Facilitating Greek young learners with Asperger's syndrome into the mainstream English as an Additional Language (EAL) classroom through the use of Interactive Whiteboard Technologies

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Students on the spectrum are often seen as having difficulty in learning a foreign language. This assumption often works as an additional barrier to their successful integration in the mainstream education, robbing them of one more learning opportunity in comparison to their peers. Their abilities have often been overlooked or underestimated and their needs have been given low priority. However, on the basis of their cognitive abilities children with Asperger syndrome are attractive candidates for inclusive education although some teachers still express their concern. Obstacles to participation reside mainly in the environment and such barriers can be eliminated as new technology seems to offer exciting opportunities to that end. This study explores ways to facilitate the learning and inclusion of students with Asperger syndrome in English as an Additional Language through the use of the Interactive Whiteboard. Recent literature has indicated a plethora of ways to support children’s learning through the use of the Interactive Whiteboard. The research took place in a language school in Greece and a case study approach was employed with naturalistic observations and semi-structured interviews so as to investigate how the Interactive Whiteboard as a teaching and learning tool enhanced the teacher’s pedagogical practices and allowed her to meet the specific needs of the two participants. The case study also reports on various strategies that can potentially help students with Asperger’s syndrome meet their learning objectives. Findings suggest that new technologies offer new answers to barriers for children’s participation in education and social life but also that inclusion is inherently dependent on the
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teachers’ perception of technology as a facilitating factor, on their attitudes towards children’s with Asperger’s syndrome needs, in-service training and on the provision of sufficient resources.

**Keywords:** Asperger’s syndrome (AS), English as an Additional Language (EAL), Interactive Whiteboard (IWB), Inclusion
INTRODUCTION

Children with Asperger syndrome are typically in the normal or higher range of cognitive and intellectual ability (Choi & Nieminem, 2008). Thus, most children with Asperger syndrome are placed in mainstream schools. However, such factors as an inclusive school culture and appropriate teacher training have been overlooked.

Students with Asperger’s syndrome interact with peers but often in an odd and self-centered way as they have difficulty with social communication (Wing, 1981; Howlin & Goode, 1998). They also take language literally (Attwood, 2006) and find it difficult to understand and predict actions of others (Baron-Cohen, 2008). This has often prevented them from having an equal opportunity to fulfill their cognitive potential. This is so in the field of foreign languages (Oda, 2010).

In recent years technology enhanced education and there is a significant body of research in the area of digital technologies and Asperger syndrome. There is limited research, however, into the use of Interactive Whiteboards (Interactive equipment used in conjunction with a laptop and a projector to incorporate software, Internet links and data projection) in relation to pedagogical practices in foreign language classrooms and especially children with Asperger’s syndrome. With the inevitable proliferation of new technologies in the classroom the role of the teacher is changing. Teachers who are enthusiasts have immediately integrated Interactive Whiteboards, others have been cautious and a few have ignored them. As Wheeler (2001) states some teaching resources become obsolete, computer based testing
will make older forms of assessment redundant, teaching strategies and resources can be shared through the internet. Therefore, teachers, including those of children with Asperger’s syndrome must begin to reappraise the methods by which they meet children’s learning needs.

The move towards mainstream inclusion, which has been largely welcomed, is not always fully supported with adequate training or resources. Many teachers in mainstream schools regard the education of students with Asperger’s syndrome outside their responsibility as they feel teaching lessons concerning social and life skills teaching as the work of special education teachers.

In order to avoid barriers to these students’ learning and participation, there is a need to shed light on teachers’ perceptions and beliefs.

Language learning is a powerful tool for building tolerant and inclusive multicultural societies. Success in foreign language learning extends beyond communicative competence and includes personal and social development, tangible advantages in the job market, reduction of isolation, opportunities for meaningful communication and increased ability to understand and empathize across cultural lines. The assumption that people with autism have less ability to acquire foreign languages still prevails, although many studies indicate that their language development is unhindered (Hermelin, 2001 cited in Oda, 2010; Wire, 2005; Attwood, 2006; Besnard, 2008 cited in Oda, 2010).

This research examines the practical experiences of a teacher integrating the Interactive Whiteboard into her practice in an effort to meet the curriculum and at the same time to facilitate learning of English as an Additional Language for
students with Asperger’s syndrome. Findings report on how the Interactive Whiteboard can be used to support and enhance classroom learning and meet the specific needs of children with Asperger’s syndrome.

The study took place in a language school in Greece and reports on the practical experiences of a teacher through the use of the Interactive Whiteboard in order to meet the curriculum and meet the needs of students with Asperger’s syndrome. Several strategies are also mentioned that could be applied in a school environment to facilitate the learning of English as an Additional Language for students with Asperger’s syndrome.

Social skills instruction is also necessary to enhance the quality of life for this group of students. Appropriate behaviour can be modelled and reinforced with the use of new technologies in the English as an Additional Language classroom as a means for social development. The literature suggests that incorporating the student’s with Asperger’s syndrome special interests into activities may help improve their socialization with typical peers (Koegel et al., 2001). Findings of this study also report on the high levels of social engagement and initiation occurred when the activities on the Interactive Whiteboard incorporated the students with Asperger’s syndrome preferred interests.

Earlier literature on Interactive Whiteboards introduced the notion of interactivity within the setting of Interactive Whiteboard use (Smith et al., 2005) and showed numerous ways to in which teachers can make use of the Interactive Whiteboard to support learning. This study indicates that learners can use the Interactive Whiteboard interactively during whole-class teaching.
and this offers opportunities to exchange ideas, pose questions and reconcile informal ideas. New pedagogic practices are possible because lesson plans and resources can be stored and are accessible at any time.

The role of the teacher is pivotal in orchestrating the use of the Interactive Whiteboard for learning guiding students, ensuring objectives, extending skills and providing challenge.

Education is regarded as an effective tool to prevent not only unemployment but also marginalisation and social exclusion. Teachers should avoid labelling pupils and promote fully inclusive environments.

Providing equal opportunities of foreign language learning to everyone including children on the spectrum relates to fundamental human rights. Creating an “autism friendly society” does not necessarily have to be very difficult or costly. The types of adjustments required can often be small and easy to do, with a bit of creativity and a lot of empathy (Slee, 2011).

Children with Asperger’s syndrome deserve no less.
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LITERATURE REVIEW

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1. Inclusion in the mainstream class

This research project attempts to explore the potential educational and inclusive impact of Interactive Whiteboard-related technology in the English as an Additional Language (EAL) classroom for students with Asperger’s Syndrome in Greece. As such this research touches upon the professional (the “what”) and the ethical (the “how to” best), of the teaching-and-learning process, in this specific educational setting. In the particular case of my project the “what” and the “how to” are connected to and constrained by the local characteristics of the English as an Additional Language classroom and the perceived social significance of learning English in Greece, the transformation that interactive technologies bring to the English as an Additional Language pedagogy and what it means to be a student with Asperger’s syndrome. My perspective is one of inclusion in the mainstream class.

1.1 Inclusive education

Education is the key for inclusion and social justice. Inclusive education is every child’s right. However, the daily reality life for children with disabilities and their families is frequently one of discrimination and exclusion, in all countries of the world (Slee, 2007). Inclusion and inclusive education are concerned with the quest for equity, social justice, participation and the removal of all forms of exclusionary assumptions and practices. It is based on a positive view of difference and considers all pupils as valued and respected members of the school community (Zoniou-Sideri & Vlachou, 2006).
Schooling operates as a field of application for disciplinary power (Allan, 1999) cited in Slee (2007) and two discourses are represented: the normative discourses and the deficit discourses. Therefore, inclusion implies a restructuring of mainstream schooling so that every school can accommodate every child irrespective of disability and ensure that all learners belong to a community (Avramidis & Norwich, 2010).

Inclusive education has its origins in debates between academics and in the emerging politics of disability which questioned the construction of “normality” (Slee, 2011). The World Conference on Special Needs Education, organized by UNESCO and held in Salamanca, Spain, in 1994, recommended that inclusive education should be the norm. Struggles for inclusion were passed into international law with the adoption, in December 2006, of the United Nations Convention on the Rights of Persons with Disabilities within the concept of “Nothing about Us without Us”.

Until recently the separation between mainstream schooling and special education rested upon the idea of separate kinds of education for different kinds of children. This challenge has arisen from the “deficit” model (Armstrong et al., 2010) as special education labels children as having intellectual, social or physical deficits.

However, there are also other perspectives. The “social” model was born in the 1970s by activists in the Union of the Physically Impaired Against segregation (UPIAS) and was given academic credibility via the work of academics like Vic Finkelstein (1981), Colin Barnes (1991) and Mike Oliver...
(1996) (cited in Shakespeare et al., 2002) in the UK. According to the social model of disability people are disabled by environment, attitudes and stereotypes and education looking at education through an inclusive lens implies a shift from seeing the child as the problem to seeing the education system as the problem.

On the other hand using just the term “difference” does not necessarily resolve the problem of norm referencing. Boucher (2009) points out that parents and carers of children with autism do not see their children as “merely different”. We cannot value diversity by underplaying, essentially denying, the seriousness of the difficulties such children face (Boucher, 2009).

Nowadays, throughout the world, departments and ministries of education are setting policies on inclusive education. The trend in social policy during the last two decades has been to promote integration and participation and combat exclusion (Rix et al., 2010). Education is academic, but it is also social, learning how to live in a community, learning about differences. The child’s right to education is enshrined in human rights treaties. According to the Policy Guidelines of UNESCO (2009) “Inclusive education is a process of strengthening the capacity of the education system to reach out to all learners”.

Rights and justice have always offered for action. The focus on social justice is in the context of a module focusing on issues of equality, participation and inclusion (Rix et al., 2010). Advocates of inclusive education challenged mass modern education which isolates children who disrupt the assembly line from
mainstream classes. Armstrong et al. (2010) state that the question of how schools can become more inclusive cannot be seen in isolation from the question of whether the educational systems in which they are located are becoming more inclusive. To this respect inclusive education is first and foremost a political decision (Slee, 2011) and education reform is a key for achieving social integration and cohesion.

1.2 Inclusive education in Greece for children with autism: A historical review

Historically the educational inclusion of students with autism in Greece has been a fiercely controversial issue. In the past students with autism tended to be segregated from their peers (Syriopoulou-Delli, 2010). However, education provided by schools in Greece does not take place in a vacuum. It is not an island. It cannot be fully understood unless set against the general mainstream education and culture in Greece.

In a number of Western countries, the trajectory of segregation, integration and inclusion seems to have marked the change in thinking about disability. Alongside this shift from exclusion to inclusion, history had a vital role to play in different national cultures (Symeonidou, 2009). Greece has followed a similar path. Individuals with pervasive developmental disorders first attracted the attention of the Greek state and the private sector in the late 1950s. Until then disability was defined as a “personal tragedy” and the state considered psychological disorders as a threat to society (Syriopoulou-Delli, 2010).

The years from 1828 -1945 was a period of slow change in Greece for people with special needs remaining in the care of their families and consequently
strongly prejudiced. The educability of people with special needs was the main principle dominated the first phase of development of special education in western countries. However, children with special needs in Greece were considered inferior to others as Syriopoulou-Delli (2010) states. Military adventure and wars were the main factors that led to the postponement of new legislation. The Greek state after World War II could barely organize an education system. The period of economic competition between the powerful economic and political blocks played an important role in educational reform in Greece. Mass education became established and the dominant ideology was that no child should be uneducable. At the end of 1960s social care had as an aim the cultivation of psychological health for affected individuals and their families. The “mentally deficient” were stigmatized and marginalised but a percentage of these people could become productive members of society (Kalantzis et al., 1973) cited in Syriopoulou-Delli (2010). By 1980 the state founded the Bureau of Special Education and reorganised its responsibility in undertaking measures for the facilitation of these children so that their needs be met as far as education and social integration were concerned. A main shift occurred at the beginning of the 1980s when the state instituted special schools for the education of the students with disabilities. However, Special Education was an independent part of the education system. From the beginning of the 1980s there were changes in the political scene and the perception of special education began to change. This change was reflected in the Law 1566/1985 where the term “people diverting from normal” was replaced by the term “people with special needs”. The Ministry of Education
promoted school and social integration of children with special needs. Syriopoulou (2010) states that the private sector began to adopt similar principles. Children with (PDD) Pervasive Developmental Disorders had finally access to the education system. Law 2817/2000 changed the term “people with special needs” to “people with special educational needs”. According to this law people with special educational needs are considered those with severe learning and adaptation difficulties due to physical, mental, psychological, emotional and social needs. This new law introduced the idea of integration and proposed the function of “one school for all”. In 2000 classroom practices in mainstream Greek schools which include children with Special Educational Needs (SEN) depend on the support of special classes, the supportive special education teacher and the relevant interest of special education advisor (Faragoulitaki & Markakis, 2000). The first step of class inclusion is the referral of the SEN child to the diagnostic center for a detailed diagnosis and the suitability of the child for inclusion in common classes.

The renaming of “special classes” to ‘inclusive classes” was one of the ways that education policy in Greece responded to the impetus of inclusion (Law 2817/2000). There has been a complex bureaucratic assessment and evaluation process for identifying students with disability. The medical model dominates in the education system requiring children to be “labeled’ with a disability recognized before put in school classes. Inclusive classes have been separate class rooms where children spent a lot of school time. This model avoids “contaminating” the mainstream education with special education intervention (Zoniou-Sideri et al., cited in Slee 2010). Thus the


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“deficit” model dominates in the Greek context as support classes reinforce social divisions and marginalization.

8 years later another Law (3699/2008) provides special education to students with special educational needs which aims to develop their personality and enable them to participate independently in family, vocational, social and cultural life. Factors that influenced the development of state policy particularly for children with autism and Pervasive Developmental Disorders have been the rapid growth of those on the autistic spectrum, the role of parent associations who demanded a child’s right to education and the introduction of technology in education which has contributed to the creation of alternative forms of education (Syriopoulou-Delli, 2010).

The inclusive discourse in Greece is at the moment characterized by change in policy and practice. However, there is a distance between the strong voices and the weak practices that characterizes the Greek inclusive discourse (Zoniou-Sideri et al., 2006). Weak practices cannot challenge the existing inequalities although the beginning of the 21st century seems to be a serious starting point of a new era for the Greek inclusive discourse since socially excluded groups have been identified and tailored policies have been provided for them.

There’s a huge gap between rhetoric and reality in the Greek society. There are several obstacles to inclusion due to the centralized system, entirely controlled by the Ministry of Education, which favours the integration of students more than their inclusion as Strogilos (2012) mentions.
The educational system in Greece, which is extremely centralised and firmly controlled by the state, encourages in many respects uniformity and separation. The Ministry of Education implements all educational policies providing identical processes throughout the country. Greek schools are obliged to follow a common school policy, a strict academically oriented national curriculum. It is the Ministry that selects teachers, employs the same textbooks for all students and all students must work on the same materials regardless of ability, interests and learning styles (Vlachou, 2006). Although this uniformity reflects recent political rhetoric towards strengthening equality and modernization of education, it also demonstrates the unwillingness of an inflexible system to negotiate educational processes and meet the diverse needs of its pupils (Strogilos, 2011).

Relevant literature reveals that European countries differ on the extent of separate special educational provision (Tisdall, 2006; UNESCO, 2005). European countries differ considerably in their categorisation of children with disabilities, the implications of such categorisation for assessment, subsequent rights to support, and educational paths (Tisdall, 2006). There are similarities and interesting differences in local practices and policies among countries. Some of these differences could be attributed to long-standing cultural traditions and local political character and some could be influenced by linguistic differences (Jahnikainen, 2011). According to Hofstede (2001) societies, organisations and groups have ways of conserving and passing on ways of thinking from generation to generation with an obstinancy that is often underestimated.
Inclusion is not simply an issue of placement. The reform of education systems is not only a technical task; it depends, above all, upon the conviction, commitment and good will of the individuals who constitute society. A focus on the local culture might be a starting point for the transition from mere rhetoric to the conceptualisation of inclusion (Symeonidou, 2009). The common sense understanding of disability in Greece, which remains very powerful even today, is seen as a “benevolent humanitarianism” (Zoniou-Sideri, 2006). Thus the need to trace the roots of specific cultural features that impede inclusion and educate the Greek society to the acceptance of “difference” and to the change of existing norms, prejudices and discriminations. The Greek society is not uncaring or exclusionary at all respects. Nevertheless, although it is painful to admit it, we have inherited a culture that does not often favor inclusion in terms of disability (Symeonidou, 2009).

1.3 Teachers’ attitudes towards inclusion

“Education for All” is closely linked to inclusive education. It is still a challenge and an unrealised wish for a lot of people with disabilities and their parents. To be able to organise education in an inclusive way requires commitment to the idea of inclusion and to the richness of diversity.

However, many teachers in mainstream schools in Greece regard the education of SEN children outside their responsibility as they feel teaching lessons concerning social and life skills teaching as the work of special education teachers (Faragoulitaki, 2001; Padeliadou, 2006; Avramidis et al.,
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Empirical evidence suggests that teachers feel teaching a class of 25 children including 5 SEN children is a daunting task. Sometimes parents prefer private schools because they do not want their children to become outsiders in state integration classes. Thus, in order to avoid barriers to students’ learning and participation, there is a need to shed light on teachers’ perceptions and beliefs that bear on teachers’ educational provision for students with SEN.

There is evidence that the school environment can become a barrier for students with Asperger’s syndrome instead of a facilitator for participation (Humphrey and Lewis 2008a). With the growing number of students with Asperger’s syndrome in the mainstream classroom, a vital factor in facilitating learning and participation for these students is the way school professionals understand them, and are able to adapt the school environment accordingly (Jordan 2005; Parsons et al., 2011).

As Lipsky and Gartner (1997) state there are some essential elements for the successful functioning of inclusive education: collaboration of teachers, support for staff and students, effective parental involvement, refocused use of student assessment, curricular adaptation and effective instructional practices and appropriate levels of funding. Special education teachers tend to have a more positive attitude to inclusion than their mainstream counterparts (Lampropoulou & Padeliadou, 1997). Teachers may endorse general statements in favor of having SEN children in regular classrooms, but it is another matter entirely how willing they are to make specific adaptations for these children (Avramidis & Brahm, 2002).
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In addition, teachers in Greece have been left on their own to develop pedagogies which promote inclusion (Strogilos, 2011). Extensive opportunities for teacher training at the pre- and in-service levels should be seen as a top priority for the policy makers (Avramidis & Norwich, 2010). The move towards mainstream inclusion, which has been largely welcomed, is not always fully supported with adequate training or resources. (Roberts et al., 2012). Rogers (1993) states that “The best teachers in inclusive classrooms are simply the best teachers. The best teachers teach each individual student rather than trying to gear instruction to the average of a group”. Training and professional development opportunities must be utilized to ensure that teachers master the essentials of the “new” role (Florian, 1998).

A new reform is at the moment taking place in Greece. With a new law 3879/2010 article 26, all students will be included in the mainstream school and teachers will be trained and helped by special education teachers within the school community. This new policy is funded by the European Union (ESPA, A School for All). Many concerns have been expressed so far, especially by state school teachers who feel there was not enough time for training and the results of this policy remain to be seen (Coutsocostas & Alborz, 2009). However, the law is not enough for an inclusive education and with the prevailing practices in Greece isolation of SEN children is on the increase (Gena, Alevizos et al., 2013).

The modern discourse of “accountability” and “choice of diversity” are central to every educational system. However, the power of the bureaucratic state is evident where the interests of the Market dictate education policies and trade
unions, teacher organizations and political opponents are perceived as a threat (Slee, 2010). Creating an “autism friendly society” does not necessarily have to be very difficult or costly. The types of adjustments required can often be small and easy to do, with a bit of creativity and a lot of empathy.

Being raised in the given cultural context a class teacher in Greece cannot easily escape from a conventional way of thinking and a set system of values unless there is a systematic effort to an alternative direction (Symeonidou, 2009; Vlachou, 1997).

On the other hand Slee (2006) argues that the special/regular domination of the field still serves interests and thus inclusion is more about discourse than practice. That is why we see countries like Greece where while the rhetoric is in place the actual practice lags behind.

Research is needed to examine additional factors which influence the formation of positive attitudes towards inclusion. The bigger challenge is in helping society to want to include people with autism – changing attitudes and perceptions of wider society and abolish labeling is even more difficult. Teachers cannot make inclusion work in isolation. As there is no theoretical formula for “doing” inclusion, collaborative negotiation, flexibility and creativity informed by an understanding of autism will be vital (Ravet, 2011).

2. Asperger Syndrome (Asperger’s syndrome)

Asperger syndrome achieved its status as a specific diagnostic entity about 20 years ago. It was only after the death of the Austrian paediatrician Hans
Asperger, that ‘his’ syndrome received widespread recognition outside central Europe. In 1981, Lorna Wing, a British autism expert, published a paper in which she coined the term ‘Asperger’s syndrome’. Over the last 20 years there has been a huge expansion in the number of people receiving the diagnosis Autistic Spectrum Disorder/Asperger syndrome in Europe and the USA – up to 1000%, according to some estimates (Grinker 2007; Fombonne 2005a) cited in Gillberg (2002). According to Gillberg (2002) people with Asperger are an enormous asset to humankind.

### 2.1 Definitions and Characteristics

One of the most common definitions in the literature is the following: Autism is defined as a lifelong complex developmental disorder that typically appears during the first three years of life and affects the way a person communicates and relates to people (APA; Autism SA; Gilberg, 2002). Since 1943 when Kanner described ‘early infantile autism’ and 1944 Asperger 1944 identified ‘autistic psychopathy’ (cited in Fitzgerald & Lyons, 2007), we have learned quite a lot about it, but still not enough to truly understand this puzzling “functional diversity”.

Asperger syndrome with characteristics first described by Hans Asperger (1944), lies on the autistic spectrum but is characterized by “high functioning” relative to “classic” autism. It is an autism spectrum disorder (Autistic Spectrum Disorder) characterised by significant difficulties in social interaction and communication, unusual patterns of narrow interests and unique stereotyped behaviours in spite of an average and above IQ (APA, 2000).
It was Wing (1981) who brought Asperger’s syndrome to the attention of the public. In her 1981 paper Wing (cited in Wing, 1996) argued that autism could not be captured by a few static criteria, but that there were striking individual differences and changes with development. She suggested autism could be manifest in socially odd behavior just as in aloofness. Wing found that children with odd rather than aloof behavior were often talkative. Asperger syndrome has now become a “household name”. However, Klin, Volkmar and Sparrow (2000) demonstrate that what we know about Asperger syndrome is still very scant. The prevailing view is that Asperger syndrome is located at the milder end of the spectrum of autistic disorders (Frith, 2004). The term “high-functioning autism” is interchangeable with Asperger syndrome. It is less stigmatizing and allows for the fact that at least some individuals are able to cope with minimal supervision and help. Individuals with Asperger’s may find ways to conceal their difficulties and present as normal though anxious and isolated (Willacy, 2006).

Literature on the Autistic Spectrum Disorders converges on the assumption that people with Asperger Syndrome have difficulties not only in communication and social interaction but also a tendency to rigidity and inflexibility in thinking (Baron-Cohen, 1985, pp 37-46). They have difficulty in recognizing or understanding others’ thoughts (Baron Cohen, 1990), difficulty in expressing and understanding their own emotions (Frith, 2004) and in the appreciation of discursive moves such as humor (Lyons & Fitzgerald, 2004). Learning difficulties are not a diagnostic feature of Asperger syndrome (American Psychiatric Association, 2000). Difficulties with social interaction,
however, have been consistently found to be the most significant factor impeding success in adaptive functioning and employment (Howlin & Goode, 1998). There is also considerable debate concerning the intellectual abilities of people with Asperger syndrome (Abele & Grenier, 2005; Gillberg, 2002; Safran, 2002; Myles & Andreon, 2001; Attwood, 1998).

On the other hand, the philosopher David Buller (2005) argued that autistic individuals often appear to have failed to acquire a degree of insight into the actions and feelings of others because they have habitually shunned the painful social contact that is required for learning the tacit interpersonal and psychological skills of everyday life.

The American Psychiatric Association (APA) has recently replaced the name Asperger syndrome with the collective term “Autistic Spectrum Disorder”. This is characterized by difficulties with verbal and non-verbal communication and has caused a lot of heated debate among the scientific community as many feel that communication problems are rarely the basis of difficulties with social interaction. The National Autistic Society (2013), however, reports that communication problems are often rooted in difficulties with social communication and interaction.

However, medical labels should be regarded as hypotheses rather than objective certainties since positivist notions of ultimate “truth” and “reality” are challenged on epistemological and ontological grounds within a social constructivist framework (Gillman, Heyman and Swain 2000 cited in Ravet, 2011).
Many educational researchers concede that the medical model is highly problematic (Frith, 1991; Molloy & Vasil, 2004) cited in Ravet (2011) and distance themselves from the “autism as disease”. The medical model has been also challenged over the past two decades especially by individuals with autism who have suffered the consequences of negative labeling (Jordan, 2006; Lawson, 2008) cited in Ravet (2011). The social model of disability which has emerged as an antidote to the medical model has located the “problem” or “deficit” within the environment rather than within the individual as mentioned above. Individuals should have a much greater say in the construction of a diagnosis and have a choice to accept or reject it (Gillman, Heyman and Swain 2000, cited in Ravet, 2011).

If we use the traits that are associated with Asperger’s syndrome as a lens through which to view these social currents then our present world seems to present more obstacles to anyone who prefers routine, stable and predictable environments over complex and fast changing ones and who shuns social engagement in favour of tightly focused instrumental or intellectual tasks, whether in the classroom, the workplace or the home (Ecclestone and Hayes 2008; Furedi 2003; Sennett 1998 cited in Moloney, 2010).

Insofar as such a person failed to conform to the norms preferred by the main economic and political interests that help to shape our lives, then they might come to be seen as ‘odd’ or even as ‘pathological’, in time attracting the attention of educationists and clinicians eager to expand their professional domains in response to parents and other carers, many of whom will have
understandable fears that their children will not fit in or might miss out in some way (Slee, 2010).

2.2 Asperger’s syndrome and Schooling difficulties

Most students with Asperger’s syndrome receive their education in mainstream classrooms with teachers who have limited experience and training in working with children with special educational needs (Myles, 2003), thus facilitating the learning and participation of pupils with Asperger syndrome and high-functioning autism in mainstream schools is complex and poorly understood.

Church et al. (2000 cited in Attwood, 2006) maintain that little information is available that describes the social, academic and behavioral experiences of children with Asperger syndrome. In their study 40 children, aged 3 – 15, with Asperger’s syndrome were observed at the school setting. The results indicated that social skill deficits remained the greatest challenge for these intellectually bright and verbal children. Many children misread social situations and failed to read the social cues of teachers and other children.

There is often an assumption that because a pupil with Asperger’s syndrome is academically able he/she should be able to cope in mainstream school (Moore, 2007). According to a recent, small-scale qualitative study of the views and experiences of 20 such pupils, aged 11-17, from four secondary schools in north-west England by Humphrey & Lewis (2008), a number of barriers exist that prevent pupils with Asperger’s syndrome from making the most of their education. Via their research project Humphrey & Lewis (2008) intended to give pupils with Asperger’s syndrome a forum for their voices to
be heard, so data were analysed using an interpretive phenomenological framework. Their findings showed that adolescents with Asperger’s syndrome are more likely to experience levels of anxiety than their typically developing peers and the “chaotic” secondary school environment itself is a considerable source of anxiety. In addition, difficulties in social communication and interaction and the social naivety exhibited by many students with Asperger's syndrome increase their exposure and vulnerability to bullying and social isolation. However, they also observed pupils experiencing adaptations to common ways of working and interacting that seemed to lead to a more positive experience of schooling.

Another recent qualitative analysis of the school experiences of students with Asperger’s syndrome, conducted by Sciutto et al. (2012) with a total of 94 participants who completed an online survey, identified that there are specific areas of need (bullying, misunderstood intentions etc.) related to understanding children with Asperger’s syndrome. To meet the needs of these children in the schools we need well-prepared teachers who bring expertise and confidence into their practices. Sciutto et al. (2012) argue that there is an increasing demand for teacher training related to Asperger’s syndrome in the schools.

Most individuals with Asperger’s syndrome go through mainstream education and are expected to follow a similar educational path to typical peers, transitioning from secondary school to university and employment (Martin, 2005). However these expectations can lead to more life challenges for them than lower functioning individuals with autism, who are often sheltered from
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difficult social situations and educational expectations (Mesibov, 1992). Studies of pupil perspectives, a growing field in inclusion research, indicate that so far inclusion has been a mixed blessing for many pupils on the spectrum (Lindsay, 2007 / Humphrey & Lewis, 2008 cited in Ravet 2011).

Based on a prevalence rate of one in 100, most schools have children on their rolls and this presents a challenge for many teachers no matter how receptive they are as they lack appropriate training (NAS, 2009).

It is undeniably true that some learners in mainstream contexts who are not on the autistic spectrum may present similar behaviors and difficulties with learning (Ravet, 2011). Learners with Asperger’s syndrome tend to take language literally (Attwood, 2007). Thus when they come across a common idiom or a metaphor they often take it at face value and may physically “pull their socks up”. This lies in their difficulty in the sphere of flexibility of thought. Heinrichs (2003) describes young people with Asperger’s syndrome as victims of teasing and bullying due to their difficulty reading social cues. He also adds that bullying and a lack of friendships are major social issues for students with Asperger’s syndrome (Heinrichs, 2003). Gus (2000) reported that “Circle of Friends” activities can be successful when applied to the peers of pupils with Asperger’s syndrome because they help to challenge the attitudes and stereotypes that they often hold.

Osborne and Reed (2011) claim that the difficulties individuals with Asperger’s syndrome typically exhibit in relation to emotional and behavioral difficulties can be aggravated by class size, lack of support staff and good staff training. In this light the mainstream language school often fails to provide these
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Children with proper support and an opportunity to receive a language education which challenges their needs and capabilities (Stainback & Stainback, 1996). They also find it difficult to understand and predict actions of others as they fail to look at the world from the perspective of others (Baron-Cohen, 2008).

In addition, because of their difficulties with social understanding children with Asperger’s syndrome may find it difficult to use non-verbal cues, such as body language and facial expression, to support the interpretation of meaning (Schreibman, 2005). So they may become confused or upset or even angry when peers express surprise as they cannot decode such situations. Hence the importance for teachers of an understanding of autism and the unique way people on the spectrum think in order to anticipate how pedagogy might need to be refined.

Research has also shown that friendship impacts the overall experience of mainstream school for autistic children. It is perhaps not surprising that many adolescents with Asperger’s syndrome are defined by a ‘failure to develop peer relationships appropriate to developmental level’ (American Psychiatric Association (APA), 2000). The majority of children with Asperger’s syndrome have few, if any friends (Howlin et al., 2000). Using a unique combination of quantitative, qualitative and social network methods, Calder et al. (2012) investigated the extent and nature of autistic children’s friendships from their perspective and from those of their teachers and classroom peers. The findings suggest that children with autism have a different understanding of what constitutes friendship and raise subtle but nonetheless serious issues
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regarding when and how teachers should intervene to support the friendships of children with autism.

Individuals with Asperger’s syndrome have, in many cases, excellent rote memory. According to a recent qualitative analysis conducted by Bennett & Heaton (2012) of parents of 125 children, adolescents and young adults with autism spectrum disorders who completed a newly developed questionnaire aimed at identifying cognitive and behavioural characteristics associated with savant skills in this group, distinguished skilled individuals. They were then further investigated in case studies of three individuals with exceptional skills for music, art and mathematics. The findings from the case studies largely confirmed the results from the questionnaire study in showing that special skills are associated with superior working memory and highly focused attention that is not associated with increased obsessesionality.

Again something should be said about autism as a social construction in the school setting. What is perceived as student failure could simply be the teachers’ lack of training or misinterpretations. Relevant literature reveals that when teachers are not trained in the use of the autism lens many learners fail to meet their potential and experience isolation, frustration and exclusion (Ravet 2011). Widespread mainstream teacher training in autism would mean that all children could benefit. This preserves the idea that autism specific approaches are different, but does not imply that they are children with special needs and enables teachers to plan for many different styles at a time, not just an individual or a group of learners on the spectrum.
On the basis of their cognitive abilities children with Asperger’s syndrome constitute attractive candidates for inclusive education (Choi & Nieminen, 2008). An astounding fact about Asperger syndrome is that a proportion of individuals can achieve high academic qualifications and a few high scientific distinctions (Baron-Cohen, Wheelright et al., 1999; Fitzgerald, 2002). However, many individuals with Asperger’s syndrome do not find a vocational niche in adult life.

Review of relevant literature highlighted that most of the research undertaken has focused on the general schooling experience of students with Asperger’s syndrome with few studies (if any) focusing on their experience as English language learners. This represents a noticeable gap in the literature given the fact that there has been a continuing rise in the number of children with Asperger’s syndrome in the English Language Teaching (EFL) classroom. As a result the number of research-based methods to meet their learning needs lags behind.

3. English as an Additional Language (English as an Additional Language) and students with Asperger syndrome

There is a variety of reasons why someone would learn a foreign language; cognitive, social, motivational, cultural etc. One of the most important reasons to learn a foreign language is the stimulation it offers the mind. According to three studies by Bruck, Lambert, Tucker (1974), Hakuta et al. (1986) and Weatherford (1986) children enrolled in foreign language courses
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demonstrate stronger cognitive skills, particularly in the area of creativity and tend to have higher intelligence scores on standardized tests. Learning a foreign language can make a useful contribution to raising a child’s with Asperger’s syndrome awareness of social skills. Foreign language learning has the potential to help pupils with Asperger’s syndrome communicate more appropriately. Using a variety of strategies the teacher could help relieve stress and anxiety and help pupils with Asperger’s syndrome be involved in the learning process and develop their full potential. Inclusion for pupils with Asperger’s syndrome in a mainstream classroom can be a real possibility and language teaching a key element in enabling this to happen.

The significance of teaching English as an Additional Language to children with Asperger syndrome must be discussed in academic environments and researches must be carried out to facilitate their learning. A merger between students with Asperger’s syndrome and typically developing ones would maximize the potential of all students for success and would change the general education system to the better. Therefore it seems a promising field for new research.

3.1 English as a lingua franca

Relevant literature testifies to the fact that English has become a lingua franca, the common language for communication, business and academic achievement among people of many different cultures. English became a global language by the late twentieth century (Crystal, 2003; Nunan, 2003).
Crystal (1997) asserts that over the last 50 years English has become a true world language. Learning English is typically seen as an empowering process associated with a number of hegemonic practices and social privileges (Pennycook, 1998; Phillipson, 1992). The globalization of the English language does not occur in a social and cultural vacuum. Kachru (1994) notes that successive waves of migration and colonization have meant that English has come into contact with other different languages and numerous varieties have developed. The development of English expanded rapidly and prominently between the nineteenth and mid-twentieth centuries throughout the world, particularly after the 1950s, when a greater mobility of people was facilitated by the growth of air travel (Richards, 2001). The importance of English was established as the language of international trade and was supported by the growth in entertainment industries, such as radio and television (Richards, 2001).

Kachru (1985, 1994) categorized World English in terms of three concentric circles. The inner circle consists of old-variety English using countries, where English predominates (UK, USA, Australia…), the outer circle countries where English is well established (Kenya, the Philippines, India…) and the expanding circle, where English is used for scientific or business purposes (China, Japan…). The global spread of English is dynamic. No other language has achieved the same range and depth of use across the world.

Fairclough (1996) points to developments in technology as one of the major factors influencing changing forms of communication. “The Internet epitomizes the information society, allowing the transfer of services, expertise
and intellectual capital across the world cheaply…” (Graddol, 1997). Kress (1997) suggests E-mail, the internet, computer games, sound, word and image processing are likely to give rise to further hybrid discourses.

Since English is now seen as a resource for promoting modernization and since students perceive it as integral to ensuring their futures, there has been an unprecedented demand for English language competence development (Nunan, 2003). Graddol (1997), points that English provides a vehicular language for international communication and forms the basis for constructing cultural identities. The ELT industry may also play an important role in maintaining an international standard (Stevens, 1992). English is said to have accounted for 80 per cent of computer-based communication in the 1990s. That proportion is expected to fall but it is unlikely that any other language will overtake English as people have to communicate with others in the cyberspace community through the medium of English (Graddol, 1997). Crystal (1998) suggests that one day there will be an international standard of spoken English to be used as a means of international communication in an increasingly diversified world.

In many countries of the “expanding circle” including Greece, English is used for business and tourist purposes. Empirical evidence suggests that learning English as a foreign language in Greece is an institutionally imperative skill seen as a prerequisite for social and academic success. Foreign language learning in Greece has tangible advantages in the job market.

Most young learners are enrolled in language schools to obtain knowledge of English at the age of 7-8 thus embarking on a learning process that usually
lasts for up to 8 years. English language teaching and learning has traditionally pursued examination-oriented education, which has been designed to cater for the acquisition of a certificate in English as an additional language.

My empirical assumption as an English as an Additional Language teacher in Greece for 25 years strongly suggests that high achievement in English language exams is connected to social success, higher social status and pride.

3.2 The English as an Additional Language classroom

As mentioned in the previous subsections children and their families are motivated to go into the process of learning English as an additional language by the social significance and the empowering potential attributed to this language. The major setting where this learning takes place is the English as an Additional Language classroom. This is the place where students and teachers come together with the mutually agreed intention to participate in the construction of the teaching and learning process (Mercer, 2000).

Although the pragmatics of classroom life have been exhaustibly described and analyzed (Richards & Rogers, 1986) there is considerable scope of perspectives and explanations on language itself and language learning. Each of these theories can be thought of as shedding light on one part of the language learning process; however no one overarching theory of second language acquisition has yet been widely accepted by all researchers.

At least 3 different theoretical views of language inform current approaches and methods in English as an Additional Language teaching. The first is the
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structural that sees language a system of structurally related elements that encode different levels of meaning (e.g. phonology, grammar and lexis). The second view is the functional one that understands language as a vehicle for the expression of functional meaning emphasizing the semantic and communicative dimension rather than its structural elements. The third view of language can be called interactional. It sees language as vehicle for the realization of interpersonal relations and for the performance of social transactions. Language is constructed as a tool for the creation and maintenance of social relations.

The teaching and learning process is also informed by theories of language learning itself. Over the past 50 years three main theoretical positions have been advanced to explain how this remarkable process of developing language takes place: the behaviorist, the innatist and the interactional/developmental (Lightbown & Spada, 2011). Behaviorists see language learning as habit formation. Therefore successful acquisition of language can be manipulated by a system of positive or negative reinforcement. This theory attributes everything to the learning environment and constructs the learner as a passive receptacle.

The innatist perspective maintains that all human languages are fundamentally innate and that the same universal principles underlie all of them. Noam Chomsky, one of the most influential figures in linguistics, argued that children are biologically programmed for language and that language develops in the child in just the same way that other biological functions develop. For Chomsky (1960) cited in Lightbown & Spada (2011) language
acquisition is similar to other cognitive processes such as walking and happens in the mind assisted by contributions of the environment. Under the cognitive/developmental perspective language acquisition is but one example of children’s remarkable ability to learn from experience without the need for a specific brain structure devoted to language. Proponents of this perspective focus on the interplay between humans’ innate learning ability and the environment in which it develops, recognizing equally important roles to both factors. A prominent theoretical construction within this perspective is Vygotsky’s (1978) sociocultural theory. After observing interactions among children and also between children and adults in schools in the Soviet Union in the 1920s and 1930s he concluded that language develops primarily from social interaction. He argued that in a supportive interactive environment children are able to advance to a higher level of knowledge and performance. Vygotsky described this metaphorical place where assisted learning takes place as the zone of proximal development (ZPD).

Regardless of how language learning is approached and despite the diverse findings mentioned in the literature (Ellis, 2005; Lee & Van Patten, 2003; Lightbown & Spada, 2011) it is possible to formulate certain “givens” that are relevant to language teaching and learning. Among them is the fact that SLA involves the creation of an implicit linguistic system, it is a complex set of processes and that skill acquisition is different from the creation of an implicit system. Of great importance for this research is the latter as it allows us to separate out skill acquisition from the notion of any internal underlying system.
and permits us to infer that skill acquisition happens independently of the
creation of an interlanguage system.

English as an Additional Language learners in foreign language schools in
Greece wish to obtain certain learning strategies in order to acquire social
language and a language certificate for a future career. Given the scope of
this research, my focus on the discourse and contextual elements of language
and the fact that I have to operate in a certain context (see section above) for
my research purposes, learning is approached from the point of skills
mastering rather than the current notion of acquisition as a system.

While focusing on skills related performance I adopt a sociocultural
perspective, based on the fact that what happens in the English as an
Additional Language classroom as neither a linguistic nor a psychological
faculty of the mind but rather a social faculty (Ortega, 2007 cited in van Patten
& Williams, 2007). Instead of trying to capture what happens in the mind of
the subjects I find it more illuminating and practical to look at language
knowledge as it is appropriated through participation in the social event that
schooling ultimately is. My main assumption here is that a shift to the positive
or more effective use of language skills mediates success in the classroom
and social inclusion.

For the operationalization of my project and in accordance with its
interactional focus I rely on two major constructs regarding how
communication is realized through language: discourse and context.
Discourse can be described as contextualized, purposeful language (Mercer,
1995). Context can be understood as a shared understanding of available
information that people use for making sense in particular situations (Mercer, 2000). Therefore effective learning of any language entails not only grasping the communicative techniques but also their effective realization according to context and discourse management. Findings suggest that effective language acquisition means more than mastering a new register i.e. the constellation of lexical and grammatical features of a language (Halliday, 1989). The use of lexical and grammatical resources is related to functional purposes which in turn are shaped by various contexts (Schleppegrell, 2001). The fact that context and discourse are notorious in literature as much for the range as for the diversity of their definitions (Mercer, 2000) suggests that more context-specific research, especially in areas where the ability of the subjects to perceive context is borderline (as in the case with individuals with Asperger’s syndrome), has the potential to offer some insight on how context and discourse are internalized into discursive strategies.

3.3 The English as an Additional Language classroom and students with Asperger’s syndrome

Since the student population in Greece includes a big number of children with Asperger syndrome, as the prevalence of autistic spectrum disorders [1 in 100 (Baron-Cohen, 2008)] allows us to infer and empirical evidence suggests, they attend classes in language schools as part of extra-curricular activities. Teaching methods vary widely as language schools are small units in almost every neighborhood run by a foreign language teacher who uses his preferable method. In recent years most language schools have been
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equipped with Interactive Whiteboards and have adopted various teaching methods.

Foreign language learning can be an enriching and rewarding experience. However, for a student with Asperger’s syndrome it can be unbelievably stressful unless certain difficulties are recognized by the teacher and ample support is offered. The challenges are many but not insurmountable.

Difficulties in understanding other minds may undermine the linguistic, cognitive and social strategies for L2 acquisition so parents of children with Asperger syndrome often consult the child psychologist about choice of language at home or at school. Goble (1995) observes that the individual with Asperger’s often has trouble with “emotional nuances and multiple levels of meaning” as contained in novels and are more at home with non-fiction texts. Attwood (1997) also notes that “once the conversation has begun there seems to be no “off switch” and only ends when the child’s pre-determined and practiced “script” is completed” explaining the difficulties with spoken language.

Although answers will have to be tailored for the individual child, the foreign language class may be one of the few times when a pupil with Asperger’s syndrome has to engage another pupil in a conversation through pair or group work outside the school community and it is therefore important for their, and others’ social development. Interactive activities are common in the English as an Additional Language classroom and Interactive Whiteboards may play an important role in motivating these students. Unfortunately most teachers are
unaware of the strengths and weaknesses of students with Asperger’s syndrome.

McColl (2000) cited in Wire (2005) has addressed the challenge of making MFL accessible to almost all pupils by offering practical advice to foreign language teachers tackle this issue. Teachers must get to grips with why a foreign language should be accessible to all rather than focusing on why it might not be offered. She identifies areas where the needs of individuals vary and highlights how the MFL curriculum needs to be appropriate to all learners.

English as an Additional Language’s learning usefulness in developing social skills for children with Asperger’s syndrome is of utmost importance.

Language barriers remain the key factor in affecting the performance of English as an additional language but the research is limited to English as an Additional Language students’ English proficiency and how the time for proficiency varies for different students (Demie, 2012). Demie (2012) suggests that it takes about 8 years to become fully fluent in English. She also argues that speakers of many African languages are more fluent in English than some of the main European languages such as Spanish, Portuguese (empirically I could include Greek) as they are more exposed to the English language because of the Commonwealth.

For pupils with Asperger’s syndrome to gain accreditation in a foreign language is a triumph. The experience of language learning boosts their self-esteem and motivation.

Since failure of the students with Asperger’s syndrome to acquire basic knowledge of English is associated with feelings of rejection and frustration for
them, as well as for their families, it is well worth exploring best practices to facilitate their learning needs and improve their schooling experience, sense of personal achievement and socialization.

3.4 Implications in catering for students with Asperger's syndrome in the English as an Additional Language classroom

The number of children with Autistic Spectrum Disorder coming into the mainstream foreign language classes is increasing and this is causing some concern to teachers (Wire, 2005). Until recently many pupils with Autistic Spectrum Disorder went through school and foreign classes unsupported and were often misunderstood by teachers (Symeonidou, 2009). Jordan & Powell (1995) said that one should regard the challenges autism causes not in terms of “deficit”, but rather as “a different way of thinking. And learning and as each child is an individual, the focus must always be on the individual pupil at that time, in that context”.

Due to the fact that their cognitive ability rates to the upper parts of the continuum, they represent, in many cases, excellent candidates for inclusive education. It is therefore their right to access a full range of academic learning programs, including learning a foreign language.

Teachers cannot overlook the educational implications in catering for students with Autistic Spectrum Disorder within the classroom, particularly when trying to create stimulating and meaningful English lessons (Harbinson & Alexander, 2009). Social interaction, social communication and flexible and imaginative thinking are evident even in those students with a very high level of cognitive ability. For many teachers of English the imagination lies at the heart of
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English and it is the source of all they aim to do in the classroom. For example, many English language learners have problems with common idioms which are frequently a problem for learners with Asperger's syndrome (Ravet, 2011). Drawing from my experience, many English as an Additional Language learners have problems with idioms because they have a weak grasp of English and do not have wide experience of the spoken language. Once they are taught what an idiom is and learn some more specific common idioms, they are able to recognize them in different contexts. Most learners will eventually pick up English idioms through immersion in a variety of social contexts. This is not true for children on the spectrum even when they have an exceptionally wide vocabulary and are highly articulate (Attwood, 2006). The imaginative content of the English language (idioms, fictional texts, and fictional writing) is a real challenge for Asperger's syndrome learners (Harbinson & Alexander, 2009). Learners with Asperger syndrome have also been shown to have difficulties in their understanding of pretence, irony, nonliteral language (e.g. double bluff) and deception (e.g. white lies) (Happé, 1996).

Furthermore, the design and style of many English language exams disadvantage students who have a lack of imagination. All often, the student with Asperger's syndrome does not even attempt a task due to complete incomprehension or views the task as pointless. However, there are other areas of strength for students with Asperger's syndrome such as non-fiction (Harbinson & Alexander, 2009).
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Attwood (1998) discusses instances where a pupil with Asperger syndrome behavior may cause a barrier to learning: gestures may be awkward, movement stiff, facial expressions inappropriate, no eye contact in dialogues. Their tendency to become “hooked” on a routine or special interest, a harmless obsession, transitions from one activity to another or lack of interest could also be barriers to learning.

Without a carefully designed plan for the provision of students with Asperger’s in the English as an Additional Language classroom, teachers may feel overwhelmed and attribute poor academic outcomes to learning difficulties. Teachers should adopt various teaching methods according to the different learning styles of their students. English as an Additional Language teaching requires flexibility in instructional formats and processes. Solomon, Lalas and Franklin (2006) propose a range of adaptation strategies that may be used for English as an Additional Language students who are struggling to keep up with the demands of mainstream schooling. These include pairing students, visual aids and modeled instruction.

It might be argued that all the above are issues for many children, not only on the spectrum, and sit well within the rights-based inclusionist model with its concern to avoid labeling. Inattention in class, incomplete work and difficulty keeping up with peers are not only problems for students with Asperger’s syndrome. Therefore it is important teachers be able to identify the differences between the process of learning a foreign language and having a difficulty and make accommodations in their teaching so as to offer the most effective support for learning.
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The most effective strategies to improve or enhance the understanding of children with autism are those that focus on high levels of structure which in turn facilitate social and communicative skills (Howlin et al., 1999). Teachers should gain a fuller understanding of how these students perceive the world and respect the way they think and learn, but at the same time it is possible to work within the context of the autism to make that thinking and learning more effective (Jordan and Powell, 1995). For some students with Asperger’s syndrome it is perhaps insurmountable to ask them to think imaginatively. Clements and Zarkowska (2000) assert that the behavior of careers, educators, supporters, planners and policy makers needs as much attention as does the behavior of the person with autism who is identified as “behaviorally challenged”. Since for many Asperger’s syndrome children their chances for an independent life depends on their formal academic qualifications at school, we must not neglect certain attributes such as the personality and ability of the class teacher and their access to resources (Howlin, 1998; Attwood, 1998; Boyd & Shaw, 2010). Simpson, Mundschenk and Heflin (2011) also identify issues which include the skills, knowledge and professional credentials of educators who teach learners with Autistic Spectrum Disorder. Teachers require rigorous and ongoing pre service and in service preparation and training (Scheuermann et al., 2003). Simpson et al. (2011) infer that recognition of the importance of creating structured settings for all children with Asperger’s syndrome is a prerequisite. Structured environments include consistency, routines, clear specification of task, clearly
understood behavioral expectations, staff with appropriate credentials and systematic monitoring of performance.

However, providing only structure and organization will be insufficient. Educators must be able to discriminate among available teaching methods, select the most appropriate one and correctly apply and evaluate the procedures, in other words teachers should acquire an eclectic approach, evaluating students’ strengths and needs and find ways to increase access and learning for everyone. The origins of “eclecticism” began with the work of British applied linguists in 1920s and 1930s. They developed an approach to methodology that involved systematic principles of selection. Teachers may adopt every good idea and leave the door open for all further developments. To this respect, a holistic approach would be beneficial to students with Asperger’s syndrome (Wire, 2005).

Adaptations and modifications are expected to make all students active participants in the classroom. Effective use of appropriate teaching aids, such as Interactive Whiteboards, makes the learning of a foreign language a joyful activity for students nowadays. One of the main claims made by policy makers and researchers is that Interactive Whiteboards promote interactivity (Higgins et al., 2005). Their potential, however, as cognitive mediation tools remains to be fully explored.

Educating children with Asperger’s syndrome is a huge challenge for teachers requiring high levels of skills, expertise and support. (Barnard et al., 2002). Resources must be found to meet the needs of these children if the policy of inclusion is to work in practice and teachers must examine their classroom
practices and adapt instructional materials to ensure that all students are acknowledged.

Rather than expecting individuals with Asperger’s syndrome to change, we need to advocate for an educational system that goes beyond convention to eliminate the existing barriers that hinder their achievement. Teachers nowadays must develop the capacity to respond to an increasingly diverse student population and ensure that all students develop to their full potential. Thus, supportive and eclectic teaching is of utmost importance. English as an Additional Language is a prime field of Education where inclusion can be realized.

4. New Technologies (Interactive White Boards- Interactive Whiteboards)

In recent years technologically enhanced education has become a priority in schools all over the world. Glover & Miller (2007) argue that Interactive Whiteboard use in school promotes pupil interest and concentration and Blanton & Helms-Breazeale (2000) maintain that pupils’ motivation and understanding is fostered. Literature demonstrates that students with Asperger’s syndrome eagerly engage in working with Interactive Whiteboards (Interactive Whiteboards) as the clear rule-based systems used by digital and visual technology make them highly suitable for such individuals (Hardy, Ogden, Newman & Cooper, 2002).

Equality of access to quality education is a crucial issue for people with autism. There are both an emerging body of research and promising practices
using technology-based supports to target the core challenges – communication, socialization and motivation – for individuals with Autistic Spectrum Disorder/Asperger’s syndrome as these core challenges have a critical effect on participation in home, school and community life (Cafiero, 2012). Many of these challenges are being addressed successfully through technology (Bellini & Akullian, 2007). There may be a need for the emergence of a whole “new wave” of education professionals who will redefine their role taking into account the extended list of Information Communication Technology (ICT) features and the need to embed them in their pedagogical knowledge and reasoning (Kennewell et al., 2010). Whether there is potential enough in the use of the Interactive Whiteboard to transform the traditional pedagogic paradigm and enhance interactivity and student involvement so as to accommodate students with Asperger’s syndrome in the teaching and learning process is to be further studied.

4.1 Interactive Whiteboards - Historical perspective

The first revolutionary teaching tool found its way into classrooms back in 1801 and had a profound impact on the nature of teaching over the next 200 years (Betcher & Lee, 2009). The blackboard became synonymous with the traditional classroom and a stereotypical symbol of education. The interactive whiteboard (Interactive Whiteboard) has the potential to be the second revolutionary teaching tool and is synonymous with the new digital classrooms of the twenty-first century. The Interactive Whiteboard has the capacity to change and revolutionise the nature of teaching. Interactive Whiteboards can be understood as a meeting point of the concerns of educational policy,
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pedagogy, the commercial sector and technology. The question of what is appropriate for teaching and learning has been and remains a highly charged one across the curriculum.

The use and integration of the new technologies, such as the Internet, World Wide Web, new computer software, etc., in educational milieus have been enormously growing for nearly two decades. Not only do these new technologies make an impact in general education, but also in special education. We are in the midst of an explosion of multimedia digital technology and teaching has long been a magnet for new ideas and technology. The classroom of the future is already here with wireless networks, touch-screen technology, Interactive Whiteboards and wireless laptops. Pupils have access to the best equipment and software. The fast-food environment that post modernity has created for the education marketplace is undermining the potential that ICT could have on teaching and learning (Beastall, 2006). Educators were the first people to recognize the interactive whiteboard’s potential as a tool for collaboration and continue to comprise the largest user base for this technology. However, according to a 2007 study, the most commonly used instructional technologies are still the pen, paper and teaching board (Lee, 2009). In addition it is observed that there are divergent approaches to use and integrate the new technologies into the Education Programs.

An Interactive Whiteboard (Interactive Whiteboard) is a touch-sensitive screen that works in conjunction with a computer, a projector and appropriate software. Applications of the Interactive Whiteboard are dependent on the
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software that is installed and used on the computer connected to the Interactive Whiteboard. Such applications include hiding and revealing, handwriting recognition, retrieving, writing and manipulating text, highlighting, shading, coloring, animation etc. The first Interactive Whiteboard was manufactured in 1991, but there has been extensive investment by governments and individual schools in Interactive Whiteboard technology in developed countries premised on the assumption that it will impact positively on learners’ achievements (Slay et al., 2008). By 2009 757,328 Interactive Whiteboards had already been placed in classrooms throughout the US and 2,028,175 had been purchased worldwide (Futuresource Consulting, 2009, 2012) and Futuresource forecasts show that the total display technologies market of interactive whiteboards, interactive flat panels and interactive projectors will reach 1.16 million devices by 2017. There has also been considerable investment in the use of Interactive Whiteboard technology in schools in the UK. In 2010 the UK government allocated 50 million pounds (one fifth of their total budget) for ICT in Education) for Interactive Whiteboard’s (Roberts, 2011). Governments all over the world invested rapidly in the new technology in contrast to the slow emergence of evidence (Smith, Higgins et al., 2005). In a small scale study of ICT rich primary school, Interactive Whiteboards were found to be the predominant ICT tools used by teachers (Kennewell & Beauchamp, 2007). “This sharp rise in the use of ICT resources in the curriculum has been driven to a large extent by the adoption of interactive whiteboards (Interactive Whiteboards) and related technologies. Interactive whiteboards are a popular technology, in heavy demand by
schools and practitioners. They offer transparent benefits to learning and teaching. That is, it is easy for institutions and teachers to recognise how Interactive Whiteboards enrich and enhance learning and teaching something which may not always be so immediately transparent to practitioners in the case of other technologies” (Becta, 2007).

4.2 Mixed findings of Interactive Whiteboard use and student achievement

Studies that have examined the relationship between the use of Interactive Whiteboards and student achievement have yielded mixed findings (Higgins et al., 2005; Swan, Schenker & Kratcoski, 2008; Lewis, 2009).

Relevant literature suggests that Interactive Whiteboards (Interactive Whiteboards) have a positive effect on the nature of classroom interaction (Reynolds & Farrell, 1996; Higgins et al., 2006). Glover & Miller et al. (2007) argue that Interactive Whiteboard use in school promotes pupil interest and concentration and promote more effective learning where teachers are aware of the ways in which technology can be used to support a variety of learning styles. In addition, Blanton & Helms-Breazeale (2000) maintain that pupils’ motivation and understanding is fostered. Interactive Whiteboards have potential for helping students deepen their understanding of difficult concepts (Ball, 2003 cited in Higgins et al. 2006; Levy, 2002; Miller, 2003 cited in Higgins & Beauchamp 2007; Richardson, 2002).

Teachers can incorporate a variety of multimedia resources into lessons such as pictures, video, sound, written text, animation, visual effects such as color and highlighting, web sites, power point presentations and thus make lessons
more appealing (Levy, 2002). When touching a particular item, there is visual or auditory feedback (Glover, Miller, Averis & Door, 2006). Interactive Whiteboards also promote student interest, higher levels of sustained concentration and behavior problems are easily overcome (Glover et al., 2001).

Since the launch of the Interactive Whiteboard a lot of emphasis was given on direct “interactive whole class teaching”. It is suggested that more interactive forms of whole class teaching will play a vital role in promoting high quality dialogue and discussion and raising inclusion, understanding and learning performance (Reynolds & Farrell, 1996). The opportunities for connecting students with highly relevant and engaging digital content are enormous, but without some way of sharing those resources on a whole class basis, the potential of the PC for the purpose of teaching with these resources is fairly limited (Betcher & Lee, 2009).

High quality teaching is oral, interactive and lively, in which pupils are expected to play an active part by answering questions, contributing points to discussion and explaining and demonstrating their methods to the class. Interactive whole class teaching is not seen as an approach to a traditional “lecturing and drilling” approach in which pupils remain passive, but as an active teaching model encouraging dialogic forms of teaching. Research on the power of classroom talk that can promote and enhance children’s learning has focused on the concept of “dialogic teaching” (Alexander, 2003; Mercer, 2003). Dialogic teaching also resonates with terms used by authorities in the field on language and learning who draw on the theoretical work of Vygotsky.
and Bakhtin (Mercer, 2000; Wells, 1999 cited in Higgins et al. 2005). Research into dialogic teaching suggests that classroom talk can take a variety of forms and functions leading to pupil participation and engagement (Mercer et al., 2004).

One of the main claims in the use of Interactive Whiteboards as a tool of pedagogy is that they promote interactivity. Students are motivated in lessons interacting physically with the board, manipulating text and images (Becta, 2003). Goodison (2002) suggests Interactive Whiteboards add a social dimension to learning because pupils share knowledge and learn by making mistakes together. Moreover Glover and Miller (2001) found that pupils, particularly boys relish making Power point presentations to impress their peers. On the other hand, Higgins, Smith and Hardman (2006) found that Interactive Whiteboards appear to be having some impact on the discourse moves used in whole class teaching, but this impact is not as extensive as that claimed by the advocates of Interactive Whiteboards. Several studies have reported the dominance of teacher talk, the brevity of student responses and the lack of sustained interaction with individuals (Hargreaves et al., 2003; Myhill, 2006; Smith et al., 2006). Teachers vary in their interpretation of interactive teaching (Moyles et al., 2003). Hargreaves et al. (2003) derive nine different types of interactive teaching from teachers’ descriptions of how they interpret interactive teaching. This is not the development envisaged by Reynolds and Farrell (1996). Wilson et al. (2006) claim it is less the model of classroom organization and more the quality of teacher-student interaction which is the key feature in promoting learning. Armstrong et al. (2005) claim
that the Interactive Whiteboard may not afford interaction if it is perceived as a presentational tool only. An Interactive Whiteboard can afford interactivity by making use of the different ways of manipulating the applications running on the screen. This can change the way pupils and teachers work with the Interactive Whiteboard and with each other. Interactivity needs to exist between teachers and students, students and students and teachers and teachers (Glover et al., 2006). Many teachers have the tendency to dominate the lesson with the Interactive Whiteboard use, simply for interactive whole class discussions and not invite students to interact with the board themselves (Schuck & Kearney, 2007). When teachers do not realize that interactivity also requires a new approach to pedagogy Interactive Whiteboards have limited impact (Armstrong et al., 2005). So whereas potentially a digital Interactive Whiteboard is different from a non-digital whiteboard there is no guarantee that this potential will be realized in the classroom.

So, how active a role are pupils playing? The research literature on whole-class interactive teaching raises some alarm bells. Such teaching may be associated with a faster lesson pace and superficial collaboration and participation at the expense of co-constructing, assessing and extending knowledge (Hargreaves, 2003) and of developing genuine dialogue and a reflective strategic approach to thinking (Denvir & Askew, 2001, Tanner et al., 2005, Higgins, Smith et al., 2006, Moss et al. 2007). Research indicates that teachers’ choice of technology is often related to their own conceptions of teaching and learning (Olson, 2000) and introducing new tools does not typically drive radical pedagogical change (Hennesy et al., 2005). The main
concern to maintain lesson pace means that Interactive Whiteboard use may afford even less thinking time and opportunity for pupil input (Moss et al., 2007). Interactive whiteboards are called ‘interactive’ because they encourage students to interact with the lesson. But the notion of interactivity is usually limited to the idea of physical interactivity—students getting up from their seat, coming to the board and physically touching the screen. Kent (2008) uses the term “ambiguity” to refer to learning situations that are specifically designed to create an intellectual juxtaposition of one idea against another. When information is ambiguous and open ended it creates a fertile environment for rich discussion and can provoke students to see a problem from multiple viewpoints, often prompting them to debate and argue for their viewpoint to be heard. Getting students to argue their case, to explain and express their point of view and defend it to their classmates, is a far more useful form of interactivity than the ‘getting a student to come to the board and drag a box around’ sort of interactivity that we so often think of when we talk about Interactive Whiteboards. Getting intellectual interactivity is a far more desirable goal than simply getting physical interactivity. Glover, Miller & Averis (2005) support that the advantages of Interactive Whiteboard use are considerable, but they do not add to teaching effectiveness unless supported by teachers who understand the nature of interactivity as a teaching and learning process and who integrate the technology to ensure lessons that are both cohesive and conceptually stimulating.

In addition, research does not often take into account the context in which Interactive Whiteboards are used. This includes school culture, technical
support, teacher training and confidence, teacher preparation time and practice lessons. Contextual factors are important for researchers to consider when studying how Interactive Whiteboards are used in schools. Building a school culture that supports interactivity and technical innovation sets the groundwork for an Interactive Whiteboard implementation (Schuck & Kearney, 2007).

4.3 English as an Additional Language and Interactive Whiteboard use

In the specific area of teaching foreign language learners, Gerard et al. (1999) state that Interactive Whiteboard use created excitement and a positive attitude to learning especially in the presentation of new linguistic and cultural elements. Levy (2002) found that both learners and teachers perceive a significant role for the Interactive Whiteboard in helping to motivate students, focus their attention and stimulate involvement in whole-class learning. Gerard et al. (1999) maintain that the Interactive Whiteboard stimulates oral interaction and the exchange of opinion and ideas. Solvie (2004) highlights the usefulness of the board but reminds teachers to focus on literacy and language learning and not on the tool. Gray et al. (2010) suggest: “the use of the Interactive Whiteboard can greatly enhance teaching language by supporting classroom management, pace and variety and the drawing to attention to grammatical features and patterns. It also has positive effects on pupils’ memorization skills and writing development. In addition, Gray et al. (2010) emphasize on the need teachers become comfortable with the new technology before engaging in pedagogical discussion, the need for a balance of activities to ensure opportunities for kinesthetic and tactile learners, the
dramatic increase in preparation time to support full exploitation, the difficulty of finding web-sized material at the right level for language learning and the danger of being lured into a “tell and show” interpretation of teaching”. For Gray (2010) the Interactive Whiteboard is a support for good language teaching, not a panacea. A balance is needed, including a range of practical, hands-on kinesthetic activities using objects, flashcards, the projector and drama.

The features of ICT been reclassified and extended for analysis of how Interactive Whiteboards can provide potential and structure for action in the classroom (Kennewell, Beauchamp, 2007). Since the ordinary blackboard, the textbook, the worksheet, the blank sheet of paper are limited in their affordances ICT features may be valuable for future research on the impact of Interactive Whiteboards on learning and the design of new resources. While a combination of methods is better than one particular technique in language learning, the potential of technology is immeasurable.

4.4 The use of Interactive Whiteboard for students with Asperger’s syndrome

Many people with autism appear to have a natural affinity for computers and the controlled environment provided by the computer (Hardy, Ogden, Newman & Cooper, 2002). Interactive Whiteboards, on the other hand, seem to be particularly suited for whole-class interaction and strong claims are made for their value by manufacturers and policy makers especially in promoting interactive communication (Mercer, Gillen et al., 2007). Schmid (2010) discusses some pedagogical benefits of adopting a multimedia-
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oriented approach in the Interactive Whiteboard-based classroom e.g. engagement and enhanced motivation, facilitation of learning, catering for various learning styles, seamless access to multimedia resources. However, a particularly noteworthy criticism from Higgins, Smith et al. (2005) is that although literature in the field is “overwhelmingly positive about the impact and the potential of Interactive Whiteboards, it is primarily based on the views of teachers and pupils. In their view “there is insufficient evidence to identify the actual impact in terms of classroom interaction and achievement”.

Children with Asperger’s syndrome are liable to be represented in all kinds of school (Jordan, 1991). As a result there is a need for specialist knowledge and support within mainstream schools (NAS, 1996). Interactive systems therefore have a potential role to play in contributing to such support. Heimann et al. (1993) feel that multimedia systems might provide a stimulating and motivating learning environment for children with Autistic Spectrum Disorder who are trying to capture the essence of reading. Rajendran and Mitchell (2000) are investigating the use of “Bubble Dialogues” to assess and improve interpersonal understanding in individuals with Asperger syndrome. There is also much interest in explicitly teaching the ability to “mind-read”. Such teaching might provide an alternative route into helping children with autism to improve social and communication skills (Ozonoff & Miller, 1995).

Individuals with Asperger syndrome have average or above average IQ and no language delay and often strong skills in responding to visual images including visual representation (Quill, 1995). Children with autism are
attracted to visual images and the world of the flat screen may be more acceptable and less frightening than the real world. They often exhibit a “triad of strengths”: good attention to detail, deep, narrow interest and islets of ability (Baron-Cohen, 2004). It is worth exploring how such strengths could be harnessed through the use of technologies to navigate the social world.

Swettenham (1996) has built a computerized version of the Sally-Anne false belief task and Clancy (1996) has developed a prototype in which virtual reality is used to help teach simple social skills to individuals with Autistic Spectrum Disorder. Another room-based application is Avatar in which the user activates objects in the room which respond with an appropriate sound effect. An avatar according to the definition by Wikipedia is the graphical representation of the user or the user’s alter ego or character. It may take either a three dimensional form, as in games or virtual worlds, or a two-dimensional form as an icon in internet forums and other online communities.

Higgins and Boone (1996) see educators to “begin to explore the possibilities of the new technologies for students with autism”.

The Interactive Whiteboard’s capacity to harness a wider range of multimodal resources in order to facilitate learning should be the teacher’s priority as image and dynamic representations make concepts, especially complex concepts, easier to see, share, discuss and understand (Moss, Jewitt, & Gardini, 2007). This is extremely useful for pupils with Asperger’s syndrome and opens up potential for new designs for learning. According to Kress & van Leeuwen (2001) meanings are made through many representational and communicational resources. Multimodality attends to meaning as it is made
through the situated configurations across image, gesture, body posture, gaze, sound, writing, music, speech and so on. To this respect multimodality can be described as an eclectic approach. Images provide a different representation of a concept. To talk about a concept, to draw it, to animate it, all draw on different aspects of a concept. (Moss, Jewitt et al., 2007). A number of benefits perceived for teaching are consistently emerging from the results including efficiency, versatility, multimodal presentation and interactivity (Smith et al., 2005). In the EFL classroom context the views of the teachers include engaging, longer attention, span and better focus, visual and dynamic representations, motivation, pace and flow and multimodality (Smith et al., 2005). The features of interactive presentation tools have the potential to support new forms of pedagogy or range of pedagogies (Beauchamp, 2006). Moore (2000) emphasizes “We are seeking in our interactive systems to emulate this educational practice of directly targeting the autistic-specific impairments” using videos, addressing social skills, asking questions, demonstrating possible consequences. Interactive Whiteboards will enhance the access of people with autism to quality education, in that the educational content of the systems is likely to be of intrinsic value and in that the autism-specific impairments tend to stand in the way of the wider educational experience”.

The social and communicative problems remain the main barriers for learners with Asperger’s syndrome for achieving their full potential. Yet, like typical youth, many appear to enjoy interactive games. Educators as Dewey and Piaget (Holton et al., 2001) all emphasized the importance of play in learning.
Play offers opportunities for children to interact with each other and facilitates friendship development. Cooperative learning and gaming can enhance future cooperation and channel behaviors (Goldstein, 1999). Playing games is part of the English as an Additional Language learning process and the ELT industry has included a great part of educational and entertaining games through the use of Interactive Whiteboard in their curriculum. Playing such games in the classroom can be highly social; social interaction, especially with peers, is increasingly motivating from childhood to adolescence (Durkin, 2010). Game play engages various abilities including sensory, cognitive and social and Greenfield (2009) maintains that interactive games are important sources of cognitive socialization, often laying the foundation for knowledge acquisition in school. Carson (2003) suggests that interactive games facilitate whole class discussion. Modern foreign language teachers are reported as using a range of materials on an Interactive Whiteboard. Thomas (2003) describes the use of CD-ROMs, web sites and Power Point slides in order to facilitate the process of MFL learning, as learners can make connections between what they see and what they hear. Also, MFL learners are reported as finding the multi-sensory input made learning more memorable (Thomas, 2003). When used appropriately, stories, educational technology and fun activities can increase student motivation and participation and support attitudes towards social skills intervention (Chen & Bullock, 2004).

4.5 Teachers’ perspectives and the use of Interactive Whiteboard

Research has also shown that teachers can use visual supports to assist students with Autistic Spectrum Disorder who struggle with social interaction,
behavior challenges, organization communication difficulties and transition from one activity to another (Arthur-Kelly, Sigafoos et al., 2009). Cohen & Sloan (2007) emphasize the need to develop visual supports to meet individual needs, skill level, age and interest of the child.

Of course, the digital whiteboard in itself is not and cannot be interactive. It is only a medium through which interactivity may be afforded. It is the user of the board who chooses to take full advantage of the Interactive Whiteboard’s potential. It provides an opportunity for interactivity (Haldane, 2007). Social discourse within the classroom provides an opportunity for an individual’s skills and ideas to be exposed to teacher guidance and peer collaboration; the “wiser others” according to Vygotsky (1978). It is the range of exchanges and interactions that occur between teacher, learner and Interactive Whiteboard within this kind of dialogic situation upon which the notion of “learning threads” is based. The Interactive Whiteboard can be seen as one of the contributors to scaffolding learning alongside the teacher or a competent peer (Beauchamp & Parkinson, 2005). Woods, Bruner and Ross (1976, cited in Beauchamp & Parkinson 2005) identified five distinctive features, all of which can be readily achieved through Interactive Whiteboard use: recruitment (motivating students to carry on the task), reduction in the degrees of freedom (breaking down the learning into chunks), direction maintenance (keeping the pupils motivated), marking critical features (highlighting key points to help students judge the correctness of their work) and demonstration (showing how similar problems can be solved).
The potential of digital resources to enrich teaching and improve student learning is immense. There may be a need for the emergence of a whole “new wave” of education professionals who will redefine their role taking into account the extended list of Information Communication Technology (ICT) features and the need to embed them in their pedagogical knowledge and reasoning (Kennewell et al., 2010). The potential to bring the wider world into the classroom will remain unfulfilled unless teachers, who in many cases are not techno-gurus, are given more time and support to exploit it. Experience suggests that once hardware goes into schools, the implementation is usually left to those who maintain the technology. Mumtaz (2000, cited in Somekh 2008) provides a list of inhibitors to teachers’ adoption of Interactive Whiteboards. Among the most important ones are lack of experience with ICT, onsite support, teachers’ time and financial support. The teachers’ beliefs and attitudes and their confidence and competence with ICT remain centrally important in the adoption of Interactive Whiteboards. However, lack of pedagogical transformation when ICT is introduced is accompanied with little understanding of the process of technological innovation by policy makers and evaluators. Legislative frameworks and organisational structures of schooling reinforce teachers’ traditional roles and beliefs (Somekh, 2008). Whereas the training discourse tends to position teachers and educators as deficient there is need to acknowledge the complexity of teaching, the social constraints affecting teachers and the individual teacher’s needs within the context and their personal beliefs (Gray et al., 2010). Teachers may not be willing to take risks and pressure to change quickly may limit possibilities.
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However, pedagogical change will occur incrementally where reflective teachers are exploring Interactive Whiteboard facilities to meet their learning objectives (Mohon, 2008). Betcher and Lee (2009) suggest that when armed with an Interactive Whiteboard and training in the proper ways to use it, good teachers with a sound understanding of effective pedagogical principles are able to embrace a wider range of digital technologies more quickly and find more creative ways to engage their students with those resources. As always, good teaching is good teaching, and technology, if used correctly, can enhance teaching in all sorts of engaging ways. Any classroom technology can be used poorly if a teacher is not skilled and proficient in its use. It is the skill and professional knowledge of the teacher who mediates the interaction with pupils. The teacher is the one to choose the appropriate software according to the needs of the students. The real “magic” is in the software, not the hardware (Betcher & Lee, 2009).

The field of English as an Additional Language and the idea of using the Interactive Whiteboard as a means of facilitating the education of students with Asperger syndrome remains largely unexplored.

Whether there is potential enough in the use of the Interactive Whiteboard to transform the traditional pedagogic paradigm, enhance interactivity, motivation and participation in the teaching and learning process and facilitate inclusion is to be further studied.
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METHODOLOGY

1. Aim

2. Rationale

3. Setting

4. Participants

5. Methodological approach

6. Data collection tools – Justification

7. Data collection tools: Strengths and Weaknesses

8. Description of the project

9. Time Frame
1. AIM

In the light of the discussion in the Literature review three assumptions can be relatively safely inferred: Firstly, over the last decade new technologies have found their way into the classroom and subsequently have occupied an influential position into the modern English as an Additional Language teaching paradigm, which has resulted in a tendency favoring their use in the classroom, regarding them as a priori effective in the teaching and learning process (Glover, Miller et al., 2007; Kennewell & Higgins, 2007; Gillen, Mercer et al., 2007; Coyle et al., 2010; Schmid, 2010). Secondly, enhanced communication technologies, such as Interactive Whiteboards, apart from facilitating learning are also considered to create and help sustain optimum inclusion conditions for students with SEN (Wire, 2000; Yabukova, 2013). Finally, at the same time an increase in the number of students with Asperger syndrome in the student body has been reported (Boyd & Shaw, 2010; Wainscot et al., 2008; NAS, 2009; autismspeaks.org, 2012). As inclusive education is every child’s right, children with Asperger syndrome should not be isolated from mainstream classes. Therefore there seems to be a convergence point where inclusive education and Interactive Whiteboard use can potentially come together to facilitate students with Asperger’s syndrome in the English as an Additional Language classroom. This research project mainly aims to critically address the alleged efficiency of enhanced communication technologies (mainly Interactive Whiteboards) with regard to their potential in facilitating the inclusion of young learners with Asperger’s syndrome in the English as an Additional Language mainstream classroom.
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Relevant literature (Higgins, Smith et al., 2006; Lewis, 2009; Glover & Miller, 2007; Higgins & Beauchamp, 2007; Reynold & Farrell, 1996; Goodison, 2002; Becta, 2003; Schuck & Kearney, 2007, Kennewell, 2007; Gray, 2010) emphasizes the mediating potential of Interactive Whiteboards, mentioning their positive impact on student motivation, interactivity and the dialogic structuring of lessons. This project tries to capture whether there are differences conducive to both inclusion and English as an Additional Language learning between English as an Additional Language lessons for children with Asperger’s syndrome that incorporate Interactive Whiteboard use and those that do not.

In addition, the secondary aim is to assess any pedagogical change these digital means might cause to the teacher’s role. It is important for teachers of pupils with autism to understand their pupils’ learning strategies, which may differ from those of other pupils’ and also to develop appropriate strategies themselves to tap into the potential of these young learners. Teachers’ attitudes have an impact on the successful implementation of inclusion so must the knowledge base of English as an Additional Language teachers working with this population of children.

I believe that English as an Additional Language is a valuable research field worth persevering and the best practices for students with Asperger’s syndrome can be best practices for all students. Also given the importance that parents and children ascribe to language education it is imperative that this particular area be explored as this has social significance for them with connotations of social status, better future career, and success.
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The main research questions are:

a) Do Interactive Whiteboard Technologies help students with Asperger’s syndrome develop specific language skills in English as an Additional Language?

b) To what degree such technologies modify and affect the teacher’s role?

c) Can Interactive Whiteboard Technologies facilitate foreign language learning for students with Asperger’s syndrome in terms of motivation and interactivity?

d) Can Interactive Whiteboards facilitate inclusive education in the foreign language classroom for students with Asperger’s syndrome?

The English as an Additional Language classroom in Greece lends itself as a research site on the subject since it is characterized by eagerness to adopt new technologies and incorporates a large number of autistic children in the student body. This is suggested by adoption rates of Interactive Whiteboards which is higher in the private education than in the public education as recorded by the union of language schools of the area of Athens, Europalso (europalso.gr) However, although teachers in Greece have practiced innovative applications, as good examples of classroom practice, unfortunately there has not been a mechanism which might register and evaluate the quality of the programs (Faragoulitaki, 2001).
2. RATIONALE

The idea of conducting this research originates from my experience as an English as an Additional Language teacher in classes with children with Asperger’s syndrome who are striving to be included in the mainstream English as an Additional Language classroom despite their communication difficulties.

Having worked with pupils with Autistic Spectrum Disorder over several years and having seen most of them succeed in foreign language exams, I am very much aware of their strengths and equally keen to challenge the widespread view they are unlikely to make much progress in a foreign language classroom.

Interactive Whiteboards seem to have the ability to contribute to creating effective conditions for learning. I have witnessed positive outcomes in terms of motivation in the classroom and lessons of a more interactional quality. Nevertheless, I feel that the potential of Interactive Whiteboards has not been fully utilized for students with Asperger’s syndrome hence the need to pursue this matter further. I feel it is our duty as teachers to support them with the appropriate “tools” in this process.

Motivated by my personal working experience since in many cases pupils with Asperger’s syndrome are competent in learning a foreign language as their typically developing peers, I believe that these children not only have the right for inclusion but also they should receive the due foreign language learning entitlement and the social benefits that go with that as all other children. As
Wire (2005) argues, pupils with Autistic Spectrum Disorder can succeed in foreign languages provided they are helped to cope with transitions, changes and self-organization and have some scaffolding put in place by the teacher.

Individuals with Asperger syndrome are generally accepted as high functioning within the autistic spectrum. Due to the fact that their cognitive abilities rate to the upper parts of the continuum and the fact that they sometimes have excellent rote memories, they represent, in many cases, excellent candidates for inclusive education (Wire, 2005). Individuals with autism, for example, appear to do better than typically developing people on the Embedded Figures Test, which requires focusing on small details within more complex patterns (Baron-Cohen, 1998 cited in Armstrong, T. 2012). They also tend to be systemisers rather than empathisers: They have a fascination with logical structures that may be as basic as a nonverbal autistic child’s obsession with a rotating fan or as complex as a high-functioning autistic teen’s ability to master a sophisticated computer language (Baron-Cohen, Ashwin, Ashwin, Tavassoli, & Chakrabarti, 2009 cited in Armstrong, T. 2012).

Nevertheless, their difficulties with social skills render their relationship within the micro ethnographic landscape of the classroom problematic so teachers should gain a fuller understanding of how these individuals perceive the world. (Howlin et al., 1999). Moreover, teachers often find themselves ill equipped to maintain a positive spin on the social interaction patterns that emerge
between these children and their typically developing peers (Lipsky & Gartner, 2007; Avramidis & Norwich, 2010).

In the classroom we can identify two prevalent micro contexts: one shaped by school rules, lesson procedures and the everyday classroom logistics and another, even subtler, connected to the appropriate use of target language. The student with Asperger during this process towards inclusion needs to internalize both contexts and signal this by performing a twofold function: participate in the classroom proceedings and produce acceptable instances of the target language in terms of appropriacy and accuracy.

In this light, it can be argued that language learning in a typical mainstream language school is heavily shaped by interaction and revolves around two intertwined axes: a behavioral as well as a linguistic one, both heavily constrained by the specific and wider social context (Lightbown & Spada, 2011). Behavior includes not only the “logistics” of English as an Additional Language classroom interaction but also how effective individuals with Asperger are in their internalizing of context (as expressed in appropriate Second Language use). The linguistic aspect is also connected to communication involving such skills as management of concentration, understanding abstract language, participating in pair and group work, handling of anxiety and stress during language tests, abilities in writing where use of imagination is required, successful contextualization, varied use of language, voice modulation in speaking activities, effective discourse management and awareness of literal use of language i.e. using language contextually in order to achieve something. The English as an Additional
Language classroom is a unique place for investigating communication related skills since language is at the same time the medium and the target of the teaching-and-learning process as this is the place where students and teachers come together with the mutually agreed intention to participate in the construction of the teaching and learning process (Mercer, 2000).

As the principle focus on this research is the mediating effect of Interactive Whiteboard in the English as an Additional Language classroom for students with Asperger and an exploration of possible ways to facilitate their learning it should be worth studying meaningful communication instances within the classroom context to see how the behavioral and the linguistic aspects are affected by the use of these new technologies.

In Greece, there has been an increase in the enrolment of students with learning disabilities as well as Asperger syndrome in mainstream schools as well as in language schools (Autismhellas, 2012; Aspergerhellas, 2008). This assumption is also empirically supported by the increased number of queries by teachers regarding how to deal with Asperger’s syndrome students reported in support forums like autism praxis (http://autismpraxis.ning.com) and elsewhere. As a result there is urgent need to facilitate the educational and social needs of such students on a “what works” basis.

Until recently, many pupils with Autistic Spectrum Disorder in Greece went through school and foreign language classes unsupported and autistic children were excluded from inclusion classes because of lack of supportive people to help teachers (Faragoulitaki, 2001). They were often misunderstood
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by teachers who found them challenging to work with (Coutsocostas & Alborz, 2010). Within the last years however there has been a shift of opinion as to the best way to help and support Autistic Spectrum Disorder pupils and inclusion has been recognized as the right of every child according to the Act 3699/2008 (Greek Gov. Official Gazette, 2008) On the other side of the coin, findings of the research by Coutsocostas and Alborz (2010) indicated that 47.5% of the Greek teachers who participated were against the inclusion of all pupils with SEN in mainstream schools as it appears to be difficult for mainstream teachers to individualize in a class of 25 – 30 pupils (Vlachou, 2006). From my personal experience also many English as an Additional Language teachers maintain that learning a foreign language is an unnecessary burden on such pupils. This leads to the conclusion that there is a disturbing discrepancy between rhetoric adopted and actual practices.

As literature suggests a legislative framework is not enough for an inclusive education and with the prevailing practices in Greece isolation of SEN children is on the increase (see above Literature section 1d, Gena, Alevizos et al., 2013). Greek teachers also regard the education of children with autism outside their responsibility and they feel they lack supportive people to help them accommodate these children in the classroom setting. Attitudes of special education teachers vary since they are more positive towards inclusion of children with Asperger’s syndrome in the mainstream classroom (see above literature, section 1d Panteliadou & Lampropoulou, 1995; 1997). Schools should be continuously searching for ways to make inclusion of all children as effective as possible. For the majority of high functioning or
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Asperger’s syndrome children their chances of living a full and independent life will be dependent on whether they obtain formal academic qualifications at school. Given the social significance of English, already described in the Literature Review, certain attributes are the personality and ability of the class teacher and their access to support and resources (Howlin, 1998; Attwood, 1998; Boyd, Shaw, 2010). Therefore modifications in instruction and assessment practices should be made in order for a student with Asperger to become a successful foreign language learner. Teachers practise innovative applications –on their own initiative- but they need supportive services and there is no evaluation of the quality of the programs. The English as an Additional Language curriculum needs to be appropriate to all learners (see above McColl, cited in Wire 2005, section 4d).

The results of the study will contribute to the methods and strategies foreign language teacher use and will reduce the barriers children with Asperger’s syndrome face in the classroom.

One of the main claims made by policy makers and researchers is that Interactive Whiteboards promote interactivity (Higgins et al., 2005). Nevertheless, the empirical research base for their impact remains slender and their educational potential remains to be demonstrated (Burden, 2002 cited in Mohon, 2008, Mercer et al., 2010). Smith et al. (2006) and Mercer et al. (2010) focus on the transformative potential of Interactive Whiteboards on the discursive strategies of teachers and pupils during whole class teaching of literacy and numeracy in the school context. This topic is connected to
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effective pedagogy with moral and practical implications for all stakeholders (Cage, 1989) but more research is needed on the effective incorporation of Interactive Whiteboards in the classroom.

Drawing on the earlier work of Gibson (1999) and Norman (1988) authors in the psychological field of human computer interactions have described how tools embody or afford possibilities for user interaction (Greeno and MMAP, 1998). The affordances of Interactive Whiteboards include: accessibility and integration of digital resources, multimodal presentation, provisionality, dynamic manipulation and immediate feedback (Kennewell, 2001; Kennewell & Beauchamp, 2007). Although these benefits could be obtained through use of a computer and data projector alone user interaction with the Interactive Whiteboard tends to be easier, more visible to class and less interruptive of lesson flow. The added value lies in the software features as “drag and draw”, “zoom”, “hide and reveal” together with the facility to save and recall objects or texts (Potter, 2007). Input devices such as tablets and slates also offer interactive functionality which research suggests may benefit autistic students (Moore et al., 2005). These new technologies make a ground breaking impact in Special Education. However, it is observed that there are divergent approaches to using and integrating the new technologies into the Special Education Programs.

The creative and transformative potential of new technologies has been discussed in the literature (Hubbard & Levy, 2006). One of the claims that have been made is that new technologies create new opportunities for the implementation of a constructivist-based learning environment in which
learning is seen as an active process of knowledge construction through interaction (Vygotsky, 1978). From the teachers’ perspective access and use of technology can help teachers rethink their practices (King, 2002). Relevant literature suggests that Interactive Whiteboards (Interactive Whiteboards) have a positive effect on the nature of classroom interaction (Reynolds & Farrell, 1996; Smith et al., 2006). A number of benefits perceived for teaching are consistently emerging from the results including efficiency, versatility, multimodal presentation and interactivity (Smith et al., 2005). However it is less clear that these are being transformed into benefits for learning (Higgins & Hall, 2005). In the EFL classroom context the views of the teachers include engaging, longer attention, span and better focus, visual and dynamic representations, motivation, pace and flow and multimodality (Smith et al., 2005). The features of interactive presentation tools have the potential to support new forms of pedagogy or range of pedagogies (Beauchamp, 2006). There may be a need for the emergence of a whole “new wave” of education professionals who will redefine their role taking into account the extended list of Information Communication Technology (ICT) features and the need to embed them in their pedagogical knowledge and reasoning (Kennewell et al., 2010). More recent research points towards a very optimistic scenario, where the potential affordances of Interactive Whiteboard technology are used to support constructivist practice (Gillen et al., 2007; Hennessy et al., 2007). These new findings indicate that as teachers develop a better understanding of the affordances of the technology they start exploiting it in a way they may transform learning.
Pupils with Asperger’s syndrome can present an interesting but worthwhile challenge to teachers, but it is important to motivate these pupils when learning a foreign language by drawing on their strengths. However research on the learning experience of English as an Additional Language learners with Asperger syndrome and the use of Interactive Whiteboard is scant and pertains an assorted collection of CBL ranging from virtual environments to projection systems thus lacking depth on Interactive Whiteboard specific teaching contexts. Whether there is potential enough in the use of the Interactive Whiteboard to transform the traditional pedagogic paradigm and enhance interactivity and student involvement in the English as an Additional Language teaching and learning process for Asperger’s syndrome students is to be further studied.

Methods of intervention using Interactive Whiteboards as a means of developing social skills and enhancing learning should be explored as their findings will be useful to the teacher. There is an acknowledged discrepancy between the “fad” of introducing Interactive educational technologies in the classroom and their actual contribution to the cognitive process. Due to the “jump on the bandwagon” effect many teachers use such technologies as an end in itself. Their relative potential as cognitive mediation tools remains to be fully explored (see literature review above, section 6b and 6d, Levy, 2002; Glover & Miller, 2001; Reynolds & Farrell, 1996; Goodison, 2002; Solvie, 2004; Higgins, & Smith, 2005; Kennewell & Beauchamp, 2007; Schmid, 2008; Gray et al., 2010).
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3. SETTING

The research project took place at a Language School situated in a suburban area of Athens, Greece. The school has been operating for 28 years and during the school year 2012 – 2013 was in the process of designing and implementing the installation of Interactive Whiteboard with internet access in each classroom. Up to then only 60% of the school was equipped. These changes were fully operational by the start of school year 2013 – 2014. Therefore the setting was ideal for providing data for the baseline stage of the research (Phase 1: comprising the pre new technology state) as well as the intervention stage (Phase 2: post new technology) thus facilitating comparison.

The school where this research took place does not operate in a vacuum but belongs to an industry that operates according to a functional framework shaped by cultures and social conditions. Thus I will try to briefly outline the wider context.

There are about 7000 language schools in Greece (europalso, 2012) operating outside the typical schooling system. These are situated in every neighborhood, where children attend foreign language classes as extracurricular activities. In Greece the learning of a foreign language takes part mainly in such schools, although state schools have compulsory foreign languages lessons in the curriculum. Language schools are very popular as the learning of a foreign language in a state school is regarded poor by most parents due to the large number of students in each class, lack of appropriate
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equipment and the fact that the methods used are obsolete. Furthermore, language schools offer the chance to learners to participate in recognized language exams such as Cambridge ESOL, Michigan, Edexcel and many others, in order for a learner to obtain a valid certificate. In contrast state schools do not prepare pupils to sit for language exams and second language learning is treated as equivalent to any school subject like math or geography. However, language certificates in Greece give people the opportunity for employment, better career prospects and are connected to pride and success.

In other words courses in language schools aimed at children and teenagers are specially designed to improve students’ language skills and provide thorough preparation for the recognised language exams. That is the reason why courses there focus mainly on different language skills, including reading, listening, writing and speaking dominated by the “wash back effect” i.e. the impact of a test on classroom pedagogy, curriculum development and educational policy as Pierce (1992) cited in Bailey (1999) states.

Most language schools have adopted a teaching style that focuses on developing students’ knowledge through exam-type activities and constructive feedback which is believed to enhance students’ chance of success in exams. Learners are taught the necessary exam taking techniques and strategies. In addition teaching methodology is up to date and teachers usually participate in educational seminars in an attempt to improve teaching pedagogy and plenty of resources are offered to them by language school owners.
People know it takes a great amount of effort and practice to master a language so they are prepared when they enroll to such a school to attend lessons over a substantial period. They start at an early age of 5-6 years old and finish at the age of 15-16. Many children attend two or three foreign language courses. A critique of this teaching paradigm, however problematic, is beyond the scope of this research. I opted to observe the students in their actual teaching environment adhering to a naturalistic research stance and also because the scope of the research is on the student in his actual classroom and not the teaching paradigm per se.

The school where the research took place offers English and German as additional language lessons to children and adults alike leading to exams for foreign language recognized certificates. Children are enrolled by parents at the age of 6-7 (beginners) for the first time and attend lessons for about 8 school years. Their aim is to obtain a foreign language certificate which is considered important for a future career and further academic studies in Greece. There are regular counseling sessions with parents for the children’s progress towards this end. The school divides classes into levels of proficiency, from Pre-Junior level (for children aged 6-7) to Proficiency level (students aged 15 and upwards). The levels coincide with the (CELA) Cambridge English Language Assessment exams accordingly: (YLE) Young Learners Exams – CEFR A1/A2 for the young learners, (KEY) Key for schools exam / (PET) Preliminary test for schools – (CEFR) Common European Framework of Reference for Languages A2/B1 for students aged 12-13,
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The school provides a holistic approach and methods where all staff share responsibility for Additional Educational Needs and Inclusion and a safe and supporting learning environment. It also cooperates with a state advisory center for Autism and Pervasive Developmental Disorders (PDD) and teachers have appropriate training opportunities to meet pupils’ needs.

The school took all reasonable steps to ensure that participants were not placed into substantial disadvantage for the purpose of conducting the research. Formal letters of consent were given by both parents (attached). Confidentiality of information, research findings and results was a top priority and all involved parties were not be forced to give any information for the sake of research validity. Prior to study permission was given by the school owner and parents of learners who signed a consent form.

Baseline and intervention phases occurred in the students’ classroom in a naturalistic setting. We firmly believe that the learning environment is of utmost importance and an active “teaching and learning tool” rather than a passive space full of stuff as the classroom environment can affect behavior. To this respect, all classrooms welcome students from the entry, are aesthetically pleasing and comfortable for work, with plenty of visual supports and positive behavioral posters on the wall. The classrooms are equipped with Interactive Whiteboards, namely each classroom has a touch sensitive screen, a laptop, a projector, appropriate software and internet access.
All teachers were given proper training to use new technology (Interactive Whiteboards) and a lot of resources to use in their classrooms. In training sessions teachers learned how to use the new equipment. They were given instructions on presenting lessons with the hardware and familiarized themselves with the new software. Technical support for the school is available the whole year round by SMART Technologies Inc.

In the school all teachers show sensitivity towards enhancing significant social relations between pupils. Particularly for children with special educational needs meaningful interactions with peers and parents are considered significant. Available instruction time, attitudes, knowledge and skills of teachers and teaching methods and materials are considered important prerequisites for teaching children with autism in a mainstream setting. All children perform better in a more relaxed and non-threatening environment and school director have made every possible effort towards this end.

The writer/researcher has been teaching English as an additional language for 25 years. She is responsible for the school curriculum, for coordinating teachers and students and for informing parents on student progress in English as she monitors academic achievement and testing for all English as an Additional Language students.

4. PARTICIPANTS

Two children, a boy and a girl, both aged 14 with Asperger syndrome participated in this research: James and Mary (both pseudonyms). They are both at the same level class, at the baseline phase they were in level C
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(leading to Cambridge KEY exam, CEFR A2) and at the intervention phase in level D (Cambridge PET exam, CEFR B1). They were chosen as the target children as they both attend mainstream school, are the same age and at the same level in English classes. The class consisted of 8 students Mary, James and 6 typically developing peers. The age of the group ranges from 12 – 14 years old. The observation was naturalistic during usual classroom sessions in the school.

**Subject A - James**

*Family background*

James (a pseudonym) is 14 years old and has currently completed his first year of mainstream junior high school. He lives in a suburb of Athens with his parents, both teachers, and his two siblings, his brother 24 and his sister 13. James receives a great deal of support from his family who are realistic about his abilities. Parents have reported that his brother is protective and supportive and has always been helpful with James’ tantrums. His sister, one year younger, is also highly involved in his life as they go to mainstream school together and spend time together at home. She is a bit competitive as an adolescent, shows sensitivity. She has also been very protective and helpful. Both parents are involved in James’ education and upbringing.

*Interventions*

According to his parents’ testimony, James was responsive to social initiations, showed clear interest in people, directed frequent smiles to others, imitated movements such as clapping and dancing, and directed other
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people’s attention with frequent points and showing up to 12 months. His first words appeared at 10 months and his first independent steps at 12 months. Nevertheless parents reported having mild concerns about James’ rate of speech development at 15 months as well as no eye contact. Because his social interactions skills deteriorated, his parents sought the opinion of experts on autism since they were aware that such a functional diversity exists. He was first diagnosed with PDD at 22 months and later at the age of 8 with Asperger syndrome. He participated in an early intervention program at a state unit for children with autism and PDD until the age of 6. He had no speech until the age of 4 but his gross and especially fine motor skills were excellent (his handwriting is more than legible, approaching calligraphy). At the age of 6 because he showed potential for development it was decided to attend kindergarten with typically developing peers with an assistant teacher specialized in autism.

Today James attends a series of private sessions on effective socializing based on social stories once a week. According to his parents for the time being he participates in no other intervention programs.

**Social skills**

As his parents report he does not have friends at school. Some of his peers seem protective; others keep their distance while others feel annoyed by his odd social conduct. He has been bullied by peers at school who tried to get things from him. He does not seem to fully grasp this situation. He uses the term “friend” inconsistently other times referring to peers he likes and other
times to peers he randomly interacts with. He is not personal image aware. He has had different obsessions like cars, dinosaurs, “Star Wars” and computer games. His current obsession is football. He prefers memorizing scores of football games and tries to dominate the conversations around the topic of football. Although this interest is not atypical of peers his age, he incessantly talks about it and often at inappropriate times (i.e. during classes). He is also immature and often does not act age appropriately. This behavior includes picking his nose in public and other actions associated with younger children. His parents insist that he needs assistance learning how to socialize properly. He participates on a football team in an attempt to gain socializing and has art lessons once a week as he is extremely talented in drawing.

**School history**

He started primary school at the age of 7. He had an assistant teacher for the first 3 years at a private school and the help of his sister (also a classmate). For the following 3 years it was decided that he was mature enough to be independent in the hope that he would be benefited from peer modeling and also by the process of dealing with his problems itself. He excels at computing and subjects where memory is the key ability (geography etc.) but he is rather weak at specific language areas e.g. reading comprehension, rephrasing and summarizing. He also has problems with metaphors and abstract notions. He does fine with basic arithmetic, but finds more complex mathematics confusing, especially when instructions are not explicit. This is an area where he needs support. Although he demonstrates interaction within a familiar
context he often seems bored when other peers are still working on tests and wants to go out and play as soon as he finishes. His teachers are enthusiastic with his abilities in geography, memorizing irregular verbs, spelling and art, but he encounters various problems concerning social skills, especially when he tries to engage in conversation with peers. He used to receive disciplinary actions from his teachers at primary school due to frequently interrupting the lesson being taught. He usually asked off-topic questions which his teachers found disruptive but seems to be more attentive in high school. He usually tends to go off into his own world, daydreaming about football and engages in egocentric and one-sided conversations focusing on items of interest. He would certainly benefit from some encouragement and praise. One of his main characteristics is that he hates holding hands which makes social interaction sometimes even more problematic. He works hard and strives to do his best at school. He hopes to become a computer programmer in the future.

Language school history

At the baseline phase James was a sixth grade student at primary school and learned English and German as foreign languages. He attended English classes in our language school twice a week, in two-hour sessions (extracurricular activity). He also had English and German lessons at the state school (at Greek state schools two foreign language subjects are compulsory). He also had French lessons at school last year. This year his parents decided for him to attend only two foreign language classes (English and German) so as not to have extra homework.
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I have been his teacher of English since he enrolled in our language school in 2008. As far as his language abilities he is now at level B1 according to the CEFR (Common European Framework of Reference for Language Learners). He participated in the Cambridge Young Learners Exams in the last 3 years and did well. According to my empirical observation as his teacher of English his language abilities are as follows: He exhibits excellent memory skills regarding vocabulary, writes with excellent handwriting, writes with no spelling mistakes, can ask simple questions and has short conversations in pair work tasks. However he is weak at listening comprehension as he cannot stay focused for a long time and never listens to the dialogues for a second time and extremely weak at reading comprehension especially when metaphorical meaning is conveyed.

As far as his social skills he exhibits the same level of socializing as in the state school. However, since the number of students is smaller, classes only last 2 hours and many topics concerned are within his interests, he seems to be more focused and disciplined.

**Subject B – Mary**

*Family background*

Mary (a pseudonym) is 14 years old and has currently completed her second year at junior high school in the mainstream education. She lives with her two parents and sister, who is 18 years old and a first year university student in a suburb of Athens. Her father is a civil servant and her mother is a nurse. They seem to be aware of the situation and willing to learn more. According to her mother her sister is a very good student and sensitive towards diversity.
However she seems to be indifferent to her sister’s situation and rather willing to ignore it rather than dealing with it. It seems that in this case, embarrassment by her sister's behavior prevails over her better judgment, as is typical for most teenagers.

**Interventions**

Mary showed signs of Autistic Spectrum Disorder from a very early age. Her mother recalls first expressing serious concern when she was approximately 2 years old. At first, her concerns were focused on not speaking as well as not reaching fine motor developmental milestones. Later Mary developed obsessions. As time passed, other difficulties emerged (e.g. she showed hyperactivity and had more obsessions) and Mary was given an initial diagnosis of Pervasive Developmental Disorder at the age of 4 and at the age of 8 she was diagnosed with Asperger’s syndrome. Her scores in fine motor skills finally fell within the normal range and her handwriting is legible but she shows some kind of gross motor clumsiness. In terms of services, Mary participated in an early intervention program and finally attended school with typically developing peers. She still attends sessions of behavior management.

**Social skills**

Mary, according to her mother, does not act age appropriately. She needs to learn to monitor her behavior and find alternative ways to express her frustration and not lose control of her emotions. Her mother has also shared concerns with her teachers that she does not have friends outside of school. Her peers seem to avoid her because sometimes she becomes upset and
often cries or yells, blames classmates or teachers, refuses to participate in activities and uses foul language. She seems to ignore what others think of her. She is not personal image aware.

**School history**

Mary started school at the age of six. She had a lot of problems with peers as she had tantrums and used language inappropriately. She did not make friends and her teachers complained about her behavior. As a pupil she was weak at writing and maths. She also receives disciplinary actions from her teachers at school due to frequently interrupting the lesson being taught. She usually asks off-topic questions which her teachers find disruptive and peers, according to her mother, seem to ignore her. She was bullied by her classmates many times, especially at the primary school, when peers took her money and school material.

Her mother seems the most involved in her education. According to her, they do homework together as she still needs assistance academically. She feels that Mary has emotional difficulties as well as attention difficulties. She has fairly good memory but she has problems with school subjects and homework as she is not diligent and not always focused. She is particularly weak at math and gets low grades in almost all subjects.

She needs reminders to pay attention during class and tends to rush through schoolwork, not reading questions in a hurry to complete her assignments. She has problems with abstracts and complex mathematics. She likes basketball a lot and trains twice a week on a team. She also participates in scouting and she is fond of it. For her parents it is an attempt to gain
socializing as she needs assistance learning how to socialize properly. Finally she does not discuss the future much, although once she stated that she wanted to become a hairdresser.

Language school history

At the baseline phase Mary was a first grade student at mainstream high school. She also learns English as a foreign language in our school twice a week, in two hour-sessions (extracurricular activity). She also has English and French lessons in high school (two foreign language subjects are compulsory according to the state high school curriculum).

I have been her teacher of English since 2008. As far as her language abilities she is now at level B1 according to the CEFR (Common European Framework of Reference for Language Learners). She has not participated in any language exams so far. According to my empirical observation as her teacher of English her language abilities are as follows: She exhibits good memory skills regarding vocabulary, writes with legible handwriting, writes with some spelling mistakes, can ask simple questions and has short conversations in pair work tasks. She is weak at listening comprehension as she cannot stay focused for a long time and is usual unwilling to listen to recorded conversations, at reading comprehension and especially at writing, where she starts an introductory paragraph and never finishes although writing is assisted.

She often refuses to participate in activities that do not interest her, although she seems eager to participate when activities are within her range of interests. She appears bored at times which can be seen through her body
language (standing up, fidgeting). Sometimes although still sitting with the group, she seems to have removed herself from the task. She has limited attention span, sometimes shows hyperactivity but likes constantly being praised and showing off. She also likes to impose things on others rather than collaborating (pair work). She encounters a number of problems with peers because of her insistence, lack of social skills and sometimes impulsive, abrupt behavior (yells for no reason during lesson and then in a self-awareness crisis she apologizes). She often complains when homework seems demanding or when tests are due. She has the habit of interrupting others and her peers think that she is loud and disruptive and two of them are completely intolerant. She seems indifferent to their feelings. She needs to improve her socialization skills and act more maturely.

Mary is a girl scout and likes going on excursions. She plays basketball in her free time and she is currently attending an intervention program to develop her social skills and behavior.

5. METHODOLOGICAL APPROACH

This research has adopted a qualitative methodology comprising elements of a case study and action research following an interpretivist paradigm. This methodology was chosen because of the small number of participants and my relationship with them as their teacher of English and the fact that it was conducted in a naturalistic setting. It dealt with the study cases of two children
with Asperger’s syndrome included in a group of eight (six typically developing ones) who are learning English as an Additional Language.

It included the use of participant and non-participant observation, a focus on natural settings, use of the subjective views and belief systems of the participants in the research process to structure that research. It was a qualitative-oriented approach involving considerable training, continuous record keeping and extensive participatory involvement of the researcher in the classroom and careful interpretation of the data.

The case study was selected as it brings us to an understanding of a complex issue and can extend experience or add strength to what is already known through previous research through extensive description and contextual analysis (Yin, 2002). This study aims to give a portrayal of a specific situation identifying the unique features of interaction within it and providing an example of “real people in real situations” (Cohen, Manion & Morrison, 2000) or as Bell (1987) points out “a case study puts flesh on the bones of a survey”.

Although case study may take many forms according to Stake’s (1995) definition it is “the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances”. This particularity has been troubling case study as for many remain outside the canon of respectable social scientific method (Flyvbjerg, 2001/2006). However, it was Aristotle who first emphasized the significance of case knowledge, who insisted that one cannot be satisfied with universals and that knowledge is validly conceived of as “phronesis”, the ability to see the right
thing to do in the circumstances (Thomas, 2011). Aristotle’s “phronesis” of human learning and behavior was disregarded and this mistake led us in the failure to distinguish between different kinds of inquiry for different purposes. Kemmis & Carr (1986) discuss “phronesis” in the context of teacher development.

Campbell (1966) maintained that “case studies have a total absence of control as to be almost no scientific value”, but years later shifted his position that “…case study is the only route to knowledge” (Campbell, 1988).

Action research was selected as it is the key to making research relevant to the concerns and needs of teachers and the education profession (Kemmis, 1993). It is carried out by teachers in their own classrooms and the research goals and questions are local and specific to their own teaching environment (Lightbown & Spada, 2006).

As Kemmis (1988) puts it: “In my view, critical or emancipatory action research is always connected to social action: it always understands itself as a concrete and practical expression of the aspiration to change the social (or educational) world for the better through improving shared social practices, our shared understandings of these social practices, and the shared situations in which these practices are carried out. It is thus always critical, in the sense that it is about relentlessly trying to understand and improve the way things are in relation to how they could be better”.

Hopkins (1985) expresses this aspect of practitioner research in the words: “Teachers are often the servants of Heads, advisers, researchers, text books,
curriculum developers, examination Boards... By taking a research stance, the teacher is engaged in a meaningful professional development activity and also in a process of refining and becoming more autonomous”. In action research you need to become aware of your own values, preconceptions and tacit pedagogic theories. You also need to make an attempt to reflect honestly and critically on your behavior and actions and to share these reflections with colleagues. Action research allows the teacher “as researcher” to reflect and inquire into classroom experiences to develop new knowledge that leads to action. It is controlled by the teacher, its focus is on teaching and learning and one of the main purposes is to improve practice. Teachers are reflective practitioners, developing and using “phronesis”. Hopkins (2007) asserts that: “It is teachers who, in the end, will change the world of the school by understanding it”.

Edwards & Talbot (1999) have noted that the case study can be used in practitioner research to illustrate a set of principles, to provide some detailed description of a topic of interest or to explore a field of study and gather information on it. Echoing the view that Bassey cited in Bell (1987) takes “the merit of a case study is the extent to which the details are sufficient and appropriate for a teacher working in a similar situation to relate to his decision making to that described in the case study. The reliability of a case study is more important than its generalizability”.

However, this qualitative approach is not without difficulties. Firstly, as Woods & Pollard (1988) point out “studies like this are like a snapshot frozen in time’.
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Woods (1988) further explains that “they may give a more complete picture, but it is a picture limited to one set of people and circumstances over a particular period of time and do not allow to make generalizations about large samples of people”.

In addition the wider discussion on the issue of external validity cannot be ignored as it is connected to the question of generalizability (Campbell & Stanley, 1963) i.e. being able to generalize findings to diverse populations and times (Smith, 1975: 88).

The generalizability criterion is central in validating the offer of social science. Case study has found difficulty in meeting this criterion and has rested its status epistemologically. Thomas (2011) argues that to seek generalizable knowledge, in whatever form, is to miss the point about what may be offered by certain kinds of inquiry, which is exemplary knowledge. The exegesis of that exemplary knowledge rests in the “phronesis” of the researcher. It is this phronesis that enables the construction of the good case study, its critical reading and its use.

This project, however, does not embrace the qualitative versus quantitative stance. While I acknowledge that case studies are obviously inconsistent with the requirements of statistical sample procedures, seen as a fundamental to generalizing to some larger population, I see my goal in this project as one of describing a specific group in detail and of explaining patterns that may exist and are not as one of discovering general laws of human behavior. As Schofield (1990) asserts “my goal is not to produce a standardized set of
results that any other careful researcher in the same situation or studying the same issues would have produced. Rather it is to produce a coherent and illuminating description of and perspective on a situation that is based on and consistent with detailed study of that situation". Where the classical conception of external validity is put on replicability (Krathwohl, 1985: 123) qualitative researchers shift their focus on internal validity in the sense of the quality of the support the evidence offered gives about the accuracy of the depiction of the situation. Where the classical conception of external validity is put on replicability (Krathwohl, 1985: 123) qualitative researchers shift their focus on internal validity in the sense of the quality of the support the evidence offered gives about the accuracy of the depiction of the situation.

Goetz and LeCompte, 1984 place emphasis on the importance of clear and detailed description as a means of allowing decisions about the extent to which findings from one study are applicable to other situations. They argue that mainly qualitative studies gain their potential for applicability to other situations through what they call ‘comparability’ and ‘translatability’. The terms:

“...refer to the degree to which components of study - including the units of analysis, concepts generated, population characteristics and settings – are sufficiently well described and defined that other researchers can use the results of the study as a basis for comparison”. (1984: 228)
As a matter of interest, a common concern about case studies put forward by their critics is that they provide little basis for scientific generalization (Yin, 2003a, p.10). Yin's (2003a) answer to this:

"case studies […] are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study […] does not represent a ‘sample’, and in doing a case study, your goal will be to generalize theories (analytical generalization) and not to enumerate frequencies (statistical generalization)” (p.10). [14]

Nevertheless even with this conception of generalizability I acknowledge that internal validity is served when research protocols are clear, consistent and relevant to the situation studied. That is why I have tried to create such protocols that can be used in a process that Stake (1978) calls “naturalistic generalization” that is taking findings from one study and applying them to understanding another similar situation.

As the research is in the interpretivist tradition which is inherently subjective, the reliability depends on my reasoning and inductive skills and degree of objectivity and logic as a researcher. As Cohen, Manion & Morrison (2007) point out “threats to validity and reliability can never be erased completely; rather than the effects of these can be attenuated by attention to validity and reliability throughout a piece of research”. On the other hand, it is necessary for myself to acknowledge the possibility of the “halo effect’ as the subjects chosen have been my students for many years. The evidence from the
literature on the subject should add some credence to the study as there may be echoes or resonance with other research already carried out.

The findings will help me within my own educational setting to adapt and learn from others and where applicable to adapt and change within this context. At a general level it is hoped that other schools, in similar contexts will recognize the responses made in a similar situation with similar expectations required from a recognized and understood policy. It will not be possible to exactly repeat this study again as it involves different people in different places at a particular time. The results would not come out in the same way but if practitioners agree that it is truthful then from that point of view it should make sense at “face value” or have “ecological validity”.

Although this is a small study which makes no claims to generalize the findings, I felt that within the brief of illuminating the research questions, cross checking in this way provided validity.

The commitment to truth, openness and ethics that underpins all the processes and procedures in this research contributed to keeping it honest and believable.

6. DATA COLLECTION TOOLS

In accordance with research questions, I have used research instruments for both the baseline and the intervention phase which include: language skills observation protocols, behavior observation protocols and basic language
skills control lists so as to check the behavior and the linguistic skills of students. I have used questionnaires for students and parents to collect information regarding their goals and expectations in English as an Additional Language learning and I have gathered examples of students’ work and tests results before and after Interactive Whiteboard application in terms of motivation and interactivity. Data were also collected from legislation and literature, field notes and diary keeping.

In order to enhance internal validity, the research triangulated the views of parents and students. Triangulation is broadly defined by Denzin (1978) cited in Jick, Todd D. (1979) as “the combination of methodologies in the study of the same phenomenon”. For triangulation purposes observation protocols, structured and unstructured questionnaires and interview schemes were designed to cross reference each other. Thus I interviewed children, observed their behavior and evaluated results to enhance validity of the research.

As my research tried to capture the impact of Interactive Whiteboard use on teaching and learning for students with Asperger syndrome the following protocols were used:

1. **Discourse Management Observation Protocol.** Tries to capture the discourse management pattern of the student in the classroom. Supplemented with field notes. Relates to research questions A and D.

2. **Social Interaction and Behavior Protocol.** Tries to capture significant social behavior instances in the classroom. Supplemented with field notes. Relates to research questions A and D.

3. **Language Skills Observation protocol.** An assessment of basic language skills and sub skills related to Listening, Writing, Speaking
and Reading Comprehension. Supplemented with test results and samples of the students’ written work. Relates to research question B.

4. **Social Skills Questionnaire.** Tries to capture how the student himself / herself perceives his/her social self and behavior. Relates to research questions A and D.

5. **Language skills questionnaire.** Tries to capture how the student feels about his language learning abilities. Relates to research questions B and D.

6. **Goals / Expectations questionnaire.** Tries to capture the affective filter settings of the students. Relates to research question A.

7. **Interview questions (Social skills - Behavior) for students.** Tries to capture how the student himself / herself perceives his/her social self and behavior. Serves as a triangulation tool for the Social Skills Questionnaire. Relates to research question D.

8. **Interview Questions (Language Skills) for students.** Tries to capture how the student feels about his language learning abilities. Serves as a triangulation tool for the Language Skills Questionnaire. Relates to research question B.

9. **Goals / Expectations Questionnaire for parents.** Tries to capture parents’ attitudes towards the social significance of learning English in Greece. Potentially combines with tool Nr 8 for triangulation purposes.

10. **Interview questions (Parents Opinion).** Tries to capture how parents perceive their child’s attitude towards English language learning. Relates to research questions A and D.

11. **Participants’ background.** To collect information on the participants’ background I used the Background Interview Questionnaire as well as my empirical opinion as their English as an Additional Language teacher during the last 5 years.

All these protocols were used in the baseline and Intervention phases for comparison. After baseline phase revisions in the protocols emerged and appropriate changes were made for the process of the research.
7. TRIANGULATION

Data collection is not a neutral logistical process. The researcher is not simply picking out facts from what seems to be a chaotic seed-bed for ideas. She is actually interacting with them creating a reconstruction of what was observed. This involves ordering of data into some kind of integrated, logical representation.

The first step in this construction was to identify the major theme categories behind which the data can then be marshalled. In order to make sense of the meanings created by the participants, their way of thinking and individual perceptions in a reliable and valid way I chose to categorize data into the following themes: Learners’ Behavior, Learners’ Social skills, Learners’ and Parents’ attitudes and Learners’ Language skills.

These categories emerged both by the process of the research itself, the Literature Review and my empirical assumptions as a teacher. The data collection tools were thus designed in such a way so as not only to enable categorization of raw data but also to provide internal cross referencing to each other for triangulation purposes. Apart from allowing for data triangulation, the whole research was designed to facilitate multiple triangulation by the use of different methodological strands within the qualitative paradigm (action research and case study) and investigator triangulation by employing multiple observers (assistant language teacher and assistant psychologist).

By combining data collection methods, observers and research perspectives I hoped to overcome intrinsic bias and problems related to single-data
collection tool, single-observer and single-method approach. Since the research was undertaken in a quite specific context with a limited sample I felt that it was crucial to obtain confirmation of findings through convergence of different perspectives.

Therefore triangulation was planned and conducted in the following way:

A. Planning triangulation: First key questions were identified and background information of the two participants was gathered. Research questions were refined and protocols were created and examined. Observer assistants’ trial observation sessions were conducted.

B. Conducting triangulation: Data were gathered by observations, interviews, questionnaires, a diary and field notes. Established literature and official documents were also used so as similarities and differences be found.

Primary Analysis began immediately. While interview transcripts were made, field notes of observation were compiled and documents assembled the data were continuously examined, highlighting certain points or writing comments. Results were grouped by similar and different views and results from previous literature. This way common themes emerged, references to related literature were made, comparisons and contrasts with other data were also made. There was cross-checking between pre and post behavior and social skills attitude observations by the researcher (teacher) and the assistant observer (psychologist) as well as between language skills observations by the researcher and the assistant observer (language teacher). Findings were compared and discussed to develop broader and deeper understanding of how each observer viewed the issues. Observation protocols were also
checked together with researcher’s field notes. Questionnaires and interviews by parents and students were analyzed and cross-checked to identify common and different viewpoints and attitudes and the diary provided more data and personal insights.

Finally three language tests results (before the use of the IWB) and 3 language tests results (after the use of the IWB) were compared in an attempt to capture any improvements in the participants’ performance.

C. Communicating triangulation: The final stage was summarizing findings and drawing conclusions. Results were presented as well as recommendations (strategies for teachers) and next steps based on findings were outlined.

All in all in order to establish validity: a) Unobtrusive measures were taken such as preservation of natural setting, access to documents and reports, personal first-hand experience, reflectivity, assistant observers’ views taken into account b) Triangulation was conducted and c) There was some respondent validation (some findings were demonstrated to parents of the participants and comments were very good).

8. DATA COLLECTION TOOLS: STRENGTHS AND WEAKNESSES

Interviews

Hammersley (1992), Silverman (1993) and Kvale (1996) among others state that interviews are social events based on mutual participant observation. Structured interviews maximize the chances that more or less the same
information is collected from all respondents, the data is coded at the point of collection, they are practical, large amounts of information can be collected from a large number of people and can be analysed more 'scientifically' and objectively than other forms of research; therefore the responses are easily comparable; last but not least, they can be replicated (Hammersley et al., 2007).

As Nunan (1992) puts it “An unstructured interview is guided by the responses of the interviewee rather than the agenda of the researcher. The researcher exercises little or no control and the direction of the interview is unpredictable”. Unstructured interviews allow some control over the type of information gathered so that there is a focus on the main areas for the study questions, but give enough looseness for the interviewees to talk freely within the open-ended questions (Bell, 1987).

However, phenomenologists state that quantitative research is simply an artificial creation by the researcher, as it is asking only a limited amount of information without explanation. They claim that in structured questionnaires there is no way to tell how truthful a respondent is being, may be forgetful or not thinking within the full context of the situation, people may read differently into each question and therefore reply based on their own interpretation of the question, they limit the possible range of answers and there is a level of researcher imposition (Ackroyd & Hughes, 1981).

I felt it was necessary to interview parents of the two children and the children themselves before and after the use of Interactive Whiteboard. These interviews were conducted at the school premises, were individual and
scheduled at weekends so as not to be interrupted or overheard by others
and participants feel comfortable. I had guaranteed confidentiality before the
interview and had obtained permission by parents to interview pupils. I made
every possible effort so that interviewees feel at ease. I explained that
whatever said would be treated in confidence and I gave clear and concise
instructions. Open ended questions provided some additional credence to the
study as interviewees were more flexible in their responses and also provided
some further illuminating information and data on attitudes. Where information
was of a sensitive nature I gave people the choice to opt out.

Because there was threat to validity in that I was the instrument for gathering
the data from the interviews I tried to lessen this effect by remaining as neutral
and as self-aware as possible throughout the interviews in order to avoid
contaminating what the subjects had to say. In addition I created a relaxed
atmosphere for the interviewees conducive to the collection of rich data.

Structured observation protocols

Structured observation protocols were also included in this project as a means
of generating quantitative data. Children’s interactions were noted down every
10 minutes during lessons. Structured observation provides a broadly
accurate account of frequency of different kinds of activity (Hammersley et al.,
2007). An influence of bias concerns the Hawthorn effect which is general to
all observations (Cohen et al., 2000; Hopkins, 2002). The limitation here lies
at the fact that you have a short time to decide what to record and you cannot
do as detailed an analysis as would be possible with an audio or video
recording (Faulkner et al., 2003). However, for observations in a whiteboard classroom this may be less of an issue as far as pupils’ are concerned since their attention is often fixed on the board when in use.

In order to provide as a detailed and accurate an account as possible of the nature of the setting and of what was said and done while the observation was being carried out I also wrote field notes as a source of data.

**Field notes - Diary**

Field notes are very simple to keep, provide good ongoing record, act as a memory aid, allow for convenient study and reflection and provide rich contextual evidence. On the other hand it is extremely difficult to record detail, there is a danger of bias as observers may see what they want to see, need systematization and they do not work well with large groups (Hammersley et al., 2003). Field notes ideally provide the “thick” description necessary for the researcher to grasp the nature of the setting under investigation and also serve as a “track record” of the project thus giving the chance for different interpretations to emerge in the light of what has already been discovered.

A diary was also kept which enabled me to gain information about events and children’s work on writing tasks and written tests during the baseline and the intervention phases which provided information of how teaching has gone as well as pupils’ knowledge and understanding.
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**Questionnaires**

The main purpose of using questionnaires in the study was to provide triangulation for the data collected in the interviews. In addition some further information around attitudes and understanding was gathered using open-ended questions alongside some questions using a Likert scaling technique.

Questionnaires helped as a great amount of information was gathered quickly and processing data was also fast and straightforward and as Bryman (2008) cited in Dornyei (2010) points out structured questionnaires can reduce the bias of interviewer effects and increase reliability of the results. They have limitations as Gillham (2008) cited in Dornyei (2010) mentions e.g. respondents may leave out certain questions either by mistake or because they do not like them, there are sometimes literacy problems, the researcher has little opportunity to double-check the validity of answers and the results sometimes represent what the respondents report to believe than what they actually believe. In order to avoid such constraints I made sure that respondents answered all the questions, explained clearly every single question and answered to relevant queries, I gave ample time to the respondents to think carefully and I did my best so as respondents did not deviate from the truth. As far as the language limitations are concerned, I first created all protocols in Greek which is the L1 of all the participants and the wording was carefully constructed, accurate and in an unambiguous style without the use of idioms and metaphors. I then translated them into English except for the “Language skills” and “Discourse management” observation
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protocols since these were given to the observation assistant who is an English as an Additional Language teacher.

Questionnaires were created according to the CEFR (Common European Framework of Reference for Languages). CEFR is a framework for reference which was designed by the Council of Europe to provide a transparent, coherent and comprehensive basis for the elaboration of language syllabuses and curriculum guidelines, the design of teaching and learning materials and the assessment of foreign language proficiency (Council of Europe).

Observation assistants

Two assistants were used for the observations (an experienced English Foreign Language teacher and a clinical psychologist specialized in children with autism). Both were trained in using the observation protocols during specific sessions before the baseline phase. Then they took part in trial observation sessions and finally attended feedback sessions on their skills, performance and possible areas of improvement. There were 10 observations of whole-class lessons in the baseline phase (5 by the language teacher observing discourse management and language skills and 5 by the psychologist observing behavior and social skills) and 10 observations in the intervention phase.
9. DESCRIPTION OF THE PROJECT

In October 2011 based on my empirical teaching experience and observation and initial reading I selected the first research project and prepared the research proposal and the research action plan.

In November 2011 using the Bolton Library services I tried an initial literature review draft on the subject.

I also met with children's parents and asked for their consent for their children to participate after explaining that I take their privacy seriously and all information they would provide to me is confidential. I further explained that personal data would be collected only for the purposes of academic research and anonymity would be kept throughout this project. Both parents were willing for their children to participate and keen to see the outcomes of the research. After gaining a first insight in this way through literature reading I created the first protocols, including parents’ questionnaires regarding the background of the two children and their goals. I talked with the school owner outlining the aims of the study and the methods that would be used as well as the strategies for ensuring confidentiality and how we would deal with them and gave him the letter of consent. We also explored the logistics of my research (time schedule, school availability, staff cooperation, not disturbing the school life etc.).

In December 2011 I conducted the first interviews with the parents of the children. I arranged individual interviews at the school premise during the weekend so as not to be disturbed and make them feel more comfortable. I
gave them choice to opt out whenever they felt like that and explained that the results of this project would be at their disposal. As I am the teacher of the children I felt that both parents were eager to participate so I had no problem during the interviews and they expressed their anticipation for the results. I also conducted interviews with the two children as well during the weekend and gathered information on their goals concerning foreign language learning and language skills and their social skills in the classroom environment.

Mid December I put together timetable and identified initial steps, I organized the training of the two observation assistants. THE English as an Additional Language teacher was trained in using the language skills and the discourse management protocols while the psychologist became familiar with the social interaction and behavior protocol. We organized a trial observation. After this pilot observation we discussed and got feedback and provided alterations.

From September 2011 to May 2012 the baseline phase took part. There were 10 observation sessions during the baseline phase. Sessions lasted 60 minutes and involved the language lessons where observation assistants completed the protocols every 10 minutes and the researcher / teacher kept field notes. In the baseline phase no interactive whiteboard was used. There were discussions on classroom observations after each session with the observation assistants. The baseline phase included specific lesson plans, protocols, field notes, a diary, examples of students’ work and test results. There was also a teaching assessment protocol. Analysis of the baseline
phase took place during June – July 2012. Then a transition was made to the intervention phase.

Intervention phase started in October 2012 and finished May 2013. There were ten 60-minute sessions with the use of Interactive Whiteboard. The intervention phase included again specific lesson plans, language skills and behavior protocols, field notes, a diary, examples of students’ work and test results and a teaching assessment protocol. Analysis of the Intervention phase took place in June – July 2013.

In school year 2013-2014 I prepared the final draft.

10. TIME FRAME

October – January 2011: Meeting with language school owner (consent and confidentiality matters) – forms attached

November – December 2011: Questionnaires for parents regarding background and goals (letters of consent given), observation assistants training sessions, students’ questionnaires, Literature review draft,

Baseline phase: September 2011 – May 2012, ten 60-minute sessions, without the use of interactive technologies. The baseline phase included specific lesson plans, language skills observation protocols, behavior observation protocols, students’ test results, field notes, diary, examples of students’ work and teaching assessment protocols.
June - July 2012: Case Analysis of Baseline phase

Intervention phase: October 2012 – May 2013, ten 60-minute sessions, with the use of interactive technologies. The intervention phase included: specific lesson plans, language skills protocols, examples of students’ work, students’ test results, field notes, diary and teaching assessment protocols.

June – July 2013: Cases analysis Intervention phase

2013 – 2014 school year: Final Draft

11. ETHICAL ISSUES – CONFIDENTIALITY

Throughout the research conscious efforts to maintain confidentiality were made. All information provided by participants was used solely for the proposed research and was securely stored in the school to ensure privacy for the families involved. Letters of consent were given by parents of both participants.

The researcher adheres to the fact that confidentiality of information is a top priority and all parties involved were not forced to give any information for the sake of research validity. This project was conducted according to the University of Bolton “Code of Practice for Ethical Standards in Research involving Human Participants” assessed at:

http://www.bolton.ac.uk/Students/PoliciesProceduresRegulations/AllStudents/ResearchEthics/Documents/CodeofPractice.pdf
ANALYSIS

This section contains the observations and data analysis of the Baseline phase. It is followed by a description of what happened in the Intervention phase after the introduction of Interactive Whiteboards in the classroom.

Phase 1 (Baseline stage)

In order to collate data from questionnaires and interviews and case study findings in a useful way I have sub-divided those in 3 sections:

1. Structured questionnaires and unstructured interviews for parents regarding their goals and expectations and personal understanding regarding the language skills of their children.

2. Structured questionnaires and unstructured interviews for students regarding their goals and expectations and language skills as well as interviews about their take on their behavior.

3. Language skills observation protocols, behavior observation protocols, students’ results from tests and my field notes.

1. As far as their goals and expectations both parents felt that English is important for their children’s future as a certificate in English is considered an asset in Greece. James’ father found it useful for him to learn English so as to communicate with others and gain knowledge. He thought it would be also useful to participate in social networks. He also described his child’s attitude towards learning English as a positive one, “James never complains about homework” he said, but expressed concerns about his behavior when an
activity is of no interest to him. Finally, he was sure that James would get a certificate (he had already passed the Cambridge YLE exams with flying colors). His main concern was his relationship with peers, especially at the state school, as he appears to be an easy target for bullies.

Mary’s mother, on the other hand, believed that gaining some knowledge of English would be to her benefit and learning English is something all children her age do. However, she expressed concerns about her getting a certificate as Mary lacks motivation and behaves “immaturely” in class. In her interview she commented on Mary’s indifference on school subjects, activities that make her get easily bored and on her denial to participate in certain activities, especially writing.

Both parents believed that socializing with peers was of utmost importance and this was a significant reason why they had their children enroll in the evening English classes in an attempt to make friends. Both parents revealed that bullying occurred throughout their primary school years. As a result James prefers to stay away from peers and spends his spare time at his computer. As his father explained “Other students find his behavior strange, even threatening, so he does not have any friends. At home he likes working on his computer. He is not always in touch with reality. It’s like living in another world. But we try to offer him meaningful leisure pursuit with various activities.” Mary had many conflicts and fights with other classmates at school but she still tries to make friends. Her special interest is at the moment Facebook and as her social skills are poor and she often uses inappropriate language her family is worried about meeting strangers on Facebook.
Finally James’ father would be happy if Interactive Whiteboards were used in the classroom as his son is good at computing but Mary’s mother was not sure whether this would help her or not. Consequently the main reasons why both parents wanted their children to be enrolled in the language school course are first of all to enhance social interaction with peers and secondly to obtain knowledge in English as it is considered important in Greece by all parents.

2. Students’ questionnaires showed that both children liked learning English. James reported that he likes taking tests and Mary likes being with friends; however they both felt bored in class when activities that did not interest them came up. They always felt frustrated in the speaking activities and their classmates were sometimes annoyed by their behavior. Mary sometimes shouts during the lesson. Once she refused to do a grammar activity and when a classmate told her to be quiet she called her names angrily. James explained he prefers sitting alone, working silently and does not like raising his hand to bid in the answering process. He also hates sitting in a different place (without prior preparation that is checking whether the chair is clean or not). Once his chair was occupied by another classmate and he went berserk. His classmate agreed immediately to move back.

*J:* I don’t like sitting next to a classmate. I don’t like people touching my school things.

*Teacher:* What if you sit with someone who is kind and asks before he gets anything?

*J:* No, I prefer sitting alone.
This is consistent with what I noticed from day one that his books and pencils are always neatly lined up on the desk, always clean and tidy in his bag and he does not want anyone else writing in his book or taking his pencil or eraser.

James also reported he does not always understand what the teacher wants from him. He does not like reading comprehension activities but he knows he is good at spelling and vocabulary memorization and he likes taking tests. He found the experience of participating in the YLE exams “very good”. He admitted he was anxious but he added with pride: “I like multiple choice questions. I liked it when I took the Flyers exam last year. I answered all questions. I passed”.

Mary on the other hand likes sitting with another girl and chatting during the lesson, something that sometimes makes her classmates angry with her. She especially hates listening comprehension and writing. She explains she always needs help for doing homework and does not like tests. “I don’t want to do any exercises in class. I like meeting my friends here. I have fun when we do projects and watch movies or listen to songs”.

Mary often displays uneasiness during lessons and giggles inappropriately. She does grammar exercises fast without reading or checking answers. She also circles multiple choice questions at random. One day I noticed during a grammar lesson that she had her book closed and did a crossword puzzle in her workbook instead. When I asked her to do the grammar exercise she just refused again with an angry look on her face and went on doing the crossword puzzle. This was an embarrassing moment for me as I had to
explain the whole class why they had to do grammar exercises when Mary did what she liked.

In general both learners like lessons when activities that interest them come up. With activities they find challenging however they are completely negative. Mary seems immature to follow class rules and James does that grudgingly when the activity is of no interest.

Students’ were consistent with parents’ answers as they want to obtain knowledge on the subject. Parents think English knowledge will be important for their future and students feel they will be able to communicate through the Net. On the other hand parents feel that activities that frustrate them are grammar ones while learners feel the hardest for them is the speaking part of exams. Parents feel their children cannot interpret gestures and facial expressions accurately while their children seem to ignore that.

James is interested in computers (his father also reported that) and he wants to pursue this area for future training and employment (he wants to become a computer programmer) and loves to work independently on his laptop at home.

3. Baseline phase also included behavior and language skills observation protocols from ten 60-minute sessions and showed the following:
A. Behavior observations

James

James does not initiate communication with peers and answers to the teacher’s questions with no eye contact. He uses appropriate body language. He avoids greeting upon arrival. When his classmates greet him he often responds to them appropriately saying “Hi!” although he does not make further conversation with them. When he does converse with his peers he often tries to dominate the conversations around football or “Star Wars”, his favorite topics and does not realize that other people might not be similarly interested. His peers are sometimes fascinated by his knowledge on the subjects, something that makes him proud and confident:

Pupil: How do you know so much? How come you remember all football teams, scores and players?

J: I know everything about football.

Pupil: You are amazing! And you know all capital cities, as well.... What is the capital city of Hungary?

J: Budapest.

Pupil: Wow! (Turning to another pupil) He’s great! I had no idea. Did you?

However he sometimes interrupts and speaks over peers making irrelevant statements e.g. “Barcelona is going to win on Sunday!”, “Messi scored 3 goals yesterday” or “A new Star Wars movie is going to be released next year!” Also his
adherence to rules makes him sometimes unpopular with his peers. “Don’t touch the teacher’s pen” or “You shouldn’t do that. I have to tell the teacher now”.

He experiences a high level of social isolation at the state school: “I don’t want to be with peers during the break. And they don’t want to be with me. They often call me names”. On the other hand in the language school he is not anxious as the number of students is small and the teacher supports him during the lesson. “I like my teacher. I don’t like the noise sometimes. Then the teacher tells me to go out for a while and relax. I sit at a chair in her office. I like that.”

His desire for privacy every now and then is evident as he starts fidgeting in a way he is shutdown. He also likes routine (follows the ritual of sitting down, taking school things out of his bag, holding his pen and waiting for the teacher to start the lesson) and finds switching between activities of listening, reading, spelling, speaking difficult, but with the help of the teacher he seems to cope with it.

Another thing worth mentioning is that he has trouble functioning if there is a lot of noise around. For instance in the first fire drill he got scared and had no idea where to go and what to do although clear instructions were given to students. He was in panic with his hands covering his ears and only calmed down when the teacher explained that it was the fire alarm and would soon stop. The same thing happened with Mary that day with her hands covering her ears and giggling. Sensory overload is a problem for children on the spectrum and a friendly classroom environment is of utmost importance. The bulletin board in the classroom has also been a distractor for James. When once he saw a piece of writing with a football player of a team he disliked he started shouting that this is the worst team. “Chelsea is the best!”, he shouted.
I had to explain to him that he could create a piece of his own to put it there next time. He was then relieved and happy to make something about his favorite football player.

**Mary**

Mary lacks concentration in English and she likes chatting during the lesson about irrelevant things. She greets her peers and usually hugs them. However she also gets easily angry with her peers for no reason and has verbal outbursts. She gets easily distracted and often refuses to participate in various activities. The teacher usually tries to ignore inappropriate behavior. Mary modifies her behavior when the teacher praises her. She does not always use appropriate register and does not respect turns. She asks irrelevant questions but holds quite good eye contact with peers. She is inattentive and unwilling to cope when she finds a task difficult: “Boring! I don’t want to do it. Let’s play”. When the teacher explains that they have to continue she shows stubbornness and refuses to cooperate. She puts down the pencil and looks angrily at the desk. She never completes class work activities and often asks to complete them at home. She is restless and reluctant to cooperate. Finally she exhibits social naivety and that makes her an easy target for ridicule. She often says she likes coming to classes because of meeting her “friends”.

On Friday evening she comes to class dressed up. It is the first school Ball after class and children are excited. Irene shows discomfort. Mary seems to
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ignore such “signals”. She is not aware of the impact of what she says has on others. She feels she is among friends.

M: Irene, you’re my best friend

(Irene giggles)

M: What will we do on Sunday?

Irene: Nothing

Teacher (to Irene during the break): Why do you like to tease Mary?

Irene: She is stupid.

Teacher: That’s not kind.

Irene: I know, miss, but everyone at school believes so. Some students call her “monkey”.

Teacher: Does she know?

Irene: No, that’s behind her back. But they call her other names in front of her.

Teacher: How would you feel in her shoes?

Irene: I know, it’s not right. It’s just a joke.

Teacher: It’s not when somebody’s hurt. How would you feel?

Irene: It’s a joke. Besides she doesn’t understand.

Teacher: How would you feel? Honestly.

Irene: Awful.

Teacher: Then stop doing so.

What I also have noticed during the lessons is that both learners have problems understanding jokes and figurative language. Mary laughs as
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everybody else when someone cracks a joke but she does not seem to understand and usually asks for clarification later. James remains serious or smiles. The following was one of some Christmas jokes during a lesson in December: “Knock. Knock. –Who’s there? – Mary. –Mary, who? –Merry Christmas!”
Mary could not stop laughing. James remained silent.
Their attention span is short to some activities and not to others. Mary has often got temper tantrums and low motivation. James has problems with changes, avoids eye contact and is extremely defensive about being touched. They both accept help and have trouble with competition, i.e. winning, losing, and coming first.
Sensory overload is also a problem for students with Asperger’s syndrome and we have to explore further whether the initiation of Interactive Whiteboards will mean extra load in the class or “Drag and Drop” exercises will become stereotypical instead of enhancing social skills.

B. Language skills observations
Before going into a detailed analysis of the communicative competences of the two participants I feel it would be illustrative to start with a few notes about language skills certification in Greece and an overview of the Cambridge Key exam format and its demands on candidates.

B1. Language Examinations and certification
The dominant exam bodies in the Greek context among Language schools are Cambridge ESOL and Michigan University ELI. They both organise exams
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twice a year (in December and May) and award a full range of prestigious language certificates from the Common European Framework of Reference (CEFR) level A1 up to level C2. The learners participating in this research are preparing for the Cambridge ESOL certificate Key for schools, level A2.

B2. Key for schools exam

The Key for schools exam is targeted at the interests and experiences of school children roughly aged 11-13. The exam is set at level A2 of the Common European Framework of Reference for Languages (CEFR) and it covers all four language skills: Reading comprehension, writing, listening and speaking and knowledge of grammar and vocabulary.

The necessary communicative skills for the Oral Module as well as the rest of the Modules (Listening, Reading and Writing) are coded in a ‘CAN DO’ list (see Appendix for the Common European Framework of Reference (CEFR) ‘Can Do’ Lists). For level A2 descriptors for spoken production stipulate, for example, that candidates: “can communicate in simple situations and routine tasks, can identify information in simpler written material they encounter such as letters, brochures, timetables etc., can ask and answer questions, can discuss everyday practical issues in a simple way, can agree or disagree with others”.

The Reading module explores whether they “can understand simple written information such as signs, brochures, prospectuses, timetables etc.”. The Reading and Writing part of the test comprises 9 parts, 5 with a range of reading skills from short notices to longer texts and 4 that concentrate on
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testing basic writing skills. Part 1 is a matching task type (matching sentences to notices), part 2 is a three-option multiple choice exercise where candidates identify appropriate vocabulary, part 3 is a matching type exercise where they select responses in five conversations and part 4 consists of a long text followed by 7 right/wrong/does not say items. Part 5 is a multiple choice cloze with 3-option multiple choice items, part 6 is a word completion type of exercise (5 dictionary definition-type sentences and 5 words to identify and spell correct), part 7 is another open cloze (10 gaps to fill with one word), part 8 comprises of two short input texts and completion of an output text and part 9 is guided writing, a note, e-mail or postcard.

The Listening module requires them to “be able to understand phrases and vocabulary related to areas of personal relevance (basic personal and family information, shopping) and can catch the main point in short, simple messages and announcements”. The format of the Listening comprises of 5 parts with short conversations and 3-option multiple choice items, a longer dialogue and a matching exercise, another long dialogue with 3-option multiple choice, another long dialogue and five gap filling with one or more words and finally a long monologue and another gap-filling exercise.

The Speaking module tests their ability to “participate in a conversation by asking and answering simple questions”. The Speaking part of the test is two-paired, conducted face-to-face with another candidate. There are 2 parts. In the first the candidate interacts with the interlocutor who asks questions about family, hobbies, daily life etc. and in part 2 the two candidates interact with each other asking and answering questions. One candidate is given some
information (prompt cards given usually include social life i.e. places to go, times, how to get there etc.) and the other candidate is given written prompts to ask questions about this information. The candidate answering should remember to answer on the basis of the information provided.

B3. Language skills of the two participants

James

James almost always completes tasks and is very fast in doing so although sometimes he seems absent minded or distracted. When you ask him, however, he knows what we are doing in class. He understands simple questions and instructions in English; he reluctantly participates in pair work activities but always responds to the teacher when asked to do so. He has excellent rote memory and is the best in class in vocabulary memorization. In fact he was to first in class to memorize irregular verbs, something that most students find extremely challenging. In addition he writes with excellent handwriting and he makes no spelling mistakes. He also has a literal understanding of words and phrases and gets confused when phrases like “He has butterflies in his stomach” come up during the lesson. He looks straight at his stomach and anxiously asks the teacher whether he has any in. “Do I have any butterflies in my stomach now?” asks. When the teacher reassures him that this is a metaphor he feels relieved although he does not seem to have grasped the meaning of the phrase yet.

Reading comprehension: He finds reading comprehension a bit overwhelming and shows unwillingness to read a whole text and guess meaning from the
context. He understands short simple messages (e.g. e-mails, short letters, signs, and notices) but he shows little understanding of abstract concepts or ideas and when he is expected to make use of interpretation strategies, especially when he encounters unfamiliar lexis, he cannot handle it. Guessing meaning from context is extremely difficult for him. However, when the teacher is breaking material into smaller parts he can handle it better.

**Writing:** He can write a short message, a note, a card or e-mail but his writing is somehow prosaic. He shows sufficient controls of simple grammatical forms and uses appropriate vocabulary to talk about everyday situations. He is also very good at spelling and applies taught rules of grammar with some mistakes and uses the basic English word order.

**Listening:** In listening work he fails to complete all answer sheets as he never listens for a second time “I don’t want to listen again. I have finished. I am ready” and he gets easily distracted. He understands simple questions and instructions, the main idea of a short spoken text but he can extract relevant factual information only when he is concentrated and listens for a second time. All in all he understands basic instructions when people speak reasonably slowly (e.g. class times, dates etc.).

**Speaking:** He speaks with acceptable pronunciation, he can give personal information and ask simple questions with a few mistakes. He has been taught to ask the person to repeat when he does not understand and he communicates without long pauses. Finally his speaking is laconic, as he maintains simple exchanges.
Mary

As for Mary, she finds reading comprehension tasks challenging and usually says so loudly “Boring! Boring! Let’s play”. Her classmates usually tell her not to disturb. She also shows little understanding of abstract concepts or ideas. When the teacher tries to break material into smaller parts she seems to do better. She follows simple instructions but complains when she finds a task demanding. She often asks to take tasks at home and when she realizes that she has to do the task in class she behaves aggressively and writes only 2-3 lines. She shows only limited control of a few grammatical forms and uses vocabulary of isolated words and phrases.

Finally she hates tests; however she reacts angrily or gets excessively disappointed when she does not pass one and she rarely volunteers an answer in oral work, answers “Yes” or “No” but does not go further and often appears not to understand the question. She has considerable difficulty maintaining simple exchanges.

Reading Comprehension: She does not easily understand the main idea of a reading passage and has difficulty guessing meaning from context. She shows little understanding of abstract ideas and concepts. However, she understands short messages and recognizes punctuation symbols.

Listening: In listening comprehension work she is unsure of what she has to do and never completes answer sheets as she is always distracted or keeps losing the place on the CD. She can understand simple questions and instructions when people speak reasonably slowly but cannot always understand detailed information especially in recorded messages.
Writing: She has a quite legible handwriting but makes spelling and grammar mistakes. She refuses to write even notes or simple e-mails and she is extremely poor in creative writing. She writes short e-mails, simple notes and postcards related to personal information but she does not always comprehend the question and her writing is sometimes off topic.

Speaking: She gives personal information and asks simple questions. However, she does not speak with acceptable pronunciation and intonation and makes grammar mistakes. She has problems with question words and when she does not know what to ask she just reads the words from the prompts. Prompt: place? Afternoon show? Clothes / get? Mary: “What place is? Afternoon show? What clothes get?”

A few more points collected by teacher observations:
Unfortunately face-to-face communication in the Speaking part of the test together with two oral examiners is confusing for both learners. Both Mary and James have participated in a number of conversations (always with another candidate) and always feel anxious during oral practice skills. James does not hold eye contact and Mary does not always understand the question and demands repetition and clarification. Her questions are not always clear as she has difficulty with a few words and this makes the other candidate confused. James makes some grammatical errors but these do not make his language unclear. However, he avoids giving full answers.

The following is part of a conversation of the Key exam between Mary and another candidate:
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**Film for Students**

*Mary: Name of film?*

*Candidate: “Do animals dream?”*

*Mary: Friday?*

*Candidate: What do you mean?*

*Mary: Is Friday?*

*Candidate: (searching the answer) No, only on Tuesday 22 April.*

*Mary: Is for all classes?*

*Candidate: For classes 10 and 11*

*Mary: When starts?*

*Candidate: At 1.30 p.m.*

*Mary: (long pause)…. Where is it?*

*Candidate: At the Silver cinema.*

Mary’s questions are not clear and only if the other candidate understands the conversation keeps going on.

The following is part of a conversation between James and his teacher (playing the part of the oral examiner):

*Teacher: How old are you?*

*James: I’m not.*

*T: What do you mean you’re not?*

*J: I’m an adult.*
James is obsessed with his age. He denies telling the truth and wants to be called an
“adult”).

T: Oh, OK then. Have you got a pet?

J: Mmm, not me, my dad.

T: What pet has your dad got?

J: Fish.

T: Have you got any brothers or sisters?

J: One brother and one sister.

T: Would you like to tell me about them?

J: No.

T: Tell me, what you like doing in your free time.

J: I like football.

T: Oh, what’s your favorite team?

J: In Greece, in England or in Spain?

T: Well, tell me about all of them.

J: I like Paok, Chelsea and Barcelona. Paok is playing on Sunday. They are going to
win. Chelsea is the best and they scored many goals this year.

T: Oh, good. And who is your favorite football player?

J: Messi.

James is looking down all the time and does not give long answers unless it is
something that interests him. He also avoids telling his age.
Reading comprehension can also be extremely challenging. Part 4 is especially demanding for both Mary and James as they have to read a long text or 3 short texts and 7 sentences. They then have to decide whether the sentences are right, wrong or does not say and choose the right answer. They have to concentrate on the overall meaning of the text and not focus on a few unfamiliar words. Unfortunately both Mary and James do the opposite and deny going on finishing the task. As for the “doesn’t say” option, it is something extremely challenging for them.

Part 7, the open cloze is also challenging for both learners putting a range of incorrect answers mainly verbs with “ing”. The main focus of this task is grammatical accuracy and therefore candidates tend not to be asked to supply a content word. When deciding on an answer, they need to think about the whole text and not just the words before and after the gap. They need to remember that if a gap requires a verb, they need to consider both what the correct word is and what tense or form it should be in.

In the written module (guided writing, part 9) where they have to write short messages up to 35 words Mary gets sometimes confused with instructions and both students find it difficult to write complete answers. Mary has difficulty in giving clear answers to the three points. Both will be penalized in the official exam as they do not write at least 25 words; however they insist it is a difficult part for them. Mary has also some spelling and grammar mistakes.

*Teacher: You have to write more words, James. That’s not enough.*

*James: I can’t.*
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Teacher: Mary, please write a few words more.

Mary: What else? I don’t know.

Example 1.

Your friend, Chris, has got your CD player. Now you need it.

Write a note to Chris:
Ask for the CD player
Say why and when you need it
Write 25 – 35 words.

Mary’s writing: “The CD player was successful CD player. I need it because I prefer it”

Example 2.

You are going to have a party. Write a note to a friend:
Ask him/her to come.
Say when and where the party is.
Write 25 – 35 words.

Mary’s writing: “Will you come to my party? The party is at 3 October and to my house”

Example 3.

You are going to paint your bedroom. Your friend Robbie is going to help you.
Say: what color paint you are going to use
What time you will start
What clothes to wear
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Write 25 – 35 words.

James’s writing: “I’m going to paint my bedroom green.

I will start at 8:00. I’m going to wear my jeans, shirt and jumper”

Example 4.

Yesterday you went to the sports stadium in your town.

Write an e-mail to your English friend Alex.

Say: who went you with

Which sport you watched

How long you stayed there

James’s writing: “Yesterday I went to the stadium with my dad and brother. I watched the football match Paok – Olympiakos. Paok won with 3 goals. I stayed 2 hours.” (Here he uses Greek football team names but is unaware of the fact that these names are unknown to British examiners; however this is a common mistake for most students).

In general both learners seem to face problems with the exam. They have problems understanding multiple meanings of words, idioms, abstract concepts and long sentences. So the reading module in the Cambridge Key exam seems to be challenging for them because of the format of exercises mainly and partly because it requires certain reading sub skills like skimming or scanning to find the information. The speaking and writing parts have also challenges for them because they reciprocate social interactions
inappropriately and do not elaborate in their answers. Therefore certain strategies are required by the teacher to help both learners.

Phase 2 (Intervention stage)

A. General Observations

At the beginning of the school year 2012-2013 the school installed Smart Interactive Whiteboards in most classrooms. Supported by significant financial investment, the use of technology was at the forefront of the school priorities. The installation of Interactive Whiteboards was part of a project to integrate new technologies to the curriculum. Classrooms were equipped with laptops, Interactive Whiteboard screens and projectors. A new school site was built, an e-learning facility was created and various web 2.0 tools were used. The teachers received school-based INSET professional training supported by a consultant from the provider firm of Interactive Whiteboards “Smart Technologies”. The school lounged a support team with the Director of studies and a computer literate teacher to encourage successful integration of new technologies into daily teaching and learning. With daily access to their classrooms teachers seemed to develop confidence and expertise in the use of Interactive Whiteboard. Thus phase 2 (Intervention stage) began.

The school used mainly the software of the coursebooks but teachers also developed their own presentations through PowerPoint, Slide share and other relevant software.
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Collected data indicated that students were enthusiastic with the use of Interactive Whiteboard. They were all willing to participate in the lesson. Comparison of James’ and Mary’s behaviors during the intervention phase (after the introduction of the Interactive Whiteboard) showed that their social skills in the classroom environment improved. This improvement was apparent due to the fact that both participants wanted to come to board and engage in activities with other students. James gradually became involved in mixed gender group work and Mary was always among the first to claim her stake at Interactive Whiteboard use time. They both enjoyed Interactive Whiteboard games albeit their reactions when they were on the losing side remained negative. Furthermore there was a noticeable increase in social communication especially in initiation of conversation and response by James. For example, he began to initiate greeting sequences when entering the classroom. In other cases when the teacher asked him to come to the board he either said “Thank you!” or “Yeah!!”.

All students were thrilled by the use of animation especially in the presentation of grammar rules. In accordance to this Mary constantly wanted to click on items and highlight. James also wanted to come to the board and write or draw. She also found some grammar presentations funny and asked the teacher to repeat them.

Interactivity, defined by the level of tactile involvement with the Interactive Whiteboard by students, was enhanced by tactile student participation and activities like Drag and drop, High and reveal and matching. Interaction moves like students coming out to the board or having choices is important. Mary’s
words: “Please, miss. Let me come to the board. Please choose me” showed her
willingness, but also some kind of obsession with new technologies. The
constant progression in an interactive situation absorbed students with
Asperger’s syndrome. As for James, first thing he did when entering
classroom was not to sit at the back as usual but come to the board and start
writing. While enthusiasm picked, the major challenge lurked (i.e. the danger
of the enthusiasm turning to obsession and private use of the Interactive
Whiteboard). So the teacher had to exploit enthusiasm to create social
interaction.

Visual stimulation was used to the full and students were eager to take part in
every lesson. The Interactive Whiteboard boosted the visual element of
teaching and learning with color, highlighting and animation. It seemed useful
for children with different learning styles especially for kinesthetic and visual
learners. Vocabulary presentations on the Interactive Whiteboard with color,
annotations, underlining and highlighting appeared more attractive. James
and Mary were always eager to participate and touch the screen. Once the
teacher said “I need an assistant to underline and highlight”. Mary was again the
first to raise her hand. Vocabulary presentation was also more appealing to
students and this was obvious from all children’s exclaims.

Teacher: Do you like the vocabulary presentation on the Interactive Whiteboard?

Mary: Yes, miss. It is fun and you can remember it easier.

Motivation was increased with games and DVDs, too. Games on the
Interactive Whiteboard made classes livelier. However there were also signs
of competitiveness among students and both Mary and James had problems
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accepting “defeat”. Once Mary’s team lost during a board game and she did not want to leave school at the end of the lesson unless we played another game: “I want to play again. It’s not fair. I want to win”, repeated again and again and only left when all other students had done so. She showed enthusiasm to participate and compete but denial to lose. A social story watched by all students on the Interactive Whiteboard in the next session described the situation when someone loses or wins and several questions followed (What is happening here? Why is the boy angry? How do the rest of the children feel? What should the boy do? Why?). Responses of the students showed that it was easily understood by them.

The Interactive Whiteboard creates a new set of routines and the teacher has to be flexible and resourceful to create appropriate activities which enhance learning and socialization. In another lesson a “turn-taking” activity created by the teacher to match words with pictures on the Interactive Whiteboard while asking “Whose turn?”. This encouraged both participants to wait for their turn and helped them in joint attention.

Short DVDs as the ones showing life of teenagers in Great Britain were also particularly attractive and maintained interest at the end of the lesson. At Christmas, for example, they saw a short DVD on the way British people celebrate Christmas and discovered new cultural elements, something really important in an EFL classroom. Although they knew the word “Christmas crackers” most kids had created a false idea of what a Christmas cracker is. So when they saw it Mary asked: “Why don’t we have Xmas crackers here? I like them.” Next project was to create some in the classroom.
Teacher support was always required. The teacher had to stand by participants to help especially when participants were unsure to touch the screen and make a choice. In one of the first lessons with the use of Interactive Whiteboard James was not sure which verb ending to choose and waited for a long time. The teacher took the initiative to explain once again by modeling an answer. The other children encouraged him to decide and when he did so all children congratulated by clapping. He rushed back to his chair with his hands over his ears. He felt embarrassed and annoyed by their reaction. Mary, on the other hand, was enthusiastic when the same thing happened to her in a gap filling exercise and felt successful. Children with Asperger’s syndrome often exhibit lack of understanding others’ intentions. The noise of cheering and clapping may make students with Asperger’s syndrome withdraw into their shell or in some cases show aggression. Sensory overloading is something that teachers should be aware of. The Interactive Whiteboard integrated naturally into the classroom proceedings. To a great degree what helped was this generation’s familiarity with gadgetry. Through the use of Interactive Whiteboard enjoyment increased, motivation was supported and the learning of all students was reinforced. Even students who lacked confidence to present their work appeared to be highly engaged in the lesson. Mary’s reaction was always positive to present work and stand close to the Interactive Whiteboard. James however preferred to write or click on items rather than presenting his work. It is a tool that provides children with Asperger’s syndrome opportunities to learn in a format that supports their visual modality. Digital technologies are
predictable, dependable and can be controlled in regard to stimuli and unpredictability.

Certain strategies appear to improve the chance of success to improve social interaction. Pennington (1996) noticed that the computer can sometimes encourage a form of “antisocial” behavior that amounts to working in isolation from others. This criticism of computer use is especially relevant to the foreign language teacher who is supposed to interact with the class. The introduction of the Interactive Whiteboard brings the problem into new perspective. When presented to the whole class a web document can enhance oral interaction within the whole class. The student can also navigate the board instead of the teacher. Other students may guide him by giving directions in the target language. This was a great opportunity to enhance social interaction. Students can also present projects on the Interactive Whiteboard in the target language. The activities on the Interactive Whiteboard are numerous suited for every learning style, examination level or communicative subject.

An example worth mentioning here is the following:

With the use of a map of a small town projected on the Interactive Whiteboard kids had to do a pair work activity asking and giving directions.

Mary: Excuse me. How can I get to the post office?

James: Walk along the street, turn right at Oxford Street, then left at Mayflower. The post office is opposite the bank.

Mary: Thank you.
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James: Excuse me. How can I get to the park?

Sam: Go down the road and turn left at Nelson Street. Then take the first left and you will find it opposite the church.

James: Thank you.

The teacher saw herself in the role of “facilitator”, highly dependent, however, for success upon the amount of prior preparation. Students expect the teacher to be fluent in its use. So lessons have to be carefully planned and prepared otherwise the teacher may be a “deliverer of material”. It is not simply the Interactive Whiteboard, but the way in which it is integrated into the teaching method that enhances learning. The skills of any facilitator or teacher will vary and so there needs to be guidance and some scope for greater exploration and innovative application to suit the needs of individuals.

The Interactive Whiteboard also seems to motivate students but as Moss et al. (2007) maintain the hands-on use although motivating it can also be mundane and does not necessarily enhance learning. As only one child can be at the board opportunities for physical interaction are limited. Effective learning is perceived when designed to engage all pupils at once and not just one on the board.

On the other hand, however, the Interactive Whiteboard helps with the presentation of new cultural and linguistic elements, it supports interactivity, it is a great way of modeling and it promotes the organizational skills of the teacher.
B. Social skills and learning attitude

With the use of Interactive Whiteboard there were fewer interruptions during the lesson. James stopped interrupting with irrelevant statements and focuses on board. Mary does not chat during the lesson and is also more willing to participate but she shows stubbornness when the teacher calls another student to come to the board. James still likes his routine with paper stuff and when the sound is loud he covers his ears. He shows enthusiasm in participating but sometimes gets distracted. Their attention span is not that limited anymore and they both show higher motivation. However, instead of enhancing social skills, exercises sometimes have become more stereotypical. They both want to use the board and do “Drag and drop” activities or click on and show stubbornness when other students are engaged. They like taking part in games but refuse to lose. They also sometimes demand to listen and see favorite singers and movies they like.

Mary: I don’t like that song. I want to listen to “One Direction”.

Teacher: This song is on the coursebook, Mary. It is about the past tense.

Mary: I don’t like it. (Covers her ears)

Teacher: Next week we’re going to see a movie. Then you are going to write a review.

James: Can we see “Despicable me”?

Teacher: No, James. It’s going to be fun though.

James: I want “Despicable me”.

Teacher: Well, you can see this at home. (James frowns...)
Both participants were highly engaged with the Interactive Whiteboard in a variety of ways including responding to other people’s interactions. Their behavior was modified in class after the use of Interactive Whiteboard. They remained focused, stopped fidgeting or shouting and showed willingness to participate. They did not display uneasiness during lessons. They were more concentrated and actively involved. The visual learning dimension of digital technologies seems to be supportive of the visual modality of students with Asperger’s syndrome. Digital technologies are predictable and routine – oriented and both Mary and James did not show any signs of panic. James increased positive interactions with peers and responded to questions from others but continued inappropriate use of eye contact and is sensitive to being touched by peers. He still has problems understanding jokes. Mary did not seem tired or bored but continued inappropriate giggling and staring at times and had trouble with competition i.e. winning, losing, being first. Although she initiates social interaction she seems impatient and stubborn. The duration, however, of social interaction between peers increased through various activities and this is important for students on the spectrum.

It seems to me that for children with Asperger’s syndrome the Interactive Whiteboard through modeling and visual support can provide assistance in the areas of social and behavioral learning. Interactive Whiteboards are appealing to children with Asperger syndrome, force students to engage with others and provide opportunities to teach attention, social interactions and communication. Once again the teacher plays the most important role as he/she is the one to create the appropriate material for learning.
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C. Language skills
In the speaking part James is not reluctant any more. He participates but still does not hold eye contact with the other classmate during their dialogue. He can express simple opinions or requirements in a familiar context according to the CEFR level A2 “Can do” lists.

Mary still demands clarification and makes grammatical errors but expresses simple opinions.

Mary: What is the name of the TV program?
Student B: “Cliffton College”
Mary: Begins at what time?
Student B: At 5:00
Mary: Is the program about?
Student B: Students meet their new math teacher.
Mary: What channel?
Student B: Channel 4.

Reading Comprehension remains challenging for both. They can see the text on board and listen to it but they still face problems with abstract concepts. Highlighting on board has helped James a lot. He now underlines sentences to find the correct answer. However he can understand straightforward information within a known area, such as on products and signs and simple textbooks or reports on familiar matters according to the CEFR A2 level “Can
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do” lists. Mary is still negative in underlining main sentences or key words and phrases. She continues giving answers at random. Figurative language is also still a problem for both.

Listening is clearer with new technologies. All students admit that they have no problems with the sound. Mary understands better what she has to do but does not always comprehend vocabulary. James listens for the first time and gives the answers but denies listening for a second time so as to check his answers again (probably stereotypical).

Writing is still challenging for Mary. However she likes seeing the instructions of the message on board and asks the teacher for clarification.

James rarely asks for clarification. He can complete forms and write short simple letters or postcards related to personal information according to CEFR A2 level.

Example 1.

You are going to paint your bedroom. Your friend is going to help you.

Write a note to your friend. (35 words)

Say:

What color paint you are going to use

What time you will start

What clothes to wear

Mary’s writing: “I will color my room purple. I will start at 11:00. I wear blue clothes”
James’ writing: “I am going to paint my room blue. Can you help me? I will start at 9:00. Wear jeans or shorts and T-shirt”

Example2.

Last night you were at a friend’s house. You think you left something important there. Write a note to your friend.

Say:

What you have left
Why it is important
Where you think it is

Mary’s writing: “Last night I was at your house. I left something important there. It is in your bedroom”.

James’ writing: “Last night I forgot my CD at your house. It is important because I like BTR. It is my favorite group. It is in your bedroom”.

As I gathered from my observations the Interactive Whiteboard is a tool that provides children with Asperger’s syndrome opportunities to learn as it supports their visual modality. It stimulates engagement but does not always reflect pedagogical goals as the incidents described above show. Both Mary and James had some progress but it was not always spectacular after the use of the Interactive Whiteboard. Teacher assistance while circulating during pair work activities increases opportunities for sustained dialogue and it is greatly
valued by students as a key factor in helping them to learn. The Interactive Whiteboard includes engaging, longer attention span and better focus, visual and dynamic representations, motivation, multimodality. However, it seems to me that the Interactive Whiteboard use in itself does not guarantee linguistic development. Once again, the teacher is the one to integrate Interactive Whiteboard into the curriculum, choose appropriate material, create activities according to his students’ needs, maintain a clear classroom structure and mainly pay individualized attention to the students with Asperger’s syndrome so as to help them fulfill their goals.

D. Interactive Whiteboard and teacher practices

I believe that English as an Additional Language teachers should develop ways of presenting language learning in a context of community which has meaning and relevance in the lives of the children. This way we can build bridges between the child and his/her community as well as with other communities abroad. Teaching a foreign language is also teaching a different culture. My evidence suggests that it is a myth that children on the spectrum function in a world of their own. Teachers should give them a chance by keeping their brain connected to the world.

CLIL (Content and Language Integrated Learning) is an approach in which an additional language, in this case English, is used as a tool in the learning of a subject in which both the language and the subject have a joint role. It is a new form of subject education. Learning to learn in English is exciting for students and communication goes beyond the grammar system without
rejecting the role of grammar and lexis in language teaching (Coyle et al., 2010). The school encourages the use of CLIL in the curriculum so one day the class was working on a geography project to create a country profile. There were 2 groups of 4. On the Interactive Whiteboard there was a map of the world and the students could choose any country they wanted. James’ group decided to write about Portugal (he insisted on that and there was a disagreement at first with another boy so I consciously helped him as he has an obsessional interest in Portugal and says he wants to travel there one day). Attwood (2006) considers how obsessional interests can be directed towards educational aims. Mary’s group on the other hand decided on Italy. After a while I realized that James had become detached from the activities of the group and I asked another student to work with him. He seemed keen. James gave them all the information they needed and the rest of the group praised him on his knowledge in geography. He felt proud. It was like a normal interaction with other kids. I challenged James to overcome his problem and join in. That day he did have some sort of dialogue with his group. Later I asked him and Mary to present their projects to the class. Mary was enthusiastic to do so. She came to the board giggling with happiness. She felt like the leader of the group. James on the other hand denied coming and so another student of his group was invited. His dislike of speaking in front of the class remained. Then I called him to come to the Interactive Whiteboard to click on the country they had chosen and write a few things (names of tourist attractions etc.) He came immediately and did not hesitate at all. It was not the kind of interaction I wanted to orchestrate for him but it was
some kind of improvement. There were comprehension check questions after
the presentations. “In which country is the city of Barcelona?”, “What is the capital
city of Italy?” James was the first to raise his hand as he is good at geography
and was proud to know all the answers. Children also wrote postcards from
these countries to friends in Greece and as homework they had to write about
a holiday in a foreign country using the simple past tense. All children were
motivated and finally responded well.

As I looked to work with the students’ interests I also produced a number of
practice worksheets. One day I showed them on the Interactive Whiteboard
photos of a girl, Susan. The objectives were to associate verbs with the
actions producing the 3rd person singular (affirmative present simple) and at
the same time raise awareness that people with disabilities are “Just like me”,
“Just like you”. First I introduced “Susan” to each student. Then students
looked at the next illustration saying “Susan laughs” and chorally repeated the
verb. Then the second illustration “Susan sings”. This continued for the
remaining 4 couplets. In the last illustration when kids saw Susan on her
wheelchair two of them felt “sad”. It was my chance to explain class about
diversity as all children need to learn to accept and value people from
backgrounds different from their own.

Then I split the class in two groups. One group saying the couplets the other
miming. Mary and James did so, too. To my astonishment they were both
very good at miming. So we continued with creating alternative chants by
replacing the verbs.
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Interactive Whiteboards allow teachers to move from the center of learning to an environment that increases students’ active involvement in the construction of knowledge and participation. Web-based resources as the above allow teachers to provide real world examples. As media is displayed in an Interactive Whiteboard classroom, the teacher can pause, model metacognition or elicit ideas from the class.

Remarkable improvement was shown when Speaking prompts were displayed on the Interactive Whiteboard. With DVDs from the Cambridge KET exam used as a model students realized how and what to do exactly. James answered questions confidently and spoke with authentic accent at times. He also showed a bank of vocabulary and structures. He could easily pass the KET exams and continue to a higher level. Mary also showed improvement by trying to copy the oral model KET test.

*Example 1*

*Mary:* What’s the name of the new computer game?

*James:* The name of the new computer game is “Dinosaur”.

*Mary:* Where do you buy it?

*James:* You can buy it at 30 London Street.

*Mary:* For how many players?

*James:* It is for 1 or 2 players. I prefer to play this game with my brother. We like dinosaurs.

*Mary:* Is it for children?
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James: It is suitable for all ages.

Mary: What is the cost?

James: It costs only 15 Euros eh... sorry pounds. It’s cheap.

Example 2

Part 1 of the test. Take turns to ask and answer these questions:

James: What time do you go to school in the morning?

Mary: I go at 8:00. How do you get to school?

James: I go by car. My dad drives me there in the morning and I always sit in front next to him. I never change my seat. I am like a driver.

Mary: What sports you like?

James: Football. How about you?

Mary: Basketball and volleyball. What do you like to do with your friends?

James: I play football and I go to the cinema. We went to the cinema last Christmas and we saw “Hobbit”. We’ll go again next year for the sequel.

James: What do you do with your friends?

Mary: I chat on the Facebook.

James in the above dialogue seems to be unaware of what real friends mean. For example he thinks that friends meet once a year to do things together and this is probably Christmas time. As he has no close friends he brings to mind the last time he went out with peers. He uses correct grammatical structures but awkward intonation.
Mary on the other hand makes a few grammar errors, her vocabulary is limited and thinks that real friends are on Facebook.

This is typical of how the Interactive Whiteboard can help the teacher move from direct transmission teaching in the detached sterilized world of the classroom into exploring meaningful social situations through dialogic teaching. Students with Asperger’s syndrome can thus be given the chance to get a taste of the pragmatics of language as well as form and grammar.

E. Parental perceptions

Parents play an important role in the child’s education as they need to be supportive and collaborative. Parent communication and training are also significant as success for the student depends upon a parent who also understands the strategies that work for organization, sensory regulation and social thinking and tries to implement them at home. This research also focused on parents’ perceptions.

The findings reported in the previous section reveal the range of desires and aspirations parents hold for children with Asperger syndrome. Participants wanted their children to have friendships and interests, be part of the local community and experience success and achievement. They wanted them to acquire the skills needed to ensure an independent life. Both parents expressed concerns in the interviews about bullying in the mainstream state school setting. As they reported, name-calling by peers is common during school breaks as others see them as “odd” and make them an immediate
target. They were happy though that the number of peers in the language school was limited and diversity was respected.

Parents’ responses also suggest that education provided should be individually tailored for their children. They felt their children had a right to mainstream education but also sought the school’s acknowledgement of their child’s individual needs. When selecting a language school, teachers’ knowledge of Asperger syndrome and attitude towards inclusion were significant factors. So the views of parents in this research are consistent with the view that appropriate strategies should be implemented to support the teaching staff.

The knowledge of English as a professional qualification has gained status in Greece, especially in the past years. Both participants felt that their children would benefit from obtaining a certificate in English. They also confirmed that their children were enthusiastic with the use of Interactive Whiteboard. They felt that their children were more willing to come to school and that they would certainly benefit from some form of social modeling. James’ father commented that he is happy that his son has now some form of conversation with his peers. Mary’s mother said that new technologies will prove beneficial as she saw a difference in her child’s attitude towards learning English and she commented on the fact that Mary remembers vocabulary better. She repeated, however, her concerns about Mary’s denial to do homework.

What parents also reported was consistent with what the teacher observed in the classroom. Again there was increase on motivation and willingness to
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come to school but not a dramatic change in the learning attitude and studying habits of the participants. Parents’ and childrens’ views are in accord as they all feel that the Interactive Whiteboard helped to focus attention on the lesson content and promoted listening activities and verbal interaction.

DISCUSSION

A. Learning, Behavior and the Interactive Whiteboard

The widespread proliferation of Interactive Whiteboards for enhancing teaching and learning stimulated a significant body of research into the manner of their use and their effectiveness on the students’ attainment (Gray, Hagger-Vaughn, Pilkington & Tomkins, 2010; Bennett & Lockyer, 2008; Moss, Jewitt et al., 2007). Technology has become an essential component of a modern classroom worldwide (SMART, 2010; Lee & Gaffney, 2008). However the research on the relationship between Interactive Whiteboard use and pupil performance is inconclusive. The study of Moss et al., 2007 indicated that “…in London schools has increased pupil performance” while other studies highlight both advantages and drawbacks in using Interactive Whiteboards (Gray et al., 2010; Verenikina et al., 2010). Researchers differentiate between intrinsic learning motivation and motivation as directed at the technology (Beauchamp & Parkinson, 2005). Studies also have discussed the benefits of the Interactive Whiteboard for visual and kinesthetic learners (Kuzminsky,
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2008 cited in Verenikina, 2010). One common theme identified throughout the studies is that of interactivity (Schuck & Kearney, 2007; Moss et al., 2007).

This research focuses on the potential of Interactive Whiteboards to students with Asperger’s syndrome in a mainstream classroom in their effort to learn English as a foreign language and also focuses on the teacher’s role and how it is affected.

The findings reported above reveal that there was development in specific language skills of the two participants but not to a dramatic degree. Reading, for example, is a complex skill that is influenced by cognitive processes, linguistic abilities and relevant knowledge. The acquisition of reading comprehension is an individual’s ability to learn to understand writing as well as he/she understands spoken language (Perfetti, 2013 cited in El Zein et al., 2014). Students with Asperger’s syndrome have significant difficulties comprehending written texts, as it is highlighted in literature (Gately, 2008; Hale & Tager-Flusberg, 2005; Wright & Williams, 2006 cited in Gately, 2008). Also many students with Asperger’s syndrome have hyperlexia i.e. “higher word reading skills accompanied by poor reading comprehension” (Klin & Wolkmar, 2003; Newman et al., 2007). To obtain reading comprehension students must understand the author’s style of writing, story structure as well as characters’ social experiences and how these contribute to the development of motivations and actions within a story setting. They need to develop sensitivity to the emotions of characters. Quill (2000) notes that children with Autistic Spectrum Disorder tend to focus on details and interpret
information in a fragmented manner. Baron-Cohen (2004) maintains that children with Autistic Spectrum Disorder have difficulty understanding what others are.

After the use of Interactive Whiteboard, no matter how strong their rote memory, the two participants still showed little understanding of abstract concepts and ideas, metaphors, idioms, irony and sarcasm. Therefore reading comprehension remains a major problem for them although speaking activities improved as well as class participation and interaction. The two participants exhibited the same pattern of development as before. However, certain strategies could help one of the two develop higher order reading comprehension skills. Social stories, priming background knowledge and visual maps activities created by the teacher on the Interactive Whiteboard helped one participant to make accurate predictions.

Furthermore, a number of barriers still exist that prevent them from making the most of their education. In the classroom they still seek routine to control their environment but remain more focused and are not easily distracted. They still need help to cope with certain demands and tend to focus on one particular interest to the exclusion of all else. They still have difficulty taking another’s point of view, tend to be egocentric and finally they take language literally as they still take some idioms or metaphors at face value. However, children who are not on the autistic spectrum may present similar difficulties, as well. The above confirm previous findings (Attwood, 2006; Humphrey & Lewis, 2008; Ravet, 2011).
It has also been found that interactivity was enhanced but technical interactivity is not in itself effective in securing learning. As Kennewell et al. state students need the intention of learning and the skills required to marshal resources and their cognitive faculties towards learning goals (Kennewell, Beauchamp et al., 2007).

Findings of the research also suggest that the problem behaviors have been reduced in the intervention stage. The positive changes in both participants may be attributed to the fact that the teacher in order to use the Interactive Whiteboard more effectively was pushed into becoming more qualified and created activities with the use of the Interactive Whiteboard that enhanced participation.

From socio-constructivist theories concerning scaffolding we expect that the most effective learning should occur when the production goal is comprehensible to the students. Knowledge is a social construction based on shared views and images (Vygotsky, 1978). In language teaching the social context of much learning offers scope for constructivist learning to be enhanced. So the opportunity to call on a vast range of Internet resources helps when technological fluency allows access. Such resources, especially cultural and social ones embed subject matter in a pragmatic background. This could explain the development in certain language skills of the two participants.

The findings accord with previous literature which mentioned that if learning is to occur some cognitive effort on the part of the students is also required. In
this view the role of the teacher is one of setting tasks which present some challenge to the learners and then “orchestrating” (Woods & Pollard, 1998; Kennewell, 2001). Orchestration represents teachers’ planning of lesson structure, student tasks, instruction and resources appropriate to the students’ characteristics (Kennewell et al., 2007). It is not only teachers who orchestrate features in the classroom however; learners should maintain a degree of autonomy over learning. Thus higher levels of interaction are achieved when teachers encourage students to act with greater autonomy.

Appropriate and qualified education can produce important gains for a large number of children with Asperger’s syndrome. Staff training should be a key part if a school is to meet the needs of students with Asperger syndrome. Therefore training provided to teachers could have played a role in the changes observed during the intervention stage and this strengthens earlier findings ((Dymondet et al., 2006; Eikeseth, 2010; Ravet, 2011).

Teachers can organize their classrooms so that students with Asperger’s syndrome are fully included. While no particular classroom approaches or educational methods for teachers of Asperger’s syndrome students can be provided these students are more likely to learn in classrooms where aspects of classroom instruction and curriculum are modified to meet their needs. They may need more time to complete assignments or less time than other students to do so (which means the teacher must have an extra worksheet for them). Predictability to cope with the environment is required, an established routine is vital and changes should be explained in advance. They need
strategies to help them cope socially and academically with clear explanations and encouragement of positive interactions. The success of inclusive education for children with Asperger’s syndrome relies on the right mixture of prior planning, resources, good communication and creativity. So teachers need to develop appropriate inclusive practices.

Analysis of the two case studies has also shown that Interactive Whiteboards facilitate foreign language learning in terms of motivation and interactivity as well as engagement in the EFL classroom for students with Asperger’s syndrome. Participant 1 (James) showed little to no engagement with peers during the baseline sessions. However, during intervention his level of engagement gradually increased. Children on the autism spectrum appear to like using Interactive Whiteboards and show greater engagement but these findings are also mediated by the ability levels of the participants. It is clear that the Interactive Whiteboard allows a flexibility in the marshalling of resources that enables teachers to create interesting multimodal stimuli. However, it is the pedagogy that determines the nature of Interactive Whiteboard use. A tool such as the Interactive Whiteboard can present new possibilities for a teacher but it cannot be the master of pedagogy. The effective use of the Interactive Whiteboard is not inherent in the hardware or software. It is predicated on the teacher’s understanding of how to engage all students and help them learn. The challenge for successful application of the Interactive Whiteboard is to make the role of the teacher more interactive by exploring Interactive Whiteboard facilities and designing specific lessons so as to improve learning but also to enhance the participation among learners.
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However, the starting point for effective use of the Interactive Whiteboard has to be in teacher training.

The results of the study also suggest that English as an Additional Language learners with Asperger’s syndrome can appropriately socialize with typical peers if activities are created around their preferred interests. They can present an interesting challenge to teachers but it is important to motivate these pupils when learning a foreign language drawing on their strengths. They should offer every opportunity to improve their social skills and learn about other countries and cultures, just like other pupils (Wire, 2005).

Today, most language schools in Greece have at least one interactive whiteboard (Interactive Whiteboard). Indeed, many have whole-school implementation programs, whereby Interactive Whiteboards are integrated into everyday classroom teacher practice. Interactive Whiteboards have the ability to transform the way teachers use technology in their classrooms (British Educational Communications and Technology Agency, 2003; Glover & Miller, 2001). Moreover children nowadays are growing up in rich digital landscapes where they are the creators and producers of rich digital resources. The Interactive Whiteboard encourages the child to engage with others and provides opportunities to teach attention, social interactions and communication (Whitby et al., 2012). Teachers must keep all segments of the lesson in mind, make meaningful visual links to materials, address manipulation of objects in the learning environment and address automation so the lesson flows without delays.
B. Inclusion and the teacher's role

New technologies modify and affect the teacher’s role to a great extent. There appears to be a learning curve for both teachers and learners. The former need time to develop their technological fluency, apply pedagogic principles to the available materials, develop new material and incorporate it into the classroom. Students also need to have a range of manipulative skills so as to take part in lessons and be given help and support.

Today most schools have at least one Interactive Whiteboard (Campbell & Martin, 2010). In Greece language schools were among the first to install them. Thus technology is an integral part of classroom teaching. However, simply having a large electronic workspace does not necessarily open a lesson to higher student interaction. Interactive Whiteboards require an investment of time training and time for building a range of new multimedia teaching materials. Planning and preparation of lessons is a key feature of a teacher’s pedagogy (Glover, Miller & Averis, 2005) which now becomes more time consuming.

Teachers of foreign languages also need to become more accommodating of Asperger’s syndrome students’ typical but sometimes unpredictable, quirky behavior. Inclusion means a need to provide an environment where students feel comfortable and achieve their potential. Children on the spectrum will fulfill this potential where teachers are supportive and encouraging, use tasks within their interests and cause no stress to them. The area of inclusive pedagogy requires further research so that educators can gain a fuller and
better understanding of what it is and how it is successfully implemented (Mamas, 2013).

A teacher with the responsibility for the achievements of his/her class must always try to ensure success by setting realistic goals for all children. Children must believe the task is worth doing and capable of doing it. As Frith (2004) wrote people with Autistic Spectrum Disorder have more than a touch of autism to them. We should strive to see the potential instead of the “disability”.

The traditional models of including children with Asperger’s syndrome have often addressed deficiencies and difficulties in social and emotional understanding (Koegel et al., 2001; Jepsen & Von Thaden, 2002). Contrary to such models the explosion of new technologies has brought the Interactive Whiteboard in almost every language classroom. Therefore there should be strong focus on identifying ways in which Interactive Whiteboards can enhance learning for students with Asperger’s syndrome through the examination of pedagogical practice in collaboration with teachers.

Echoing Soodak (2003) we must not forget that in order to talk about inclusive classrooms necessary prerequisites are the feelings of belonging, membership and acceptance on behalf of the children. After all, inclusion is supposed to be in the best interest of these very children.
C. Strategies to help the learner with Asperger syndrome in the mainstream school

One of the main scopes of this research was the key role of the teacher. Teachers often express concern about changes in roles and responsibilities, differences in teaching style and philosophical orientation (Soodak, 2003). With adequate support, teaching leads to positive outcomes for learners in heterogeneously grouped classes (Villa et al., 1996). It is the teacher that can make the difference. Therefore I feel that the following strategies which came up from my empirical experience and relevant literature (Friend & Bursuck, 2002; Wire, 2005; Roth, 2010; Darretxe & Sepulveda, 2011; NAS, 2013 assessed at www.nas.org.uk) could be useful to other teachers in an attempt to facilitate the learning process of students with Asperger’s syndrome in a mainstream school.

The three main areas affected in people with autism are: social interaction, social communication and lack of flexibility. Students with autism can learn in the general education setting provided all the concerned people are well informed, sufficient support is provided and suitable teaching strategies are implemented.

General education classes are more likely to be diverse and inclusive of students with special needs than ever before. The strategies identified in this research offer a starting point for classroom practice and professional dialogue about the possibilities of an autism-friendly school, a school for all
students. Diverse classrooms provide a unique opportunity to promote a sense of understanding and empathy of others.

Policies should be in place to ensure all forms of support are well coordinated (Humphrey, 2011). Understanding more about how to best support students with Asperger’s syndrome is vitally important as they are typically subject to an increased risk of negative outcomes in mainstream education. For example, they are up to be excluded from school and three times more likely to be bullied (Humphrey & Symes, 2010). Analysis showed that positive attitudes towards students with Asperger’s syndrome as well as leadership support for inclusion and respect for diversity are key components for a successful inclusion.

The principal sets out the philosophy of the school; he or she is the role model for the teacher and the entire school can change dramatically when the principal leads the way to best practices (Graydon, 2006). To ensure the success of inclusion, it is important that principals exhibit behaviours that advance the integration, acceptance and success of students with Asperger’s syndrome in general education classes.

Therefore regular training and briefing for staff concerning their knowledge about and responsibilities for autism spectrum difficulties, and the needs of individual children is of utmost importance so is a specialised staff member to provide leadership and guidance and a point of contact for children who need help and support is also required and finally a curriculum adapted to the needs and strengths of individual children.
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Teachers should first and foremost get the information about the condition. They should get to know the child, not only his/her difficulties and stressful situations but also his/her strengths and interests and his/her learning style so as to provide a supportive environment, organize the appropriate activities and use specific strategies.

There are many successful strategies for EFL teachers to use in working with children with Asperger syndrome (Wire, 2005). Learning a foreign language can make a useful contribution to raising a child’s with Asperger’s syndrome social skills. Social interaction is a crucial part of foreign languages and the student with Asperger’s syndrome can derive enormous benefit from interaction with others. Thus the first strategy is building a relationship with another student or pairing him with. He / she must be a mature and sensitive student not the “coolest” but the one they have common interests and could help in different situations. He could also create a “circle of friends”. The good choice of partners can prove extremely significant. Modeling is required and a suitable student is always helpful.

Verbal communication has also an important role to play for a child with Asperger’s syndrome. Frequently the child with Asperger’s syndrome speaks too loud or too soft or he speaks too much and monopolizes conversation. There may be irrelevant stories and interruptions or even complaints. Some come across as rudeness. Other times he / she may repeat what the teacher or other peers say. All these could irritate the teacher. In such cases a social story may be helpful. It puts the child at the center of the story and it is
descriptive and directive. Gray’s social stories (2002) could be a valuable solution but there are also numerous social stories on the Internet to show through the Interactive Whiteboard.

The greatest challenge for teachers, however, is the lack of flexibility and imagination of students with Asperger’s syndrome. Students with Asperger’s syndrome can thrive in a tightly structured classroom environment where predictable routines and rules are established and provide “scaffolding”.

Seating arrangement carries importance as these children dislike changes. Some of these children cannot leave their work until the page is completed or deny going on the next question when they fail to remember something. Preparing students for some cases like these so as not to close down and refuse to work is significant.

Their particular interest could also be used imaginatively and constructively in the foreign language lesson. Teachers should give them motivation to involve in the learning process. This is something that applies not only to the student with Asperger’s syndrome but to any other student as well. At times they need to be challenged to come out of their stereotyped selves and at times they need to be left alone so as to feel comfortable.

Furthermore, teachers must be sensitive to the needs of children with sensory processing difficulties. Some students with Asperger’s syndrome for example are extra sensitive to touch. We should ensure that adequate space is maintained between him and the next student in line. Teachers should organize adaptations keeping these things in mind.
Finally, predictability, consistency and concern with social development are important traits that teachers must possess to create a successful school environment.

In general this research indicated various strategies that could be applied in a school environment so as to facilitate learners with Asperger’s syndrome to learn English as a foreign language:

- The first strategy is a stable, predictable classroom environment avoiding unexpected changes and distractors (e.g. changing rooms, vivid colors, loud sound etc.).

- Routine is also very important to children with Asperger’s syndrome. It may take them a while to establish a routine but once they get it down things can run smoothly. Rules should be established from the very start.

- Being cautious with direct eye contact. Teachers should avoid conflicts when the pupil with Asperger’s syndrome does not hold eye contact. This is also important for oral examiners to remember since they examine student in pairs. Children with Asperger's syndrome find it difficult to cooperate in pairs or in a group.

- Teachers should avoid confrontation about their idiosyncrasies. Their voice may be too loud or accented awkward.

- Using visuals. Asperger's syndrome children learn better when they visualize what is being asked to do. So the Interactive Whiteboard is an
extremely useful tool for the English as an Additional Language teacher not only to present new vocabulary or grammar rules but also to teach some metaphors and explain their meaning. Visual timers could also be useful for transitions.

- Video modeling as a strategy can improve a variety of skills in students with Asperger’s syndrome (e.g. improve conversation skills, appropriate interactions, reduce problem behaviors etc.).

- Transitions can be challenging for children on the spectrum so teachers could facilitate this process. In the EFL classroom there are various transitions from one book to another and an established routine here could be helpful.

- Students with Asperger’s syndrome usually have encyclopaedic knowledge of some subjects, these should be incorporated into foreign language learning activities, homework or projects to increase their interest.

- Their excellent rote memory can be used in vocabulary activities and games to arouse interest and make them more active.

- These pupils may have areas of the curriculum where they have real strength and interest. Computing is one of them. The use of Interactive Whiteboard allows for the development of classroom activities that are engaging students. Encourage and reinforce all attempts at communication.
Children with Asperger’s syndrome can find it very hard to leave a task incomplete. Some have strong feelings about writing with a particular pen or pencil, not tearing a page out, or not using a dirty notebook. Teachers should help them with organisational features and allow for more time to do certain tasks.

Reading comprehension can be difficult for them since they do not understand abstract ideas. Chunking material and breaking it into smaller parts makes it less overwhelming.

When working on projects teachers should be sure that they will do a project on a topic of interest. Thus there will be less resistance to complete an assignment.

Using explicit, direct instructions and if necessary repeat them.

Allow time for students to answer and then check whether they have understood.

Encouraging visual contact.

In pair work activities encourage the more socially adept in your class to spend time with the less. No kids should be left out and isolated. One of the important things group work is supposed to teach is how we can work with diverse people.

Teachers should never raise their voice if a student is angry or agitated. You must not assume either that he/she will understand by looking at your expression. You should speak with a neutral expression and calm voice. You can use visual support to help the child calm down. Avoid irony and sarcasm.
Positive reinforcement is a way to help the child understand what he did was correct and this practice will increase his status among his peers.

Positive role models and cooperative groups can also be helpful since children with Asperger’s syndrome often learn many social cues from other peers. Teachers should make sure that the child is around positive behaviors (e.g. a circle of friends).

Last but not least create good relations with the parents, letting them take part in the goals of schooling and meeting them often, not only when problems arise.

So how will it be obvious that such strategies are working? The learner will be achieving his potential and attaining well in assessments. They will answer confidently in oral work and will have mastered a bank of vocabulary and structures. They will pass examinations and possibly continue to a higher level or simply have amassed enough of the foreign language to serve them well enough in the future. As Wire (2005) states, this will only be achieved when teachers acknowledge that these young people can do very well in learning foreign languages but also when the classroom experience and teacher’s approach have been subtly differentiated to suit them.

Darretxe and Sepulveda (2011) maintain that schools should be small with a small number of students per classroom and depersonalized. Structured schools are preferable with directive teaching methodologies. It is essential that there is a real commitment from the teaching staff. Likewise peers should
be sensitized through discussions as these eliminate wrong ideas and notions.

It is important to remember that some strategies may work and others might not. It is likely also that a strategy might work for a while and then stop working. No single method for teaching students on the autism spectrum is successful for all students. Students’ needs change over time making it necessary for teachers to try different approaches.

D. Alternative factors in the educational context

Discussion has mainly focused on factors that are critical for the educational process and the facilitation of inclusion for students with Asperger’s syndrome in a mainstream English as an Additional Language classroom. However, the foreign language classroom as any other context of human interaction is a complex and varied field which is shaped by an array of factors some more salient than others and not always easily distinguishable in this interplay.

To be fair, I should acknowledge that other significant factors in addition to the use of the Interactive Whiteboard should also be taken into account. In other words the differences between the baseline and intervention results may have stemmed from alternative factors as well. Among them social stories created by the teacher so as to improve students’ social skills and behavior, teaching methods and approaches, various strategies to facilitate students on the spectrum adopted by the teacher, the specific setting, learning activities and school curriculum, exam-oriented activities and more practice, peers, number of students in the classroom, effect of time, teacher’s attitude of inclusion.
LIMITATIONS

I saw my goal in this project as one of describing a specific group in detail and of explaining patterns that may exist, seeking greater insight into an issue rather than seeking to generalize and discovering general laws of human behavior. However, some limitations of the study exist as it adopted mainly a qualitative stance.

Perhaps because a case study focuses on a single unit, a single instance, the issue of generalizability looms larger here than with other types of qualitative research. However, much can be learned from a particular case. Erickson (1986) argues that since the general lies in the particular, what we learn in a particular case can be transferred to similar situations. It is the reader, not the researcher, who determines what can apply to his or her context.

While this was a case study, with two participants, and the generalization of the findings to other children and settings is not known, there is no reason to doubt that at least similar findings would be obtained with other children in other settings. Although universals are hard to define in the study of human affairs, context-dependent knowledge can be valuable in itself due to its in-depth approach quality. However, future studies with larger groups of participants would be useful and would increase the external validity by allowing across-group comparisons.

Action research was selected as it is carried out by teachers in their own classrooms and the research goals and questions are local and specific to their own teaching environment (Lightbown & Spada, 2006). Teachers as researchers can make judgments based on their knowledge and experience
and the demands of practical situations, so action research is a linking of the development of theory and practice (Stehhouse, 1975; Kemmis, 1986). However students’ familiarity with the teacher and teacher’s familiarity with the students could be the source of some bias in the study. Since in this study the naturalistic observation method was used, examination of the two subjects was overt. Thus, a way to deal with the problem of bias was to have two assistant observers (a teacher of English and a psychologist) in order to triangulate. For reasons of reliability the two assistant observers were trained and provided feedback and clear definitions about behaviours and events to be recorded. Observer bias was also reduced by keeping the two assistant observers unaware of the goals and hypotheses of the study.

Another limitation is the fact that language skills performance was mainly linked with the students’ KEY results before and after the introduction of the Interactive Whiteboard. I feel language performance is wider than results in language exams as many students fail in them no matter how competent in language performance due to various reasons. Besides not all language learners become proficient users. Although findings are restricted to a limited range of grades (3 pre and post Interactive Whiteboard KEY tests were conducted), they suggest that the project appeared to have a positive impact on the academic achievement of the two participants. However, an improvement in the test scores is something usual for most students after practice in class. Further research and statistical analysis with a wider sample could be useful in the future.
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Also effective measurement to compare social behavior was not considered in this study as the primary purpose was to see whether the Interactive Whiteboard facilitated teaching and learning for students with Asperger syndrome. Although social interaction with peers improved, this might only be in the context of their school activities. Social behavior protocols were linked to school life. Quantitative measures of behaviour such as frequency of occurrence or duration of behaviour were not obtained. This indicates that some caution should be used when interpreting the findings of this study.

Furthermore, it is interesting to note that the high levels of social engagement and initiation occurred when the activities incorporated the students’ with Asperger’s syndrome preferred interests. Further research may be interesting to investigate.

In addition, another limitation of the study was the lack of generalization across different types of activities. Future studies should investigate how to help these students generalize the social and language skills across other types of learning activities.

Moreover, this research was conducted in a setting (a language school) where classes involve a small number of students where they come twice or three times a week. A typical mainstream state school usually means a large number of students in the classroom and unexpected variables that may affect students’ social relationships and academic results. Besides, school settings may be different in terms of teacher attitude on full inclusion. Therefore, findings may or may not be typical of the state of inclusive education for the broader population of children with Asperger’s syndrome.
Finally, this research emphasized the importance of identifying ways in which the Interactive Whiteboard may be a useful tool to enhance learning. Several strategies were mentioned in an attempt to help students with Asperger’s syndrome learn a foreign language. However, the degree of effectiveness of each strategy mentioned in this research (especially those delivered via the Interactive Whiteboard) is linked, as described above, to local constraints so they could be subjected to further investigation in future studies.

The study also reflects the training needs for teachers in general. I cannot claim, however, that my conceptualisation is universal given the fact that this research was mainly qualitative and on a small scale. Yet, it may serve as a basis to understand better how the inclusive practices for pupils with Asperger’s syndrome work in the English as an Additional Language classroom and to generate future research and discussion in this regard.

Finally, despite its limitations this research could be useful as a contribution to a corpus of research focusing on the inclusion of children with Asperger syndrome in various educational settings and its implications.

**CONCLUSION**

The inclusion of children with Asperger’s syndrome in mainstream schools presents both challenges and opportunities. At the same time the traditional classroom environment in recent years is being replaced by utilizing technology through Interactive Whiteboards, Wikis, Podcasts, social media, online communities. Given the challenges associated with autism spectrum, emerging technologies may be a means to support these students in mainstream education.
The use of the Interactive Whiteboard may be the most significant change in the classroom environment in the past decade which transforms the teacher’s role. This study has hopefully added to the growing body of literature in an attempt to help children with Asperger’s syndrome in foreign language lessons through the use of the Interactive Whiteboard.

Literature has already shown that the introduction of Interactive Whiteboards has affected teaching and learning interactions (Glover et al., 2005; Smith, Higgins et al., 2006; Gray et al., 2007; Kennewell & Higgins, 2007; Hennessy et al., 2007; Mercer et al., 2010). It is clear that the Interactive Whiteboard allows a flexibility in the marshalling of resources that enables teachers to create interesting multimodal stimuli for whole-class dialogue more easily than do other technologies (Mercer, Hennessy et al., 2010). The Interactive Whiteboard can present new possibilities for a teacher. The effective use of the Interactive Whiteboard can also help children with Asperger’s syndrome improve their social skills and acquire language learning skills. However, the effective use of the Interactive Whiteboard is not inherent in the hardware or software (Mercer, Hennessy et al., 2010). It is predicated upon the teacher’s practical understanding of how to engage students and to help them learn.

In recent years, across Greece, as elsewhere, teachers are finding more pupils with Asperger syndrome coming into their foreign languages classrooms. Wire (2005) remarks that children with Autistic Spectrum Disorder are excellent candidates for foreign language education and the best way to motivate them to learn a foreign language is to involve them actively in the learning process. This research showed that although the Interactive
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Whiteboard is a support for good language teaching it is not a panacea. It cannot help a weak teacher and will not teach on their own. In other words, a good whiteboard needs a strong teacher to complement its abilities. A whiteboard cannot only open new avenues of education but can turn just about anything into an interactive lesson.

A balance is needed including various strategies to best help them participate in a meaningful way. The challenge therefore today is for teachers to understand how best to use technology and create activities meaningful and applicable to their learners’ with Asperger’s syndrome needs. The case study above showed that the more sound the pedagogy that informs the technology use, the more meaningful its integration. Teachers should fully understand the affordances of the Interactive Whiteboard, develop the expertise and use appropriate software that also affords interaction.

Teachers cannot make inclusion work in isolation. The real work of enacting inclusion in the school environment belongs to teachers, parents, children and support staff working together in participation and dialogue so as to find a form of inclusion that can meet learner needs and maximize inclusion. As Ravet (2011) proposes, collaboration, flexibility and creativity accompanied by an understanding of autism is the only “recipe” for the inclusion of children on the spectrum. According to a study that examined Greek teachers’ perceptions related to the nature and management of children with autism, they are considered to be highly ‘needy’ as regards their educational achievements and nearly half of teachers’ sample (45.2%) did not perceive that these children would be able to acquire good language skills and in order
to fulfil Autistic Spectrum Disorder children’s demands, it is crucial for teaching personnel to have been appropriately trained (Syriopoulou-Delli et al., 2010). Educational inclusion of students with Asperger’s syndrome has been widely promoted in recent years. However, despite the rhetoric in favour of inclusion it seems that the Greek educational system is still segregating in its philosophy and does not fully support the active inclusion of all children (Faragoulitaki, 2001; Padeliadou et al., 2006; Avramidis et al., 2002; Zoniou-Sideri & Vlachou, 2006; Coutsocostas & Alborz, 2009). The medical / deficit model is still prevalent. For many students with Asperger’s syndrome, as well as for their parents, schooling is not a positive experience and as Hargreaves (1982) asserts ability labelling leads to “destruction of dignity so massive and pervasive that few subsequently recover from it”.

Therefore, no matter how successful the implementation of the Interactive Whiteboard, when we talk about improvement or results for students with Asperger’s syndrome in the English as an Additional Language classroom possible alternative factors should be taken into account such as various strategies teachers use, social stories created according to the students’ needs and the effect of time on students’ internalization of school rules and the language of the classroom as well as their maturity and experience with exam tasks.

Slee (2011) maintains, even when teachers use a contemporary lexicon of inclusion, the cosmetic amendments to practices and procedures reflect assumptions about pathological defect and normality based upon a disposition of calibration and exclusion. Knowing these students and how we
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have developed techniques of dealing with them through special educational practices will make the regular teacher more inclusive. Herein lies a fundamental cultural law. Inclusive education is about all students. Inclusion speaks to the protection of rights of citizenship for all and it is our duty as teachers to enable not disable children in their effort to learn a foreign language.
CONTRIBUTION TO RESEARCH – SUGGESTIONS FOR FUTURE STUDIES

I hope that this study will enhance educators’ interest to conduct in-depth research exploring the changing educational opportunities for children with Asperger’s syndrome, as well as software developers’ interest to design applications in association with pedagogical approaches in the field of English as an Additional Language.

Future studies could concentrate on the facilitating potential of Interactive Whiteboards across a wider sample of students in various language school settings. Results could be strengthened by further research that employs a control group methodology (providing that relevant ethical issues are tackled). Relevant research could be undertaken across different school settings (not limited to private language schools) such as state schools etc. where conditions are dramatically different.

I feel that further research could also focus on various teaching approaches and strategies and how they are constrained by new technologies.

Finally I think that teachers and students would benefit from research on other kinds of new technologies apart from the Interactive Whiteboard such as virtual classrooms, social networks etc. and how they could inform inclusion practices in the classroom.

Word count (excluding Acknowledgements, Table of contents, Abstract, References and Appendices): 42,359
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APPENDICES

1. Discourse Management Observation Protocol

<table>
<thead>
<tr>
<th>DISCOURSE MANAGEMENT MARKER</th>
<th>STUDENT</th>
<th>STUDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiates communication with peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiates communication with teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respects turns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintains eye contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses appropriate body language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses appropriate register</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stays within context</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Interview 1 (Parents/Background)

Date: …………………

Parent: …………………………………………………………………………

Interviewer: …………………………………………………………………..

This is an interview on how you see your child’s efforts in learning English as a foreign language. There are no right or wrong answers. Your opinion matters. Please take your time and feel free to ask any questions you like.

Family Background
1. Child’s age
2. School class / year
3. Home address
4. Does the child live with both parents?
5. What is the parents’ occupation?
6. Are both parents involved in the child’s education?
7. Describe your attitude towards him/her
8. Does he/she have any siblings? If yes, how old are they?
9. Describe their attitude towards him/her

Diagnoses - Interventions
1. What is the child’s diagnosis?
2. When was diagnosis originally obtained?
3. Background of diagnoses
4. Intervention programmes the child attends

Social skills
1. Difficulties in communication
2. Interests
3. Friends - Socialization
4. Can you describe the social challenges your child faces?

5. Please mention any difficulties he/she experiences in communication with peers

6. What upsets or frightens your child?

7. Obsessions

8. Does he/she show any inappropriate social behaviours (picking nose etc.)

9. What do you believe could help him/her improve in social skills?

**School Background**

1. School progress (problems, challenges, achievements)

2. Did he/she start school at the age typically developing children start?

3. Did he attend nursery school/kindergarten?

4. Does he/she have an assistant teacher at school?

5. Talk to me about his school schedule (favourite subjects, subjects he/she excels, subjects he has difficulties, skills he/she masters, skills he lacks)

6. How do teachers assess him/her? (marks, behaviour)

7. What is his/her cognitive level?

8. Does he/she have any learning difficulties?

9. Do you help him/her with homework?

10. Does he/she have any other skills? Does he/she use a computer?

11. How would you describe his/her relation with peers and teachers?

12. Do you believe that school plays a supportive role? (explain)

13. Describe his/her foreign language progress so far (difficulties, topics of interest…)

*Note: A substantial part of the child’s foreign language background has been derived from my empirical observation as his/her teacher (see attached Language Skills Chart)*

Thank you for your time! You have been very helpful!
3. Interview 2 (Parents/Opinion)

Date: ....................

Parent: ..............................................................................................................

Interviewer: ......................................................................................................

Please read carefully and answer by ticking the most appropriate box. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like.

1. How would you describe your child’s attitude towards learning English?
2. Does he/she talk about any problems in class? If yes, what?
3. Does he complain about anything with regard to his/her teacher or peers?
4. What kind of activities is he/she interested in?
5. What activities bore or frustrate him/her?
6. Does he/she complain about homework? If yes about what exactly?
7. Does he/she talk about things he/she would like to be different in class?
8. How do you feel about new technologies in the classroom?
9. How does he/she feel about it?
10. Do you think your child would benefit from some form of social modeling?

Thank you for your time. This has been very helpful!
4. Interview 1 (Students/ Behavior)

Date: ..................

Student: .................................................................

Interviewer: ..................................................................

Please listen carefully. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time before answering and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like or restate your answers at any time. I may also ask you further questions to understand better what you are saying.

1. What is a friend for you?
2. Are there things about the class or the lesson that you are worried about?
3. When do you feel frustrated? (e.g. when I don’t understand a question, when everyone is looking at me, when I get reprimanded…)
4. What do you like to do with your classmates? (e.g. games, activities, pairwork, role playing, watching films, singing…..)
5. Do you think you need help to cope with life in class?
6. What kind of help do you most need from your teacher?
7. Do you feel you collaborate well with your classmates?
8. Do you believe you cooperate well with your teacher?
9. If you feel you need to talk to someone, is there someone in the school that you can talk to?
10. Why do you think your classmates / teachers misunderstand you?

Thank you for your time. This has been very helpful!
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5. Interview 2 (Students/Language skills)

Date: ………………..

Student:…………………………………………………………………..

Interviewer:………………………………………………………………

Please listen carefully. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time before answering and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like or restate your answers at any time. I may also ask you further questions to understand better what you are saying.

1. Do you like coming to class? Why? / Why not?
2. If you didn’t have to come to class would you still like to?
3. What is the easiest for you in learning English?
4. What is the hardest for you in learning English?
5. My most favourite class activities are…..
6. My least favourite class activities are…
7. What do you feel you most need to work on?
8. What changes would you like to see in class?
9. When do you feel bored in class? (when I have to wait my turn to speak, when my teacher explains grammar rules)
10. What’s the hardest thing in working with others? (e.g. eye contact, speak, guessing what others think, context…)

Thank you for your time. This has been very helpful!
6. Questionnaire 1 (Parents/Goals)

Date: …………………

Parent:……………………………………………………………………..

Please read carefully and answer by ticking the most appropriate box. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like.

Please, rate from 1 to 3 according to importance for you.

1= not important, 2=quite important, 3=very important

1. Excelling in class

2. Getting a passing grade in exams

3. It is to his/her benefit

4. Gaining knowledge

5. English is important for his/her future
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6. Communicating with others

7. Travelling

8. Surfing the Net

9. Using social networks

10. It is what all children his/her age do

11. It is his/her choice

Thank you for your time. This has been very helpful!
7. Questionnaire 2 (Students/Goods)

Date: ........................

Student:...........................................................................................................

Please read carefully and answer. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like.

Please, rate from 1 to 3 according to importance for you.

1= not important, 2=quite important, 3=very important

1. Getting high marks

2. Getting a passing grade in exams

3. Being top of my class

4. Pleasing my parents

5. Pleasing my teacher
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6. Gaining knowledge

7. English is important for my future

8. Communicating with others

9. Travelling

10. Surfing the Net

11. Using Facebook

12. Playing computer games

Thank you for your time. This has been very helpful!
8. Language Skills - Assessment Criteria

SCHOOL: ……………………… CLASS: ……………………………

STUDENT: ……………………………………………………………

PERIOD COVERED: ……………………………

TEACHER: ……………………………………………………………

A. Listening

1. Understands simple questions and instructions: A  FA  N

2. Understands the main idea of a short spoken text: A  FA  N

3. Understands and responds to dialogues and monologues including telephone conversations and recorded messages: A  FA  N

4. Understands basic instructions when people speak reasonably slowly (e.g. class times, dates and room numbers): A  FA  N

B. Reading / Reading Comprehension

1. Reads at an acceptable pace: A  FA  N

2. Understands the main idea of a reading passage: A  FA  N

3. Guesses meaning from context: A  FA  N

4. Understands short simple messages (e.g. e-mails, postcards, short letters from friends, signs, instructions, notices): A  FA  N
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C. Writing

1. Writes with legible handwriting: A FA N

2. Completes forms and writes short simple letters or postcards related to personal information: A FA N

3. Writes with acceptable spelling: A FA N

4. Applies taught rules of grammar but with some mistakes: A FA N

5. Writes sentences using the basic English word order: A FA N

6. Writes simple notes or e-mails (e.g. accepting or offering an invitation, thanking, apologizing): A FA N

D. Speaking

1. Speaks with acceptable pronunciation and intonation: A FA N

2. Gives personal information: A FA N

3. Asks simple questions: A FA N

4. Participates in oral pair work: A FA N

5. Applies taught rules of grammar but makes some mistakes: A FA N

6. Expresses likes and dislikes in familiar contexts using simple language: A FA N
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7. Can ask the person to repeat what they said when he does not understand: A  FA  N

8. Communicates without long pauses: A  FA  N

OVERALL ASSESSMENT

1. APPROPRIACY: A  FA  N

2. EFFECTIVENESS: A  FA  N

These skills constitute the global criterion of appropriacy and effectiveness of communication which are indicative of whether a speaker communicates on socially acceptable terms i.e. can handle register and genre according to context (specific and cultural) and purpose.

KEY

A: TARGET SKILL ACHIEVED (MARK: 80-100/100)

FA: TARGET SKILL FAIRLY ACHIEVED (MARK: 55-79/100)

N: TARGET INADEQUATELY OR NOT ACHIEVED (MARK: 0-54/100)

DATE: ……………………… SCHOOL: ……………………… CLASS: ……………

OBSERVER: ……………………………………………………………………..

<table>
<thead>
<tr>
<th>BEHAVIOUR</th>
<th>STUDENT</th>
<th>STUDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greets teacher and peers appropriately upon arrival</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Makes eye contact with teacher and peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raises hand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fidgets in seat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gets out of seat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks relevant questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks permission to do things</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepts the decision of the teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respects turns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expresses discomfort when task demanding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is inattentive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distracts or interrupts peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follows directions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is prone to copy when task is difficult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks the teacher or peers for assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actively participates in classroom activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepts responsibility for actions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follows directions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modifies behaviour when teacher praises him / her</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completes classwork activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has difficulty in switching between activities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. **Questionnaire (for Students/Behavior)**

**DATE:** ………………… **SCHOOL:** ………………… **CLASS:** …………..

**STUDENT:**……………………………………………………………………..

Please read carefully and answer by ticking the most appropriate box. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like.

1. **I have friends in class**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **I like working with others**

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. **I feel bored in class**

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. **I feel frustrated in class**

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. **I understand what the teacher wants from me during the lesson**

<table>
<thead>
<tr>
<th>NEVER</th>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
</tr>
</thead>
</table>
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<table>
<thead>
<tr>
<th>6. I like chatting with my classmates before and after the lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEVER</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. I initiate a conversation with my classmates</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEVER</td>
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</table>

<table>
<thead>
<tr>
<th>8. I only talk about what I like</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEVER</td>
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<table>
<thead>
<tr>
<th>9. I feel nervous when I have to ask my teacher questions</th>
</tr>
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<tbody>
<tr>
<td>ALWAYS</td>
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<td></td>
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<table>
<thead>
<tr>
<th>10. I feel nervous when it is my turn to speak in class</th>
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<tbody>
<tr>
<td>ALWAYS</td>
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<table>
<thead>
<tr>
<th>11. I raise hand when I know the answer</th>
</tr>
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<tbody>
<tr>
<td>ALWAYS</td>
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<td></td>
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</table>
Sophia Sagia

Facilitating Greek young learners with Asperger’s syndrome into the mainstream EAL (English as an Additional Language) classroom through the use of Interactive Whiteboard Technologies.

12. I don’t like it when I make a mistake

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
</tr>
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</table>

13. I prefer working alone silently

<table>
<thead>
<tr>
<th>NEVER</th>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
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</table>

14. My classmates feel annoyed by my behavior

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
</tr>
</thead>
</table>

15. My classmates often misunderstand me

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
</tr>
</thead>
</table>

16. My teacher often misunderstands me

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
</tr>
</thead>
</table>

Thank you for your time. This has been very helpful!
11. **Questionnaire (for Students/Language skills)**

**Date:** ………………. **School:** ………………. **Class:** ……………

**Student:** …………………………………………………………………………

Please read carefully and answer by ticking the most appropriate box. It is important that you give truthful answers TO ALL THE QUESTIONS. Please take your time and remember there are no right or wrong answers. Only your opinion matters. Feel free to ask any questions you like.

1. I like learning English

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
</tr>
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<tbody>
<tr>
<td></td>
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</table>

2. English grammar is difficult

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
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<tbody>
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<td></td>
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</table>

3. I am good at spelling

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
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4. I am good at reading comprehension

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
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5. I am good at listening comprehension

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
<th>NOT SURE</th>
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<tbody>
<tr>
<td>6. I am not good at writing</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I am not good at speaking</td>
<td>NO</td>
<td>YES</td>
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<td></td>
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<tr>
<td>8. I ask questions in class</td>
<td>ALWAYS</td>
<td>SOMERIES</td>
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<td></td>
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<td></td>
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<tr>
<td>9. I pay attention in class</td>
<td>ALWAYS</td>
<td>SOMERIES</td>
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<tr>
<td>10. I have distracting thoughts during lessons</td>
<td>ALWAYS</td>
<td>SOMERIES</td>
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<td></td>
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<tr>
<td>11. I like pair work</td>
<td>ALWAYS</td>
<td>SOMERIES</td>
</tr>
</tbody>
</table>
12. I like group work

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
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<th>NEVER</th>
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13. I need help from my teacher

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<th>NEVER</th>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
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14. I understand my teacher’s instructions

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<th>NEVER</th>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
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15. I need help for my homework

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<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
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16. I like taking English exams

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<th>SOMETIMES</th>
<th>RARELY</th>
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17. I feel well prepared for tests

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<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
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18. I check questions / tests before I finish

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
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19. I practise English outside the classroom

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<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>RARELY</th>
<th>NEVER</th>
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20. I feel bored when my teacher presents the new grammar rules

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<tr>
<th>ALWAYS</th>
<th>SOMETIMES</th>
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<th>NEVER</th>
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Thank you for your time. This has been very helpful!
12. Observation Assistant Control Session Protocol

Date: ……………….  Session:………………

Researcher:………………………………………………………………………

Observation Assistant:……………………………………………………………

A. Subjects covered

1. Trial Observation feedback

2. Discussion on areas/skills to be improved
Sophia Sagia
Facilitating Greek young learners with Asperger’s syndrome into the mainstream EAL (English as an Additional Language) classroom through the use of Interactive Whiteboard Technologies.

13. Observation Assistant Training Session Protocol

Date: .....................  Session:.....................

Researcher:...........................................................................................................

Observation Assistant:.............................................................................................

B. Subjects covered

1. Research scope
2. Research methodology
3. Observation Rationale
4. Observation Protocol Review
5. Observation Protocol Use
6. General notes on observing behaviour
7. Trial Observation date
8. Feedback and Control session date
9. Actual Observation dates
10. Non-disclosure of personal data clause

Researcher’s signature
....................................................................................................................

Assistant’s signature
....................................................................................................................
Facilitating Greek young learners with Asperger’s syndrome into the mainstream EAL (English as an Additional Language) classroom through the use of Interactive Whiteboard Technologies.

### ALTE general can do statements

<table>
<thead>
<tr>
<th>CEFR Level</th>
<th>Listening/Speaking</th>
<th>Reading</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>CAN advise on or talk about complex or sensitive issues, understanding colloquial references and dealing confidently with hostile questions.</td>
<td>CAN understand documents, correspondence and reports, including the finer points of complex texts.</td>
<td>CAN write letters on any subject and full notes of meetings or seminars with good expression and accuracy.</td>
</tr>
<tr>
<td>C1</td>
<td>CAN contribute effectively to meetings and seminars within own area of work or keep up a casual conversation with a good degree of fluency, coping with abstract expressions.</td>
<td>CAN read quickly enough to cope with an academic course, to read the media for information or to understand non-standard correspondence.</td>
<td>CAN prepare/draft professional correspondence, take reasonably accurate notes in meetings or write an essay which shows an ability to communicate.</td>
</tr>
<tr>
<td>B2</td>
<td>CAN follow or give a talk on a familiar topic or keep up a conversation on a fairly wide range of topics.</td>
<td>CAN scan texts for relevant information, and understand detailed instructions or advice.</td>
<td>CAN make notes while someone is talking or write a letter including non-standard requests.</td>
</tr>
<tr>
<td>B1</td>
<td>CAN express opinions on abstract/cultural matters in a limited way or offer advice within a known area, and understand instructions or public announcements.</td>
<td>CAN understand routine information and articles, and the general meaning of non-routine information within a familiar area.</td>
<td>CAN write letters or make notes on familiar or predictable matters.</td>
</tr>
<tr>
<td>A2</td>
<td>CAN express simple opinions or requirements in a familiar context.</td>
<td>CAN understand straightforward information within a known area, such as on products and signs and simple textbooks or reports on familiar matters.</td>
<td>CAN complete forms and write short simple letters or postcards related to personal information.</td>
</tr>
<tr>
<td>A1</td>
<td>CAN understand basic instructions or take part in a basic factual conversation on a predictable topic.</td>
<td>CAN understand basic notices, instructions or information.</td>
<td>CAN complete basic forms, and write notes including times, dates and places.</td>
</tr>
</tbody>
</table>
DSM-5 and Asperger syndrome

When this research started the term Asperger syndrome was still used all over the world. However, in May 2013 the APA published the Fifth Edition of the DSM (DSM-5) after a 14-year revision process and one of the most significant changes was that the DSM-IV-TR autism subgroups of AD, Asperger’s disorder and PDD-NOS were combined into one broad diagnosis: autism spectrum disorder (Autistic Spectrum Disorder). The people involved in making the changes felt that there was not enough evidence to show a definite distinction between Asperger syndrome and high-functioning autism spectrum disorder. They have incorporated both of these terms (and others including PDD-NOS) into the overall category of ‘autism spectrum disorder’. The professionals who developed DSM-5 have suggested that the term ‘Asperger’s’ might still be used colloquially by diagnosticians; for example, for a diagnosis of autism spectrum disorder with similarities to Asperger syndrome. Many people also identify closely with the term Asperger syndrome and will continue to use it in everyday language (NAS, 2013).

In Greece and in many European countries most diagnoses are based so far on the International Classification of Diseases (ICD), published by the World Health Organisation. Many individuals wish to retain their previous diagnosis as the “label” is considered part of their identity or reflect a peer group with whom they identify. This is perfectly acceptable as a clinician can indicate both the DSM-5 diagnosis as well as the previous diagnosis, such as Asperger syndrome, in an individual’s clinical record (Autism Speaks, 2014).
A brief note on the history of Asperger’s Syndrome

The history of the formal identification of autism began with the work of an Austrian psychiatrist, Leo Kanner (1894 – 1981) whose publication “Autistic Differences of Affective Contact” in 1943 in the USA described a group of patients who appeared from an early age aloof, resisted change and engaged in repetitive activities. Kanner also observed absence of imaginative or make-believe play, an unusual attraction to certain objects and lack of communication.

Less than a year after Hans Asperger published a paper describing his work with 2 boys who had normal intelligence but lacked the ability to integrate themselves socially. They had poor nonverbal communication skills, did not demonstrate empathy with peers, had pedantic speech, showed interest in a single topic which dominated their conversations and experienced social isolation. His observations resulted in his paper (1944) “Autistic Psychopathy in Childhood”. He also observed their excellent rote memory and believed they would be able of exceptional achievement.

Both Asperger and Kanner were unaware of each other’s work at the time but both used the term “autistic” originally used by Eugen Bleuler in 1911. Bleuler used the term “autistic” to describe extreme withdrawal from the world into the self in his patients (Klin et al., 2000).

An English psychiatrist, Dr Lorna Wing, attached the name of Asperger’s syndrome to the condition of children in her case studies in her 1981 publication “Asperger’s Syndrome: A Clinical Account”. Dr Wing also noted the presence of deficits in the use of language for communication.

In 1991 Asperger’s work was translated into English by Uta Frith and sets of diagnostic criteria were outlined by Gillberg and Gillberg (1989). Asperger passed away in 1980, one year before international acknowledgement of the term named after him.

In 1992 Asperger’s Syndrome was defined in the International Classification of Diseases (ICD-10) and was included as a separate diagnosis in the Diagnostic and Statistical Manual of Mental Disorders in the 1993/94 edition. A year later (1994) Asperger’s Syndrome was made official in the Diagnostic and Statistical Manual of Mental Disorders (DSM) by the American Psychiatric Association.
Since the inclusion of the disorder increasing numbers of children have been diagnosed with Asperger’s syndrome in the past 20 years. With the rise in numbers has also come the awareness that many individuals who are now adults are living with undiagnosed Asperger’s. Explaining the rise in numbers of individuals with autism is difficult. The MMR vaccine has been investigated and dismissed by researchers as the cause of autism. Possible environmental causes such as toxins, pollutants and antibiotics continue to be under scrutiny. Changes in the diagnostic criteria, growing awareness and knowledge among parents and professionals play also a role in the increase. The strongest evidence however, is that complex genetic factors play a major role in etiology (Wing, 2000). How genes interact with environmental factors still remains a mystery.

When this research started the term Asperger syndrome was still used all over the world. However, in May 2013 the APA published the Fifth Edition of the DSM (DSM-5) after a 14-year revision process and one of the most significant changes was that the DSM-IV-TR autism subgroups of AD, Asperger’s disorder and PDD-NOS were combined into one broad diagnosis: autism spectrum disorders (ASD). The people involved in making the changes felt that there was not enough evidence to show a definite distinction between Asperger’s syndrome and high-functioning autism spectrum disorder. They have incorporated both of these terms (and others including PDD-NOS) into the overall category of ‘autism spectrum disorder’. The professionals who developed DSM-5 have suggested that the term ‘Asperger’s’ might still be used colloquially by diagnosticians; for example, for a diagnosis of autism spectrum disorder with similarities to Asperger’s syndrome. Many people also identify closely with the term Asperger syndrome and will continue to use it in everyday language (NAS, 2013).

In Greece and in many European countries most diagnoses are based so far on the International Classification of Diseases (ICD-10), published by the World Health Organization. Many individuals wish to retain their previous diagnosis as the “label” is considered part of their identity or reflect a peer group with whom they identify. This is perfectly acceptable as a clinician can indicate both the DSM-5 diagnosis as well as the previous diagnosis, such as Asperger syndrome, in an individual’s clinical record (Autism Speaks, 2014).

These proposed changes are based on research, analysis, and expert opinion. The revisions have been made with the hope that the diagnosis of autism spectrum disorders will be more specific, reliable,
and valid. Despite these positive hopes, legitimate concerns have been raised regarding how these changes might impact people on the spectrum. One of the biggest concerns is that some who are higher functioning will no longer meet the more strict diagnostic criteria and will therefore have difficulties accessing relevant services.

It is clear these changes will have an impact on families and people currently diagnosed with an autism spectrum disorder. It remains to be seen how diagnosticians and clinicians will use the new criteria in evaluating children and the impact it will have on the availability of services.

The diagnostic label, any label, does not summarize a person and there is need to consider the individual’s strengths and weaknesses and to provide individualized intervention that will meet those needs.

References


NAS: www.nas.org

Autismspeaks: www.autismspeaks.org