will be provided with a Child Assent Form and asked to support to their child when completing it. The parents/guardians will be asked to give the completed form to the class teacher who will forward it to the researcher. **(Appendices E (II), E (III), E (IV) & E (V) E (VI))**

Information on the importance of child consent and the necessary steps to obtain it will be signposted in the parent and teachers' information and invitation to participate letters,' *The consent of participating students and their parents will also be sought and your advice may be required to support parents giving consent when their child is unable to so independently*' **(Appendices D & E (I))**

## RESEARCH DISCLAIMER

The lead researcher should complete this research disclaimer **only** if the research involves NEPS personnel as participants.

I [NAME OF RESEARCHER] intend to undertake research entitled [TITLE] during the period [PERIOD].

I am being supervised by [SUPERVISOR] in [UNIVERSITY] (If applicable). During this time, I will conduct my research involving NEPS personnel. I acknowledge that the responses I may obtain will consist of the views of individual psychologists in relation to the research questions being asked. I acknowledge that the responses I may obtain are not representative of the view of NEPS as an organisation.

I agree that a statement to verify this fact must be included in my research report and any other documentation connected with my research and also at any reporting of the research at conferences, seminars, symposia etc.

I also guarantee that a summary of the research once completed will be forwarded to the NEPS Research Advisory Committee.

In addition I guarantee that a copy of any report of this research to be published will be forwarded to the NEPS Research Advisory Committee before its publication.

**Name:** \_\_\_\_\_

**Signed:** \_\_\_\_\_

**Date:** \_\_\_\_\_

#### **SUPERVISOR'S DISCLAIMER**

**If the research is being supervised by an academic in a university, the supervisor must also complete the following disclaimer.**

I acknowledge that the responses from NEPS personnel that Helen Finnegan, under my supervision as part of a Doctorate in Educational Psychology during the period October 2022 to October 2023, will obtain in the course of her research, will consist of the views of individual psychologists in relation to the research questions being asked. I acknowledge that the responses to be obtained are not representative of the view of NEPS as an organisation.

I agree that a statement to verify this fact must be included in Helen's research report and any other documentation connected with her research and also at any reporting of the research at conferences, seminars, symposia etc.

I guarantee that a summary of the research, once completed, will be forwarded to the NEPS Research Advisory Committee.

I also guarantee that a copy of any report of this research to be published will be forwarded to the NEPS Research Advisory Committee before its publication.

**Name: Dr Clare Daly**

**Signed:** 

**Date: 27 May 2022**


## SECTION 5: Appendices

Please attach the following:

	Included?		
	Yes	No	N/A
Evidence of Ethical approval for research study (if available)	X		
Recruitment materials, e.g. flyer	X		
Participant information leaflet (over 18 years)	X		
Participant consent form (over 18 years)	X		
Parent information leaflet	X		
Parent consent form	X		
Child / young person information leaflet	X		
Child / young person assent form	X		
Interview or focus group questions	X		
Names of standardised questionnaires / tests	X		
Copy / description of non-standardised tests	X		
Copy of non-standardised questionnaires or surveys	X		

**Declaration:** I declare all of the above provided details to be true. I am familiar with the PSI Code of Professional Ethics and I agree to abide by it.

**Name:** Helen Finnegan

**Signed:** 

**Date:** 22/06/2022

Completed Form A should be emailed to: [researchneps@education.gov.ie](mailto:researchneps@education.gov.ie)

**\*For the purposes of research and ethical approval the Lead researcher is the member of the research team who will take responsibility for the application for NRAC approval.**

## **Participant Information Sheet for Teachers**

**Name of Department:** Faculty of Humanities and Social Sciences

**Title of the study:** *An investigation into the impact of mediated learning experience strategies as a form of dynamic assessment on the learning outcomes of children with autism*

### **Introduction**

My name is Helen Finnegan and I am a doctoral student in the Humanities and Social Sciences faculty of the University of Strathclyde, Glasgow, Scotland. I am writing to invite you to take part in a research project.

### **Why have you been invited to take part?**

You have been invited to take part in this research as you are currently teaching in an autism class.

### **What is the purpose of this investigation?**

This research study wants to explore the potential benefits of teachers using mediated learning strategies as a teaching/interaction approach when working with students with autism. Mediated learning is a component of an assessment and teaching methodology called dynamic assessment which is person centred and focuses on developing a student's thinking skills that can be applied to all learning situations. Participants will be invited to attend three workshops that will explain the theory that underpins mediated learning, how it can be used in the classroom setting with opportunities for participants to use the approach and reflect on its application and utility in classrooms. Participating teachers will be required to video record themselves working with a student in their class after workshops 1 and 2 and complete a rating scale to support reflective practice. This will require consent from participating teachers, their school principals, the students where possible and their parents/guardians. The second part of the study will involve in-depth interviews with some participants that will explore the possible role of mediated learning in building teacher confidence and if it enhances the learning outcomes of their students.

Participation in these interviews is voluntary.

### **How will your data be used?**

The information you provide will be used to identify if mediated learning strategies impact positively on the learning outcomes of students with autism and contribute to teacher confidence and self-efficacy. The surveys will contain questions about your knowledge and understanding of mediated learning strategies and how they can impact on your interactions with students and on their learning. The information may also be used as part of a wider discussion about effective teaching methodologies in autism classes in schools in the Republic of Ireland and in other countries. The findings from the study may also be used for a journal article in an academic journal. No one will be able to identify you, your class or school from this article.

### **How will your privacy be protected?**

All personal data on participants as well as the safe use of video technology will be processed in accordance with the European Union's General Data Protection Regulation (GDPR), and the Data Protection Act (2018) and the Acceptable Use Policy (AUP) of participants' schools.

Consent forms and information from completed questionnaires will be stored securely online using *OneDrive for Business* which is the University of Strathclyde's secure cloud storage system. All participants will be given a unique code that will be

used throughout the research to protect your anonymity and you, your students or school will not be identified at any stage. All data will be destroyed once the research has been completed, i.e. 31/05/2023. The workshops will be delivered online, however, due to the interactive nature of them, they will not be recorded to protect the anonymity of all participants. Participants can still withdraw from the study after completing the online workshops. The researcher and chief investigator have sole access to all data which will be stored for the duration of the study, i.e. 18 months and will be securely destroyed on completion of the study. The contact details of participants will also be stored for the duration of the study.

Please refer to the enclosed document *Privacy Notice for Participants in Research Projects* which explains how the University of Strathclyde will use your personal information and your rights under data protection legislation

### **What are the benefits of taking part in this research study?**

While there are no financial benefits for teachers participating in this research, it is hoped that this study will contribute to teachers' professional development through the acquisition of additional teaching methodologies that can complement current practices. Participating in this research study will also offer teachers the opportunity to shape and inform effective teaching methodologies and intervention planning for students with autism while providing them with the opportunity to reflect on their own professional practice.

### **What are the risks of taking part in this research study?**

There are no known risks for the participants who take part in this research study. No personal questions or questions relating to sensitive issues will be asked of them. As the training workshop will be delivered online, there will be no public health issues arising from Covid 19 to be considered.

Should a participant experience any distress as a result of their participation in this research study, they will be directed to the counselling services available free of charge to public service employees through *Employee Assistance Service (EAS)* which is delivered by Spectrum Mental Health ([www.mentalhealth.ie](http://www.mentalhealth.ie))

While the confidentiality of participants is guaranteed, it will be breached if there is a disclosure of a risk of serious imminent harm.

### **Can you change your mind at any stage and withdraw from the study?**

Participation in this study is voluntary and you do not have to participate if you choose not to and does not affect your participation in the workshops. You can also decide to leave the research, with no negative consequences, up to the point before your data has been anonymised. If, you decide to leave at any time up to this point, your data will be destroyed and your participation will end.

### **How will you find out what happens with this project?**

When the research is completed, participants will be provided with a brief summary document to inform them of the project outcomes. Participants' email addresses will be retained for this purpose and deleted once the summary document has been sent. The findings from the research will be written up as part of a thesis which can be made available to participants on request from the researchers.

### **What will happen if you agree to take part?**

If you agree to take part in this study, you will be asked to sign a consent form and return it to me by email. Your school principal will also be asked to sign another form to say that they are happy for you to take part and return it to me by email. The consent of participating students and their parents will also be sought and your advice may be required to support parents giving consent when their child is unable to do so independently. I will keep the forms securely until the research is completed.

### **What will happen if you do not wish to take part?**

Should you decide that you do not wish to participate in the study, you can still attend the training workshops on mediated learning.

#### **Researcher contact details:**

Should you require any further information, I will be happy to answer your questions about this study at any time. You may contact me at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk)

#### **Chief Investigator details:**

Dr. Clare Daly,  
University of Strathclyde,  
16 Richmond Street,  
Glasgow, G11XQ  
Scotland

[clare.daly@strath.ac.uk](mailto:clare.daly@strath.ac.uk)

This investigation was granted ethical approval by the University of Strathclyde Ethics Committee.

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

Secretary to the University Ethics Committee  
Research & Knowledge Exchange Services  
University of Strathclyde  
Graham Hills Building  
50 George Street  
Glasgow  
G1 1QE

Telephone: 0141 548 3707

Email: [ethics@strath.ac.uk](mailto:ethics@strath.ac.uk)

### **Consent Form for Teacher Participating in Research Study**

**Name of Department:** Faculty of Humanities and Social Sciences

**Title of the study:** *An investigation into the impact of mediated learning strategies as a form of dynamic assessment on the learning outcomes of children with autism*

- I confirm that I have read and understood the information sheet for the above project and the researcher has answered any queries to my satisfaction.
- I have discussed my participation in this research study with the school principal.
- I understand that my participation is voluntary and that I am free to withdraw from the project at any time, up to the point of completion, without having to give a reason and without any consequences. If I exercise my right to withdraw and I don't want my data to be used, any data which have been collected from me will be destroyed.
- I understand that confidentiality cannot be guaranteed if there is a **risk of serious imminent harm**



- I understand that I can withdraw from the study any personal data (i.e. data which identify me personally) at any time.
- I understand that anonymised data (i.e. data which do not identify me personally) cannot be withdrawn once they have been included in the study.
- I understand that any information recorded in the investigation will remain confidential and no information that identifies me will be made publicly available.
- I consent to being a participant in the project and understand that I will have to complete two surveys before and after the completion of the workshops on *Mediated Learning Strategies*
- I confirm that I have read and understood the University of Strathclyde's *Privacy Notice for Participants in Research Projects*

(PRINT NAME)	
Signature of Participant:	Date:

Appendix 5:

## **Information Sheet for School Principals**

**Name of Department: Faculty of Humanities and Social Sciences**

**Title of the study:** *An investigation into the impact of mediated learning experience strategies as a form of dynamic assessment on the learning outcomes of children with autism*

### **Introduction**

My name is Helen Finnegan and I am a doctoral student in the Humanities and Social Sciences faculty of the University of Strathclyde, Glasgow, Scotland. I am writing to invite a member of your teaching staff to take part in a research project.

### **What is this research about?**

This research study wants to explore the potential benefits of teachers using mediated learning experience strategies (MLE) as a teaching approach when working with students with autism. MLE is a component of an assessment and teaching methodology called dynamic assessment which is person centred and focuses on developing a student's thinking skills that can be applied to all learning situations. Participants will be invited to attend three workshops that will explain the theory that underpins mediated learning experience, how it can be used in the classroom setting with opportunities for participants to use the approach and reflect on its application and utility in classrooms. The workshops will be delivered online and participants will be asked to complete two surveys before and after attending the workshops.

### **Why is a member of staff at your school being invited to take part?**

A member of staff in your school is being invited to take part in this research, with your permission, because your school has an autism class of which the staff member is the class teacher.

### **How will the data be used?**

The information provided by your staff member will be used to identify if MLE strategies impact positively on the learning outcomes of students with autism and contribute to teacher confidence and self-efficacy. The surveys will contain questions about teacher knowledge and understanding of MLE strategies and how they can impact on interactions with students and on their learning. The information may also be used as part of a wider discussion about effective teaching methodologies in autism classes in schools in the Republic of Ireland and in other countries. The findings from the study might also be used for a journal article in an academic journal. No one will be able to identify your staff member, the class or school from this article.

### **What will happen if you give permission for a staff member to take part?**

If you give permission for a member of your staff to participate in the research study, both you and the teacher will be asked to sign consent forms. Both forms will be retained securely by me for the duration of the research.

### **How will your school's privacy be protected?**

All personal data on participants as well as the safe use of video technology will be processed in accordance with the European Union's General Data Protection Regulation (GDPR), and the Data Protection Act (2018) and the Acceptable Use Policy (AUP) of your school.

Consent forms and information from completed questionnaires will be stored securely online using *OneDrive for Business* which is the University of Strathclyde's secure cloud storage system. All participants will be given a unique code that will be used throughout the research to protect your anonymity and you, your students or

school will not be identified at any stage. All data will be destroyed once the research has been completed, i.e. 31/05/2023. The workshops will be delivered online, however, due to the interactive nature of them, they will not be recorded to protect the anonymity of all participants. Participants can still withdraw from the study after completing the online workshops.

**What are the benefits of taking part in this research study?**

While there are no financial benefits for teachers participating in this research, it is hoped that this study will contribute to teachers' professional development through the acquisition of additional teaching methodologies that can complement current practices. Participating in this research study will also offer teachers the opportunity to contribute to shaping and informing effective teaching methodologies and intervention planning for students with autism while also giving them the opportunity to reflect on their own professional practice.

**What are the risks of taking part in this research study?**

There are no known risks for the staff member in taking part in this research study. No personal questions or questions relating to sensitive issues will be asked of them. As the training workshop will be delivered online, there will be no public health issues arising from Covid 19 to be considered.

Should a participant experience any distress as a result of their participation in this research study, they will be directed to the counselling services available free of charge to public service employees through *Employee Assistance Service (EAS)* which is delivered by Spectrum Mental Health ([www.mentalhealth.ie](http://www.mentalhealth.ie))

**Can the staff member change their mind at any stage and withdraw from the study?**

Participation in this research study is entirely voluntary, so the staff member does not have to take part if they choose not to. They can also decide to leave the research, with no negative consequences, up to the point before their data has been merged with other data. If they decide to leave at any time up to this point, their data will be destroyed and their participation will end. However, once their data has been merged with other data, it will be not possible to withdraw from the research. It is also important to highlight that staff members who wish to attend the training workshop are welcome to do so and is not contingent on their participation in the research study.

**How will you and the staff member find out what happens with this project?**

When the research is completed, the information received from the participants will be written up as part of a thesis. The anonymous findings from the research will be made available to participants and schools, if requested.

**What will happen if your staff member agrees to take part?**

If you are happy for a member of your teaching staff to take part in this study, both you and the teacher will be asked to sign consent forms and return them to me by email. I will keep the forms securely until the research is completed.

**What will happen if you do not wish to take part?**

If you are not happy for the teacher to participate in the study, the teacher can still attend the training workshops on MLE.

**Researcher contact details:**

Should you require any further information, I will be happy to answer your questions about this study at any time. You may contact me at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk)

**Chief Investigator details:**

Dr. Clare Daly,  
University of Strathclyde,  
16 Richmond Street,

Glasgow, G11XQ

Scotland

[clare.daly@strath.ac.uk](mailto:clare.daly@strath.ac.uk)

This investigation was granted ethical approval by the University of Strathclyde Ethics Committee.

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

Secretary to the University Ethics Committee

Research & Knowledge Exchange Services

University of Strathclyde

Graham Hills Building

50 George Street

Glasgow

G1 1QE

Telephone: 0141 548 3707

Email: [ethics@strath.ac.uk](mailto:ethics@strath.ac.uk)

## **Consent Form for School Principal in Research Study**

**Name of Department:** Faculty of Humanities and Social Sciences

**Title of the study:** *An investigation into the impact of mediated learning experience strategies as a form of dynamic assessment on the learning outcomes of children with autism*

- I confirm that I have read and understood the information sheet for the above project and the researcher has answered any queries to my satisfaction.
- I have discussed this research study with the staff member who teaches in the autism class.
- I understand that participation is voluntary and that participants are free to withdraw from the project at any time, up to the point of completion, without having to give a reason and without any consequences. If a participant exercises his/her right to withdraw and don't want their data to be used, any data which has been collected from them will be destroyed.
- I understand that confidentiality cannot be guaranteed if there is a risk of harm
- I understand that a participant can withdraw from the study any personal data (i.e. data which identify him/her personally) at any time.
- I understand that anonymised data (i.e. data which do not identify me personally) cannot be withdrawn once they have been included in the study.
- I understand that any information recorded in the investigation will remain confidential and no information that identifies participants will be made publicly available.

- I consent to a member of my school’s teaching staff to being a participant in the project and understand that the teacher will have to complete two surveys before and after the completion of the workshop on *Mediated Learning Experience Strategies*
- I am aware that the use of video technology will form part of this research and that the teacher has consent to being audio and/or video recorded as part of the project.

(PRINT NAME)	
Signature of Participant:	Date:

Appendix 6:  
**Information for Parents on Child Assent**

Dear Parent,

Your child's teacher is taking part in three training workshops on the use of a teaching approach called 'Mediated Learning'. It is hoped that this approach will be beneficial to your child's learning in school. As part of this training, the teacher will be asked to record him/herself working with your child and using this approach. The videoclips will only be watched by your child's teacher for training purposes. The teacher will replay the videoclips and complete a questionnaire that helps him/her to identify which of the new skills were used. While your child will be in these video clips, the focus is on the teacher using the skills and not your child.

To ensure that your child is happy to be involved in this process, I enclose an information document for your child that outlines the purposes of the study, his/her involvement in it, that participation is voluntary and can be terminated at any point should s/he child feel worried/upset. Should your child prefer a recorded version of this document, please email me at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk) and I will forward it to you.

To support your child in deciding if s/he wishes to participate in this activity, it is recommended that you read the document or watch the video with your child and answer any questions s/he may have. If your child is happy to participate, s/he will need to sign the enclosed *assent* form and return it to the class teacher who will forward it to me.

Should your child not be in a position to engage with the information contained in this document/video or you are concerned that s/he may not fully understand the nature of his/her involvement, the decision for your child to participate in this activity is at your discretion. You may wish to consult with the class teacher in making this decision.

You may contact us at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk) or at [clare.daly@strath.ac.uk](mailto:clare.daly@strath.ac.uk) should you require any further information or advice.

Appendix 7:

### **Information about the use of video technology**

**Name of Department: Faculty of Humanities and Social Sciences**

**Title of the study:** *An investigation into the impact of mediated learning strategies as a form of dynamic assessment on the learning outcomes of children with autism*

Dear Participant,

As part of this research project which explores the impact of mediated learning strategies on the learning outcomes of students with autism, you will be asked to record two short interactions with one of your students after Workshops 1 and 2. The video clips will only be watched by you for training purposes. After replaying the videoclips you will be asked to rate your use of mediated learning strategies using a rating scale that you will be given. The process will be as follows:

- Participant makes a short video recording ( approximately 10 mins) of an interaction with a student (with parental/guardian consent) using the principles of mediated learning using a portable storage device that is the property of the school
- The portable device must be password protected and stored in a secure place when not in use.
- As far as possible and is practical, every effort should be made to focus the camera on the participant's face and not the child/student
- The video clip should be stored on the device's hard drive for the shortest time possible and not saved to any cloud/platform
- The participant replays the video recording as soon as possible on the school property and completes the mediated learning rating scale
- Once the rating scale has been completed, the participant will delete the video recording from the portable device.

To ensure that all personal data contained in these video recordings is stored and processed safely, participants must adhere to the guidelines outlined in the Data Protection Act (2018) and General Data Protection Regulation (GDPR) as well as their school's *Acceptable Use Policy* (AUP). All data breaches must be reported to the Data Protection Commission within 72 hours of becoming aware of the breach.

Further information on Data Protection is available from the Data Protection Commission at [www.dataprotection.ie](http://www.dataprotection.ie) and 01 7650100/1800437 737

**PLEASE SIGN, KEEP ONE COPY FOR YOUR OWN RECORDS AND RETURN A SECOND COPY TO THE RESEARCHER at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk)**

I have read the enclosed information regarding the safe use of video technology as part of this research project and understand all the safety procedures regarding the recording of video clips, their storage and deletion. I have explained this information to the parent/guardian of the student and have obtained their written consent.

(PRINT NAME)	
Signature of Participant:	Date:



Appendix 8:

### Information about the use of video technology

Dear Principal,

As part of this research project which explores the impact of mediated learning experience strategies (MLR) on the learning outcomes of students with autism, participating teachers will be asked to record two short interactions with a pupil/student after Workshop 1 and 2. After replaying the videoclips they will be asked to rate their use of MLR strategies using a rating scale they will receive. The process will be as follows:

- Participant makes a short video recording ( approximately 10 mins) of an interaction with a pupil/student (with parental/guardian consent) using the principles of MLR using a portable storage device that is the property of the school
- The portable device must be password protected and stored in a secure place when not in use.
- As far as possible and is practical, every effort should be made to focus the camera on the participant's face and not the child/student
- The video clip should be stored on the device's hard drive for the shortest time possible and not saved to any cloud/platform
- The participant replays the video recording as soon as possible on the school property and completes the MLR rating scale
- Once the MLR rating scale has been completed, the participant will delete the video recording from the portable device.

To ensure that all personal data contained in these video recordings is stored and processed safely, participants are advised to adhere to the guidelines outlined in the Data Protection Act (2018) and General Data Protection Regulation (GDPR) as well as their school's *Acceptable Use Policy* (AUP). They have been informed that all data breaches must be reported to the Data Protection Commission within 72 hours of becoming aware of the breach.

Further information on Data Protection is available from the Data Protection Commission at [www.dataprotection.ie](http://www.dataprotection.ie) and 01 7650100/1800437 737

I would be grateful if you could discuss the enclosed information regarding the use of video technology as part of this training and research project with your staff member and if satisfied with the procedures, sign the enclosed consent form, retain a copy for your own records and forward a copy to the researcher at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk) . I have read the enclosed information regarding the safe use of video technology as part of this research project and understand and agree with all the safety procedures regarding the recording of video clips, their storage and deletion.

(PRINT NAME)	
Signature of Participant:	Date:

Appendix 9:

### **Information about the use of video technology**

Dear Parent,

Your child's teacher is taking part in three training workshops on the use of a teaching approach called 'Mediated Learning'. It is hoped that this approach will be beneficial to your child's learning in school. As part of this training, the teacher will be asked to record him/herself working with your child and using this approach. The videoclips will only be watched by your child's teacher for training purposes. The teacher will replay the videoclips and complete a questionnaire that helps him/her to identify which of the new skills were used. While your child will be in this video clip, the focus is on the teacher using the skills and not your child. The process will be as follows:

- The teacher makes a short video recording ( approximately 10 mins) of an interaction with your child using a portable storage device that is the property of the school
- The portable device must be password protected and stored in a secure place when not in use.
- As far as possible and is practical, every effort should be made to focus the camera on the teacher's face and not your child
- The video clip will be stored on the device's hard drive for the shortest time possible and not saved to any cloud/platform
- The teacher will replay the video recording as soon as possible on the school property and complete the questionnaire
- Once the questionnaire has been completed, the teacher will delete the video recording from the portable device.

To ensure that all personal data contained in these video recordings is stored and processed safely, the guidelines outlined in the Data Protection Act (2018) and General Data Protection Regulation (GDPR) as well as their school's *Acceptable Use Policy* (AUP) have been explained to your child's teacher.

Both you and your child's teacher have been reminded that all data breaches must be reported to the Data Protection Commission within 72 hours of becoming aware of the breach.

Further information on Data Protection is available from the Data Protection Commission at [www.dataprotection.ie](http://www.dataprotection.ie) and 01 7650100/1800437 737

**PLEASE SIGN, KEEP ONE COPY FOR YOUR OWN RECORDS AND RETURN A SECOND COPY TO THE RESEARCHER at [helen.finnegan@strath.ac.uk](mailto:helen.finnegan@strath.ac.uk)**

I have read the enclosed information regarding the safe use of video technology as part of this research project and understand all the safety procedures regarding the recording of video clips, their storage and deletion.

I understand that the information contained in these two videoclips is strictly for teacher training and that no personal information or pictures of my child will be shared with other parties outside of the school.

(PRINT NAME)	
(PRINT NAME)	
Signature of Parents/Guardians:	Date:
Signature of Parents/Guardians:	Date:

Appendix 10:



An Roinn Oideachais  
Department of Education  
An tSeirbhís Náisiúnta Síceolaíochta Oideachais  
National Educational Psychological Service



University of  
**Strathclyde**  
Glasgow

**Child Assent Form**

Participant ID:

Child Name:

Researcher Name:

Researcher Signature:

Date:

YES: 

NO: 

**Has someone watched the information video with you?**

YES: 

NO: 

**Do you agree to take part?**

YES: 

NO: 

**If you want to stop, tell teacher** 

Write your name: \_\_\_\_\_

Thank you



# Hello!

Appendix 11



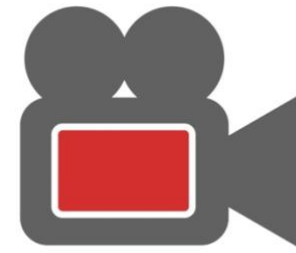
Helen

Clare

Hi, we are Helen and Clare and we like to find out information about how children learn. Sometimes we do research studies. Research studies help us learn new things.



We are doing this research to find out more about different ways that teachers can help their students to learn and think. Your teacher would like to help us with this work



Your teacher will do some activities with you and video them. The video will only be seen by your teacher and kept in a safe place.



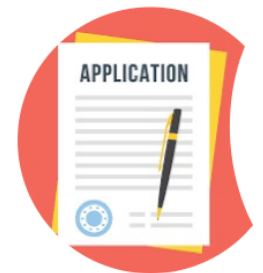
- You get to decide if you want to take part.
- You can say 'No' or you can say 'Yes'.
- No one will be upset if you say 'No'.
- If you say 'Yes', you can always say 'No' later.
- You can say 'No' at anytime.









# Child Information Booklet



If you think you would like to do this work, talk to your mum or dad. You can ask them any questions you have and you can ask us questions too. You will need to sign a special form before you can do this activity with your teacher



<h2>Mediated Learning Workshops</h2>	<p><i>If you are not prepared to look at your pupils' strengths, don't touch their weaknesses</i> Reuven Feuerstein</p>
<p><b>THE DETAILS</b></p> <p> <b>When:</b> Tuesdays, September 20th, October 4th &amp; 8th</p> <p> <b>Where:</b> Online.</p> <p> <b>Who is it for?</b> Teachers (primary &amp; post-primary) who are teaching in autism classes. Principals of these schools are also welcome to attend the training</p> <p> <b>Time:</b> 1pm to 3pm</p>	<p><b>WHAT IS MEDIATED LEARNING ?</b></p> <p>Mediated learning is part of a teaching and assessment approach called Dynamic Assessment and comes from the work of Professor Reuven Feuerstein. Feuerstein along with other eminent psychologists rejected the belief that individuals are born with a certain intelligence that remains fixed throughout life and suggested that individuals have the potential to change when provided with the right kind of interactions with key adults. Through mediated learning, learners can change the way they think and develop the efficient thinking skills that are necessary to become autonomous and independent learners. Feuerstein constructed a list of cognitive functions that he believed are the building blocks of efficient thinking that can be developed through the process of mediated learning, paving the way to effective learning.</p>
<p><b>The Workshop</b></p> <p>3 workshops that will cover the following topics:</p> <ol style="list-style-type: none"><li>1. An introduction to dynamic assessment</li><li>2. What is mediated learning?</li><li>3. An overview of Feuerstein's 12 principles of mediated learning and how each can bring about changes in cognition</li><li>4. What are Feuerstein's 'cognitive functions'?</li><li>5. Understanding the input, elaboration and output phases of thinking to understand and support a child's difficulties.</li><li>6. Using Feuerstein's 'Cognitive Map' to analyse a learner's cognitive strengths and difficulties to inform interventions</li><li>7. All teachers attending the workshops will have access to a pre-recorded webinar of the training that they can refer to as a resource in their classrooms</li><li>8. Applying MLE to develop children's thinking skills</li></ol> <p>Teachers will be required to video themselves using mediated learning skills with a student after workshop 1 and 2. The video clips will only be watched by the teacher and consent from parent/student, teacher and school principal will be required</p>	<p><b>Research Study</b></p> <p>A research study which will explore the impact of mediated learning strategies on the learning outcomes of children with autism will be carried out in conjunction with these workshops. Participation in the research study is voluntary and teachers have the option of attending the workshops only.</p> <p><b>Workshop Facilitator</b></p> <p>The workshops will be delivered by Helen Finnegan, Educational Psychologist (NEPS) who has a special interest in Dynamic Assessment and has completed the British Psychological Society approved Level 2 training in Dynamic Assessment and Mediated Learning.</p> <p><b>Further Information</b></p> <p><a href="mailto:helen.finnegan@strath.ac.uk">helen.finnegan@strath.ac.uk</a></p>
<p> An Roinn Oideachais Department of Education An tSeirbhís Náisiúnta Síceolaíochta Oideachais National Educational Psychological Service</p>	<p> University of Strathclyde</p>

Appendix 13:

**Teacher Self-Efficacy Rating Scale**

Rate your degree of confidence in completing the following tasks by recording a number from 1 to 6 using the scale given below:

\* Conduct an assessment of your students' developmental skills/learning skills.

1                    2                    3                    4                    5                    6

\*Describe your students' characteristics that relate to Autism.

1                    2                    3                    4                    5                    6

\*Describe educational interventions for students with Autism.

1                    2                    3                    4                    5                    6

\*Translate assessment information into teaching goals and objectives for your students.

1                    2                    3                    4                    5                    6

\*Write measurable objectives for your students.

1                    2                    3                    4                    5                    6

\*Write a teaching plan for your students based on goals and objectives.

1                    2                    3                    4                    5                    6

\*Generate teaching activities for your students.

1                    2                    3                    4                    5                    6

\*Organise the classroom to increase opportunities for learning for your students.

1                    2                    3                    4                    5                    6

\*Use visual supports to increase your students' independence.

1                    2                    3                    4                    5                    6

\*Help your students understand others.



1                    2                    3                    4                    5                    6

\*Help your students be understood by others.

1                    2                    3                    4                    5                    6

\*Provide opportunities for communication in the classroom throughout the day for your students.

1                    2                    3                    4                    5                    6

\*Assess the causes of problematic behaviours of your students.

1                    2                    3                    4                    5                    6

\*Design positive behavioural supports for your students.

1                    2                    3                    4                    5                    6

\*Implement positive behavioural supports for your students.

1                    2                    3                    4                    5                    6

\*Collect data to monitor your student's progress toward objectives.

1                    2                    3                    4                    5                    6

\*Make use of data to re-evaluate your students' goals or objectives.

1                    2                    3                    4                    5                    6

\*Assess your students' social interaction skills.

1                    2                    3                    4                    5                    6

\*Assess your students' play skills.

1                    2                    3                    4                    5                    6

\*Teach your students social interaction.

1                    2                    3                    4                    5                    6

\*Teach your students play skills.

1                    2                    3                    4                    5                    6

\*Train peer models to improve the social skills of your students.

1                    2                    3                    4                    5                    6

\*Describe parental concerns regarding your students.

1                    2                    3                    4                    5                    6

\*Communicate and work effectively with your students' parent(s) or caregiver(s).

1                    2                    3                    4                    5                    6

\*Describe parental priorities for learning with regard to your students.

1                    2                    3                    4                    5                    6

\*Help your students remain engaged.

1                    2                    3                    4                    5                    6

\*Sustain your students' attention.

1                    2                    3                    4                    5                    6

\*Motivate your students

1                    2                    3                    4                    5                    6

\*Help your students feel successful.

1                    2                    3                    4                    5                    6

\* Teach your students' academic skills.

1                    2                    3                    4                    5                    6

Appendix 14:

## Mediated Learning Experience Scale (MLESPBL)

Participant Identifier \_\_\_\_\_

0	1	2	3	4
Not Observed	Rarely Observed	Sometimes Observed	Often Observed	Very Often Observed

<b>Intentionality &amp; Reciprocity (IR)</b>	<b>Inviting the learner to engage with a specific task/activity</b>				
<b>Intentionality (I)</b>					
Teacher explains the overall purpose and intention of the activity	0	1	2	3	4
Teacher demonstrates planning and preparation for the activity	0	1	2	3	4
Teacher creates a sense of anticipation	0	1	2	3	4
Teacher is willing to re-explain when work is not understood	0	1	2	3	4
<b>Reciprocity (R)</b>	<b>Learner is receptive to and involved in the learning process</b>				
Students' interest and motivation are aroused	0	1	2	3	4
Students ask questions relevant to the subject matter	0	1	2	3	4
Learners participate in activity	0	1	2	3	4

<b>Meaning</b>	<b>Conveying the significance and importance of the task</b>				
Teacher explains the importance or value of the activity	0	1	2	3	4
Teacher explains the reason for focusing on the activity	0	1	2	3	4
Teacher uses the problem to facilitate meaningful inquiry	0	1	2	3	4
Teacher gives positive or negative feedback to student responses	0	1	2	3	4

<b>Transcendence</b>	<b>Making links to past or future learning experiences</b>				
Teacher facilitates the solving of the current problem					
Teacher facilitates the learning of a concept/principle beyond the scope of the immediate subject matter	0	1	2	3	4
Teacher relates the problem to prior learning					
Teacher links the problem to other disciplines	0	1	2	3	4
Teacher explains how the underlying process of solving	0	1	2	3	4

a problem (by posing the appropriate questions) can be applied to a variety of situations					
Teacher promotes the use of work habits that are necessary for life-wide learning	0	1	2	3	4

Appendix 15:

## Mediated Learning Workshop Evaluation Questionnaire

*Thank you for attending the workshop on Mediated Learning Strategies and you are now invited to evaluate the training to assess its effectiveness and plan for future training.*

**Primary Teacher** •

**Post Primary Teacher**

**Years in Teaching**

**Years teaching in autism class setting**

### INSTRUCTIONS

Please circle your response to these items. Rate aspects of the workshop on a 1 to 5 scale:

1 = 'Strongly disagree', or the lowest, most negative impression.

3 = 'Neither agree nor disagree', or a neutral impression.

5 = 'Strongly agree', or the highest, most positive impression.

### WORKSHOP CONTENT (Mark your response to each item.)

1. I enjoyed this workshop

1 2 3 4 5

1. I knew a lot about *Mediated Learning Experience* **before** this workshop

1 2 3 4 5

2. I know more about *Mediated Learning Experience* **after** this workshop

1 2 3 4 5

3. Using *Mediated Learning Experience* will enhance my interactions with students in my class

1 2 3 4 5

4. I intend using *Mediated Learning Experience* strategies when working with my students

1 2 3 4 5

5. Having completed this training, I now feel confident in using *Mediated Learning strategies* in my class

1 2 3 4 5

6. Attending this workshop has contributed positively to my professional development

1 2 3 4 5

7. Select what aspect of the course you found most interesting/helpful

Theory of mediated learning

Zone of Proximal Development

Reflective practice

8. What factors will keep you from using the content of this workshop in your teaching?

I will need additional training

I will not have the resources I need

I will not be provided with opportunities to use what I have learned

I will not have the time to use what I have learned

The course content is not relevant to my role as teacher

Other (please specify): \_\_\_\_\_

**WORKSHOP DELIVERY** (Mark your response to each item.)

1. What aspect of the training workshop did you find most useful?

On-line delivery

Opportunities to connect with colleagues teaching in autism classes

Video clips to explain the principles of mediated learning

Opportunities to practice with colleagues

Recorded webinar of the training as a resource to use afterwards

Checklists to guide effective practice

Reflective practice session to review progress

2. What aspect of the workshop engaged you the most?

\_\_\_\_\_

3. What aspect of the workshop engaged you the least?

\_\_\_\_\_

4. Any suggestions to improve the workshop?

\_\_\_\_\_

Thank you for completing this questionnaire

## **Questions for semi-structured interviews**

### **Training & Experience**

5. How many years have you been teaching in special education and specifically in an autism class?
6. What motivated you to teach autistic students?
7. Did you have specialised training beforehand or did you receive 'on the job training'?
8. What opportunities for further training have you received since you started teaching in the autism class to develop the specialised skills/training you need to meet your students' unique needs?

### **Professional Development**

9. What are the greatest challenges for you as a teacher working with students with complex needs?
10. How confident do you feel when developing individualised learning programmes for your students?
11. What assessment tools do you use to inform your intervention plans?
12. Is there sufficient professional support/training provided by the Department of Education to build teachers' skills in assessing complex needs?

### **Mediated Learning**

13. What was your experience of mediated learning before completing these workshops?
14. Do you see a value of using mediated learning strategies in your interactions with your students?
15. If so, how do you think you might use mediated learning in your class, for academic, social skill development or both?

### **Workshop Delivery**

16. Did attending the 3 workshops impact on your own professional development?  
If so, what areas in particular were helpful?  
If not, could you explain why it hasn't helped you professionally?
17. In terms of the workshop content and delivery, could you name any aspect that you find interesting/helpful and why?
18. Was there any aspect of the delivery of the content that you feel engaged your interest?
19. Have you any suggestions how the skills of mediated learning could be embedded/further developed in autism classes?
20. As online training is likely to continue to be an important method for teachers to access specialised training, have you any suggestions as to how this type of training could be enhanced to optimise learning for the teachers and the transfer of the new skills to the classroom?



## Appendix 17:

### Focus Group

#### Introduction

Hi everyone and thanks you all very much for giving your time this evening for this focus group

#### Statement of the purpose of the interview

The purpose of this focus group is to 'critique' 3 workshops I plan on delivering to teachers working in autism classes in September/October on a teaching/interaction approach called mediated learning which is comes from an assessment approach called DA.

DA is relatively new to the Irish education scene and works really well for learners who have complex needs and where standardised assessment tools don't always fully capture their strengths and needs and limited in how they inform interventions used in the classroom

The idea of this training is to offer teachers a different & flexible approach they can use when working with their students to build their thinking skills which they can use across all areas of their learning

There's a research aspect also associated with the training as I want to find out if using mediated learning in our classrooms improves the students' learning. I'll also be examining how training such as MLE impacts on teachers' self-efficacy and the indirect impact of that on the students' learning

#### Guidelines to follow during the interview

##### Want

- Critique these workshops, **content, mode of delivery and accessibility, suggestions**, thoughts to improve it so it achieves what it set out to do, upskills and empower teachers

##### Don't Want

- Debate standardised vs dynamic assessment
- Discuss specific challenges

**\*\* I will be making an audio recording so I can listen back to the discussion afterwards. If you could give your name first before you talk so I'll be able to identify who is speaking afterwards. Your names will be anonymised and the recording destroyed after it has been transcribed.\*\***

#### Warm-Up

- Maybe you could introduce yourself, and where you are working etc

### General Questions

1. As an ASD teacher, are you happy with the amount of training opportunities you get ?
2. Which do you prefer, in person or online?
3. What are the advantages of online/ in person
4. Any disadvantages??
5. Keeping to online training, what activities/approaches do you find helpful?
6. Any strategies used that you don't like or find helpful?
7. What would your ideal online training look like in terms of the length, content and delivery

### Specific MLE Questions?

Research into training for teachers have identified the following 4 aspects as being key to effective learning:

1. **Knowledge**- exploring the theory/rationale for these new skills
2. **Modelling the new skills**-ideally in a setting the closely resembles the class setting
3. **Practice**-opportunities to become competent and confident in using the skills
4. **Peer coaching**- teachers collaborating, planning and developing and using their new knowledge/skills

I'm going to talk you through the slides for the 3 workshops and I want you to keep those 4 aspects in mind when critiquing them. I also want you to think about the workshops in terms of

1. Mode of delivery
2. Content, amount & pace
3. Mixture of activities
4. Length of time of each workshop & suggestions regarding best time
5. Understanding and using the measures
6. Suggestions

You have a sheet with all those headings and maybe as we go through the slides you might jot down a few notes for afterwards

### Wrap-Up

Thanks for sharing all your opinions and suggestions and from what I've heard to day it would seem that the following ideas are important for enhancing/improving training for teachers in our autism classes. The recording of this interview will be anonymised and destroyed once the research has been completed.

## Appendix 18: 18 full text studies screened for eligibility

	CYP (4-18) & Autism	Primary/post primary	Published (2000-2022)	Clinical/ school/ home setting	Measures include 1 DA & minimum 1 outcome	Qualitative or quantitative or mixed methods
Schoen Simmons et al (2014)	√	√	√	√	√	√
Donaldson & Olswang (2007)	√	√	√	√	√	√
Aljunied & Frederickson (2011)	√	√	√	√	√	√
Lebeer (2005)	√	√	√	√	√	√
Calero et al (2015)	√	√	√	√	√	√
Tzurriel & Groman (2017)	√	√	√	√	√	√
Hegazi et al. (2012)	√	√	√	√	√	√
Anat-Zaidman-Zait et al (2020)	√	√	√	√	X	√
Zanuttini & Little (2021)	√	√	√	√	X	√
Nigam (2001)	X	X	√	√	X	X
Haas et al., (2022)	√	√	√	√	X	X
Bauminger-Zviely et al., (2019)	√	√	√	√	X	√
Alves et al., (2016)	√	√	√	√	X	√
Wilczynski et al., (2013)	√	√	√	√	X	√
Trembath et al., (2021)	X	X	√	√	X	√
Gevarter et al., (2020)	√	X	√	√	√	√
Holly et al., (2005)	√	√	√	√	X	√
Horner (2019)	X	X	√	√	X	√



# Mediated Learning



## What is mediated learning?

Mediated learning is based on Feuerstein's theory of Mediated Learning Experience (MLE) which describes an interaction approach that develops the basic skills, behaviours and competencies for self-directed learning. Using this approach the mediator, who is typically a parent, teacher or more experienced peer positions themselves between the learner and a specific task to interpret, guide and give meaning to it, making the learning experience intentional and focused.

Feuerstein identified twelve specific skills/interactions that are fundamental to mediation. The first three, (Intentionality & Reciprocity, Meaning and Transcendence) are necessary and sufficient for an interaction to be considered mediation and the other nine may be used at different times, where and when appropriate, making mediation a dynamic and flexible process. While we use many of these skills when working with students in our classes, mediated learning gives us a framework that we can use to ensure we integrate the three key principles and some of the others into our interactions, enhancing the immediate learning experience and connecting it to past and future ones, helping our students to become independent learners which is the goal of learning and education

### **Intentionality & Reciprocity**

Feuerstein considered these to be the most important skills in a mediated learning experience.

*Intentionality* is an intentional and purposeful act in which the \*adult selects a specific task and actively works to engage the learner's attention and interest in it.

*Reciprocity* occurs when the learner responds to the adult, indicating interest and cooperation

There is a two-way relationship between the adult and the learner and both need to be present for real learning to take place. By offering a *hand*, the adult invites the learner to engage with the activity and in *reaching back with his hand*, the learner communicates his connection to it.

Factors that are involved in and influence *Intentionality & Reciprocity*:

- The adult- whose language, pace, pitch and non-verbal cues can be varied to enhance engagement.
- The learner-whose attention span, interest, motivation and language skills affect the response
- The activity- presenting it using different modalities to enhance both the intentionality & reciprocity

### **Meaning**

Meaning occurs when the adult conveys the purpose and importance of an activity, making it relevant to the learner. Meaning can be mediated in the following ways:

- Making explicit specific strategies and skills involved in a task
- Conveying the importance of an activity through modelling behaviours
- Using non-verbal cues, e.g. position, facial expression, inflection of voice
- Acknowledging the meaning expressed by the learner
- Encouraging the learner to seek meaning in order to understand his environment

### **Transcendence**

*Transcendence* describes the process of making connections between current learning to past and future experiences and is best described as a 'bridge', moving

the learner beyond the immediate activity to wider learning. Transcendence develops in the learner:

- A deeper understanding of the world
- How things and concepts are connected
- Instils a sense of curiosity in learners
- A desire to seek explanations
- Reflective thinking to reach an understanding of a situation
- Thinking laterally about issues and experiences
- Finding a general rule that can be applied to other situations/problems

### **Competence**

Mediation of competence involves the adult developing the learner's self-confidence to engage in a specific activity. The focus is not necessarily on the successful outcome but rather the learner's perception of it, helping him/her to develop a positive belief in their own ability, the motivation to try and the determination to persevere. Adults can mediate competence in the following ways:

- Selecting activities that match the learner's level of expertise, simplifying, slowing down and repeating
- Phrasing questions that match the learner's language skills and developmental level
- Making explicit the strategies used by the learner that result in a successful experience
- Focusing on and making explicit the successfully completed parts of an activity, even though the whole activity might be unsuccessful
- Making the learner aware of their progress

### **Self-Regulation & Control of Behaviour**

Another way to describe this skill is 'reflection'. Here, the adult encourages the learner to take responsibility for their own learning and behaviour. Mediating self regulation and control of behaviour is similar to instilling in a child a self-regulatory traffic light. The red light stops the learner from rushing impulsively through a task, the yellow light reminds the learner to slow down and reflect and the green light encourages the learner to proceed through the activity in a systematic fashion.

Adults can mediate self-regulation & control of behaviour as follows:

- Breaking down complex problems into smaller, achievable chunks
- Using a systematic approach rather than rushing
- Encouraging the learner to pause and reflect using phrases like 'stop and have a think' or 'wait a minute, let me think'
- Talking through solutions to problems in order to demonstrate a particular strategy
- Modelling regulated and controlled behaviour by not interrupting learners answers, reflecting before answering
- Encouraging learners to organise tasks and prioritise

### **Sharing**

Mediating the principle of sharing occurs when the adult and learner work on an activity and respond together. It involves being open and receptive to the opinions of others, being sensitive to their feelings. Opportunities for turn taking, problem solving with others in an empathic way not only develops a learner's cognitive skills but also their social skills. Activities that foster and develop sharing are as follows:

- Encouraging learners to help and listen to each other in a sensitive way
- Arranging opportunities for group activities
- Encouraging learners to share their experiences/problems with others

### **Individuation**

Mediation of individuation celebrates the diversity of people and encourages the learner to reach his/her potential. It can be likened to that of a person's fingerprint which is unique and different for every person. Helping the learner to understand and appreciate his/her uniqueness helps to build their independence skills. Ways to foster individuation are as follows:

- Encouraging independent and original thinking
- Allowing the learner to choose some activities in their daily schedule
- Creating an atmosphere of acceptance and tolerance
- Providing learners with tasks that build their independence skills

### **Goal Planning**

The mediation of goal planning encourages the learner to set goals and discuss explicitly the means for achieving them. The process involved is emphasised as much as the product. The mediation of goal planning can be fostered in the following ways:

- Modelling goal oriented behaviour by setting clear goals for learning activities
- Encouraging learners to set realistic goals
- Developing skills such as planning, reviewing and modifying goals according to changing needs and circumstances
- Encouraging perseverance and patience when completing challenging tasks
- Breaking down larger, long term goals into smaller, achievable steps

### **Challenge**

The mediation of challenge instils in the learner the motivation to attempt something new and the determination to persevere with something difficult while also being able to embrace novelty and complexity in an ever changing, fast world. Challenge can be mediated in the following ways:

- Modelling an open and excited attitude when faced with new/difficult challenges
- Encouraging creativity, curiosity when solving new tasks
- Creating appropriate opportunities for the learner to face complex tasks
- Acknowledging the learner's feelings of satisfaction and achievement
- Citing examples of people who have overcome challenges and achieved success in all areas of life
- Emphasising to the learner the positive aspects of a specific task even if the overall outcome was unsuccessful.



### **Self-Change**

The mediation of self-change develops the learner's capacity for ongoing self-change which is an integral aspect of becoming an independent, autonomous learner. Activities that foster self-change are:

- Encouraging self-evaluation of the learner's own progress
- Helping the learner to understand that change does not make him/her a different person
- Sharing positive perceptions of change with the learner

### **Optimistic Alternative**

This aspect of mediation is closely aligned with the concept of the 'glass half empty/glass half full'. Here the adult works with the learner to choose an optimistic rather than a pessimistic approach to a problem so that solutions can be found.

Activities to foster an optimistic outlook are:

- Encouraging the learner to view problems from different perspectives, opinions and points of view which helps the learner to recognise that there is never just one way to solve a problem
- Sharing examples of famous people who found positive outcomes to what could have been pessimistic futures
- Modelling 'glass half full' thinking
- Encouraging the learner to brainstorm possible solutions to problems

### **Sense of Belonging**

This is where the adult explains to the learner the importance of being part of a larger group settings, e.g. class, school, locality, clubs and society. The learner is helped to understand that we all belong and how we are connected to the generations who came before us and those that will come after us. Sense of Belonging is mediated as follows:

- Developing an inclusive classroom culture that includes all learners
- Exploring the roles and responsibilities people have in different groups, e.g. sports teams, musical and social groups
- Making connections with groups and organisations outside of the school setting, e.g. Gardaí, Tidy Towns
- Having culture awareness days in the class to understand and celebrate diversity

Appendix 21:

**Reflective Log –(Rolfe & Jasper ‘What Model’, 2001)**

<p><b>WHAT?</b> ...happened? ...was my role in the situation? ...was I trying to achieve? ...action did I take? ...were the consequences for me and the student? ...was the response of the student? ...feelings were evoked? ...was good/bad about the interaction?</p>	
<p><b>So What?</b> ...does this tell me about my relationship with my teaching and the student? ...did I base my actions on? ...should I have done? ...other knowledge can I bring? ...is my new understanding of what has occurred? ...other broader issues have arisen?</p>	

**Now What?**

...do I need to do to improve the interaction/situation?

...are the broader issues to be considered if new actions are to be successful?

...might the consequences be?

...can I do to transfer this learning to other contexts?

Appendix 22:

**Appendix 22  
Phase Analysis**

INPUT	ELABORATION	OUTPUT

**Task Analysis**

Content	Modality	Abstraction	Thinking Skills
What is the subject matter? Is the subject matter familiar? Can the subject matter be varied to aid understanding?	Written, verbal visual presentation?  Can the mode be varied?	How abstract was the task? How complex was the task? Can the learner be given opportunities to practise & consolidate?	List the thinking skills required?  How can these skills be mediated?

Appendix 23:

Okay, T1, thanks a million for meeting with me today to talk about just the mediated learning workshops. And just I suppose before we begin, in terms of your experience working in the autism class, what kind of experience or how many years have you been at it? Or is this a new post for you?

Unknown 0:20

Yeah. So this is my second year working in the post. So some would say that's new and some would say that's not new. For me. It's definitely still new. I'm just learning every single day every single week, and I don't even know less, no less than half of it. So yeah, I'd still say I'm very new to the setting. Yeah,

Unknown 0:36

brilliant. That's great. And I suppose, because this is kind of your second year, isn't it? Yeah. How confident do you feel? It's very different to the mainstream or it's very different to learn support as well. How confident do you feel as a teacher I suppose in developing your education, plans for the students in your class, do you feel you know, did you get a good handle on that? Or is this something that's really challenging for you?

Unknown 1:00

Um, I think this year, the second year, I feel like 100 times more competent and I definitely do have a handle on like, setting targets like I know the kids so well. At this stage like I I'm very in tune with them so I know exactly what they need. And last year, I was like a deer in the headlights and like looking back I only see how, how much like a deer in the headlights. I was like, I didn't feel it then because I was just running on oxygen like and just getting it on board. Now looking back I can see like what I didn't get last year on what I do get Niall and like I said, like every week that goes forward, I get more and more and more so like,

Unknown 1:37

it's kind of a learning curve, isn't it? It's such a different setting. Yeah, it's you couldn't explain that to other teachers who haven't worked that this is so different and probably different. To anything your training prepares you for your degree is my

Unknown 1:50

training. My degree did not prepare me the only thing that works is on the go experience like on the ground. Yeah, but like I can't even wait to get back to mainstream and use what I learned in this setting in mainstream because these behaviours are in mainstream children as well. Yeah, communication behaviours, all that kind of thing. So so the same

Unknown 2:08

strategies work except in in the mainstream class setting. So I suppose then in terms of kind of assessing your when you're kind of getting your education plans together for your students in assessing their needs, and trying to inform those plants. How good do you feel you're at that and been able to, you know, if you look at all the different components

that are part of an autism, I suppose an artistic students profile, how good do you feel you are kind of assessing those to help you set the targets

Unknown 2:38

I think at the like in September you're never good at it, because you're just you've just met the children and like some would even say like doing a plan at the end of September doesn't make any sense because you couldn't possibly know what you want those children to learn between September and June. And when you get to February you and you do the February review, you've got more of a clearer picture. Yeah. So like I just did my February reviews. They're gone in February, obviously. And those plans are a lot better than my September plans. They're more careful. Make

Unknown 3:07

sense? Yeah. Yeah, it's, it's very much just from visiting the classes I find. It's very much any it's always evolving and changing, isn't it? Like it's not where you can set out your targets in a mainstream class. Here, the targets keep changing as the needs become more apparent. So yeah, you're right. It's much more flexible. So I suppose just in terms of doing the mediated learning workshops, and thanks very much, by the way for doing them, just what was your sort of opinion and how do you think just the even without just when listening to the workshop, how do you think that something that could help you in this classroom setting Yeah, is it something or did you think, Oh, this was just too abstract. I just couldn't see how I could fit it in.

Unknown 3:50

I didn't think it was too abstract and I didn't like it didn't seem like it was impossible to like use in my classroom or in a similar setting. The only thing that I felt was that the children that I had certain children in mind going into the training that I wanted to like they were my focus children that I wanted to do the principles with. Yeah, I shouldn't have done that, because that those children that I had in mind, just their circumstances didn't match up with the principles. Yeah. Mostly because of communication issues. I think those principles will work very well with children who've got very good communication and are good at chatting and processing their emotions and things like that. Yeah.

Unknown 4:32

And I suppose that's something and even for me, that maybe I didn't flag it enough. And I've learned that too, that a to develop these skills. You need to start with a student or a pupil that as you say, has has reasonably good skills across a number of areas. Because as you say, two challenges with a particular number of students would make this developing these skills very, very difficult at the at this stage. So I suppose, is it something then you know, and we talked about dynamic assessment and how it was different to the kinds of stuff you're normally used to? It when I talked about that? Was that something that kind of you felt yet you know, that's what I think is well, you know, standardised scores don't really work for these children because you know, that they have just such varying needs, or was it something that you thought, Oh, my God, I don't know how this would fit in with my view of teaching, you know, they did it feel to fit in with what you, your kind of approach, or is it something completely? No,

Unknown 5:29

it's not completely alien, but again, it will work for a certain culture. I will not work for the other board.

Unknown 5:36

Fair enough. Fair enough. That's great. So I suppose like you said, so mediated learning you think would work with the students would have stronger I suppose. It's a communication occasion particular. Yeah.

Unknown 5:48

You're just like, you know, minor Junior infants. So they're four and five. Like they are very small. They're not thinking about things like that. So even a little bit older than mine. Yeah. Or like some of mine. Act like they're older and they think they're older. So like, you know, the ones who have very good communication. So

Unknown 6:05

patience seems to be an important one. Okay. So I suppose in order for mediated learning to work in this kind of a classroom setting, not just for you as a teacher, but this type of setting. What do you think needs to happen? You know, if you think that some aspects of this would work well, like what would you see are the kind of top tips that you be thinking, in order for this to work for teachers, this training needs to change in whatever way do you see anything that could be done differently to make it work you know, practically, because it has to be practical. You know,

Unknown 6:38

I think, like, I think I wish before I do the training, I knew more about what media mediated learning actually was. So that I could go into the training like kind of would have would have basic foundation understanding of it, whereas I went in like I'd never even heard before it was totally new and everybody Yeah, yeah. Yeah, maybe like some sort of like video tutorial like would be something like that. Maybe a nice one. Yeah, just like what a foundation I vote Yeah. And also, don't go into it with certain children in mind because as you know, like, I was hyper fixated on one of my ads. Yes, I was like, How can I do this with him? How could you do this? And I wasn't even thinking about like, yeah, the broader maybe isn't next year or get an older house or anything like that.

Unknown 7:23

I love that idea. That's a really nice one because a few teachers have said to me that the theory they felt one teacher loved all the theory, but she does a lot of courses and talk. Yeah. And then somebody else said to me, Oh, my God, I switched off when I heard it. I didn't watch around about you know, so actually your idea for the little kind of webinar recorded webinar that people could play back and just kind of get their heads around so that it saves me spending that time then we can get straight to was there anything else that you feel kind of top tips? So there's two of them, is there anything else to make it work like in this kind of a classroom setting? You know, that just having done the training, you know,

Unknown 8:01

I was actually gonna say to you the time of the day that we did the training Yeah. Which is absolutely wrecked when you get home I know. I know. Some teachers don't like to do weekend courses, but for if it's like, you know, I don't

Unknown 8:14

even know Do you know what I was thinking T1? Ideally, it would be nice to do this as part like training during the working day. Did you be released for the day to do a bit like incredible years. So I'm trying to make a case for that. And where and that's where I'm trying to gather all this information for because I think that's where it's too tight. I've done it in two different ways. I did it in the afternoon with your group. I did it with truly Education Centre in the evening, seven or whatever. time you had to have a day we're exhausted. Yeah, you are exhausted. So we need to get you on a day when you can actually clear your head. Yeah, so that to me, that would be my idea. I don't know what would you think of that? Then I

Unknown 8:52

had to do a release. Like the doing it off of zoom as well. It would be really beneficial.

Unknown 8:56

It's gonna ask you that online versus in personality. thing. It's like

Unknown 9:01

online there's a lot to be said for online. It's like really like if, like efficient, it's so handy for like, especially teachers, you've got kids and things like that. But there's like, we do switch off and we're put ourselves on mute. And we're looking around our room like it does happen scrolling

Unknown 9:15

the phone? Yeah, like I do. Yeah. We all do it. It's part of Yeah, I was thinking I don't What do you think of this idea? I kind of a hybrid model a bit like what you were saying maybe a recorded webinar, God introduced off or get you going to do the pre reading to get and then bring you together as a group for you know, maybe time released from you know, to the half day or whatever. And what did you think of the small group setting? You know, we went into breakout rooms and we did kind of talking about videos. Did you like that kind of a format? Okay, maybe in person, but did you like the idea of sort of working with colleagues

Unknown 9:51

to either side anyway, because I love chatting that out. Like, yes, that's how I learned and how I process what has happened in my day. You know, some people hate that. That's their worst nightmare. Like, for me, like I enjoy getting into smaller groups and like hashing things out, so yeah.

Unknown 10:07

Okay, brilliant. And so, was that what part of it did you find? ICU switched off from you know, just that you found you just really felt disengaged? Was there any was it the



tiredness factor? Or was it the some aspect of it that you found was, you know, just didn't really kind of grab your attention?

Unknown 10:25

I'd say mostly the tiredness. Like yeah, like 90% would have been that you did go ahead and go through the history like the guy who founded the principles of Stein. Yeah, like, I don't really care about him. Like maybe I love him, maybe. Yeah, I do like that. You do. Talk about where he has come from, like, Bush. Yeah. And I liked that you did like you focus on the first few principles like he didn't go into the whole hog like yeah, like I think what theory some teachers love that kind of love academia and some teachers don't. So you do have to break

Unknown 10:57

so in a way I wonder T1 if if the like reduce suggested which these are great ideas, see I don't think of these myself. If the webinar the kind of recorded thing, did the theory Yeah, then people have the choice. You can actually zoom along or you can go back and replay it if you're very interested. Because you have to try and some people know of all that and then some people don't and I think that'll be Yeah, that's a really good one actually, that's great. And what was the bit that you love? The most out of it, then what was the kind of thing that you took from it? We say the last session was trying to plan you know, the input elaboration output. Do you remember that? Yeah. And it was like like a computer screen. Some teachers found that really helpful to help them figure out where a child is having a barrier, you know, where they're hitting a roadblock. Did you find that helpful? Or planning you know, the dude remember watching the video of the little boy down syndrome, doing the video with his mom, and they were doing the reading activity and we were trying to figure out Yeah, whilst was you know where he's heading? What was that? Is that a helpful way practical thing for you as a class teacher here? To kind of think about, or was there something else jumped out as the kind of your takeaway message or the thing you liked

Unknown 12:05

my wife? I think I really liked when we watch the videos, and we had to pick out where we thought each of the credits was. Yeah. And that was, it was kind of reassuring to me. I was like, Oh, I actually can spot these things. But I only just learned about an hour ago like I'm already picking it up. Yeah. And then we were actually in the breakout rooms Yeah, talking about it as well seeing named the principal and you named where you saw the video. Yeah. I also liked where we made videos like yeah, because you we saw that we didn't see on a daily basis. So I think that part yeah, yeah. Kinda needs

Unknown 12:37

good. Okay. And do I there was something come into my head the language that was something somebody else mentioned to me, no intentionality and reciprocity. I know where did where did he come up with it? But anyway,

Unknown 12:48

the words are hard, you know, transcendence and when you said, bridging Yeah, if you gave another synonym for the word more for layman's yes that like sort that out as well. Yeah, yeah. Because the minute you said bridging I was like, Okay, now Yeah,

Unknown 13:03

and that's it and I kind of I based it on his he's even if you watch his videos like It's like he's from another generation Yeah, time, but he's even for another like it's even older. He's very, very antiquated way speaks Yeah, but I think that can be modernised. But I suppose I wanted to give you the sort of the original. Yeah, and let's see. Oh, yeah. And then let's see how we can we can kind of modernise it, make it a bit more contemporary, because that's what other people have done. You know, so anything any other tips for me, okay, if I want to make this work for teachers, and I want teachers to take this on board, and I want it to become part of this kind of a classroom setting. What would you advise me to do?

Unknown 13:41

I think the practical elements were the things that keep you going on a day like that at the end of the day and keep you engaged like watch the videos. Yeah. So if you had more little tasks like that, yeah, yeah. More videos and more examples of it. Yeah. Like, actually, when you were doing it with your niece getting in the game, like it was nice to see it in practice. Yeah. Just more of

Unknown 14:01

that. Okay. And more of examples of it. And what about the YouTube clips like Did that help? I tried to put in a few funny ones as well, just to kind of, you know, to lighten it up a little bit and sheets creek or whatever, but, you know, is that something people like because some people like that, and then other people didn't know, you know, didn't know what I was talking about? Like I thought a lot of people have watched it does kind of lighten it a bit. Or you know, yeah,

Unknown 14:24

it lightens up first of all, but also just makes it relevant. Yeah. Okay, so we're gonna because everyone watches, so we're like, oh, that's what we're actually learned about. We've seen that before. Like, we do it. Yeah, we do it. We do it.

Unknown 14:36

exactly. Brilliant. Great stuff. Super. Thanks so much. Thanks a million. That's great.

Appendix 24:

Qualitative Analysis of 5 interviews

<b>Anchor Code</b>	<b>Teaching experience in a specialised autism class</b>
Empirical Indicator 1(EI1)	
EI1 (a)	New to job
EI1 (b)	Teaching confidence increasing
EI1(c)	Skills transferable to other class settings
EI1(d)	Loves teaching in special class
EI1(e) & EI1(h)	Extensive experience in special class setting 9 years plus teaching in autism class
EI1(e)	Challenging role, need to be flexible
EI1(f)	Very rewarding
EI1(g)	Feel isolated from other teaching staff
EI1(i)	Completed extensive training
<b>Anchor Code</b>	<b>Challenges of developing interventions and support plans for autistic students with complex needs</b>
Empirical Indicator 2 (EI2)	
EI2 (a)	Learning targets constantly evolving
EI2 (b)	Assessment aspect of planning is challenging
EI2 (c)	Collaboration with colleagues important
EI2 (d) & EI2(h)	Not enough time for planning
EI2(e)	Confident planning interventions
EI2(f)	Support from 'experts' for confidence building
EI2(g)	Not confident developing interventions
EI2(i)	So many complex needs, prioritising is challenging
EI2(j)	Important to connect with student first
EI2 (k)	Daily practice of skills to be effective
<b>Anchor Code</b>	<b>Opinions of mediated learning training</b>
Empirical Indicator 3(EI3)	
EI3 (a)	More appropriate for verbal children
EI3 (b)	Not suitable for non-verbal children
EI3 (c)	Start with a less complex child to build skills
EI3 (d)	MLE framework builds reflection skills
EI3 (e)	MLE highlights relationship with learner is key
EI3(f)	Names skills teachers use unconsciously

EI3(n)	Highlights that teachers are already doing MLE but not aware of it
EI3(g) EI3(p)	Visual of MLE framework facilitates planning & feedback The visual of the wheel is really helpful
EI3(h)	Enjoy collaboration with colleagues
EI3(i)	Too much theory, switched off
EI3 (k)	The importance of ‘meaning’ for meaningful learning
EI3(l)	Empowers teachers by choosing content and strategies
EI3(m)	Strengths based
EI3(o)	Terminology is off-putting
<b>Anchor Code</b>	<b>Suggestions as to how mediated learning can be developed to make the interaction approach more effective in the autism class setting</b>
Empirical Indicator 4 (EI4)	
EI4 (a)	Pre-training tutorial (video) that explains the theory
EI4(b)	Training during the school day
EI4(c)	Hybrid training that appeals to all
EI4(d)	Problem solving with colleagues
EI4(e)	Having a recorded webinar as a reference
EI4(f)	Video clips of good practice
EI4(g)	Critiquing own video clips for reflection
EI4(g)	Use contemporary language
EI4(h)	Making own videos helps to develop understanding & confidence
EI4(i)	Theory to explain the background
EI4(k)	2 days of training away from the school
EI4(l)	A practical focus on how MLE can be used in class
EI4(m)	Teachers have opportunities to observe, model and practice skills
EI4(n)	Use the autism teachers’ cluster group for practice
EI4(o)	Have an ‘expert’ in MLE to facilitate practice
EI4(p)	Video clips of MLE in everyday lessons
EI4(q)	Integrating the skills into daily activities
EI4(r)	Face to face training
EI4(s)	Videos of teacher using MLE with pre/non-verbal children

EI4(t)	Link MLE with other autism interventions
EI4(u)	Develop a training booklet
EI4(v)	A rating scale to develop practice
EI4(w)	An Irish version
EI4(x)	Training that includes mainstream teachers
EI4(y)	MLE training for SNAs
EI4(z)	Acronyms to facilitate recall of ML principle
EI4(AA)	Train ½ experts in each school
EI4(BB)	Deliver training in stages
EI4(CC)	Link MLE skills to Autism Good Practice Guidance
EI4(DD)	Online is more convenient for family life
EI4(EE)	Develop a reflective log for teachers

Appendix 25:

Frequency Tables of Anchor Codes

*Teaching Confidence*

<b>Code</b>	<b>Count/Frequency</b>	<b>Number of cases</b>
New to job	2	2
Teaching confidence increasing	2	2
Skills transferable to other class settings	1	1
Loves teaching in special class	1	1
Extensive experience in special class setting nine years plus teaching in autism class	2	2
Challenging role, need to be flexible	4	2
Very rewarding	2	2
Feel isolated from other teaching staff	1	1
Completed extensive training	2	2

*Note: "Count" represents the number of times a code is assigned to empirical indicators found in the data. "Case" represents the number of participants' transcripts connected to a particular code.*

*Challenges for Teachers*

<b>Code</b>	<b>Count/Frequency</b>	<b>Number of cases</b>
Learning targets constantly evolving	3	3
Assessment aspect of planning is challenging	3	2
Collaboration with colleagues important	1	1
Not enough time for planning	2	2
Confident planning interventions	1	1
Support from 'experts' for confidence building	2	2
Not confident developing interventions	1	1
So many complex needs, prioritising is challenging	1	1
Important to connect with student first	1	1

Daily practice of skills to be effective	1	1
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*Note: "Count" represents the number of times a code is assigned to empirical indicators found in the data. "Case" represents the number of participants' transcripts connected to a particular code.*

### *Opinions of Mediated Learning Training*

<b>Code</b>	<b>Count/Frequency</b>	<b>Number of cases</b>
More appropriate for verbal children	2	2
Not suitable for non-verbal children	3	3
Start with a less complex child to build skills	1	1
MLE framework builds reflection skills	5	4
MLE highlights relationship with learner is key	3	2
Names skills teachers use unconsciously Highlights that teachers are already doing MLE but not aware of it	5	3
Visual of MLE framework facilitates planning & feedback The visual of the wheel is really helpful	5	3
Enjoy collaboration with colleagues	1	1
Too much theory, switched off	1	1
The importance of 'meaning' for meaningful learning	2	1
Empowers teachers by choosing content and strategies	1	1
Strengths based	1	1
Terminology is off-putting	1	1

*Note: "Count" represents the number of times a code is assigned to empirical indicators found in the data. "Case" represents the number of participants' transcripts connected to a particular code.*

### *Factors to optimise training.*

<b>Code</b>	<b>Count/Frequency</b>	<b>Number of cases</b>
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Pre-training tutorial (video) that explains the theory	1	1
Training during the school day	2	2
Hybrid training that appeals to all	1	1
Problem solving with colleagues	6	4
Having a recorded webinar as a reference	1	1
Video clips of good practice	3	2
Critiquing own video clips for reflection	4	4
Use contemporary language	4	3
Making own videos helps to develop understanding & confidence	3	3
Theory to explain the background	2	2
2 days of training away from the school	1	1
A practical focus on how MLE can be used in class	2	2
Teachers have opportunities to observe, model and practice skills	2	2
Use the autism teachers' cluster group for practice	1	1
Have an 'expert' in MLE to facilitate practice	1	1
Video clips of MLE in everyday lessons	2	2
Integrating the skills into daily activities	3	3
Face to face training	2	2
Videos of teacher using MLE with pre/non-verbal children	1	1
Link MLE with other autism interventions	2	1
Develop a training booklet	1	1
A rating scale to develop practice	2	2
An Irish version	1	1
Training that includes mainstream teachers	1	1
MLE training for SNAs	2	2
Acronyms to facilitate principle recall	1	1



Train 1 or 2 experts in each school	1	1
Deliver training in stages	2	2
Link ML skills to Autism Good Practice Guidance	2	1
Online is more convenient for family life	1	1
Develop a reflective log for teachers	1	1

*Note: "Count" represents the number of times a code is assigned to empirical indicators found in the data. "Case" represents the number of participants' transcripts connected to a particular code.*