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Specificity of Teaching Vocabulary to Primary School Students with Asperger's Syndrome in ELT: Case Studies

Abstract. Nowadays, the number of children suffering from Autism Spectrum Disorders, especially those with diagnosed Asperger's syndrome, is increasing steadily. Undoubtedly, this psychological disorder is one of the most complex and difficult to understand and deal with. Despite the fact that a lot of studies have been done so far, this phenomenon is not fully understood and further research should be done. The purpose of the present study was to explore the relationship between the choice of teaching methods, approaches and techniques to students with diagnosed Asperger's syndrome and the learners' knowledge gains in the selected aspects of the English language. It was hypothesized that if modifications in the process of teaching English are made with reference to the specificity of Asperger's syndrome disorder, children with diagnosed AS will learn English faster. The findings of the study showed that the introduction of proper techniques and the adaptation of learning process to AS students' preferences help them to achieve better results and gain more knowledge easily.

Keywords: Asperger's syndrome, ASD, English vocabulary, teaching process, English language acquisition

1. Introduction

In 1944 Hans Asperger wrote a case report connected with Autistic Psychopathy in which he described the case of children with eccentric, weird manners, impairment in social functioning and communication, unusual interests and some cognitive areas of hiper-functioning (Atwood 2017). At that time, there was no distinct cate-

gory for autism and Asperger's syndrome in the American Psychiatric Association's list. Not until 1989 the first criteria in diagnosis for Asperger's syndrome were proposed and they appeared in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) in 1990. It was the first basic and crucial step in the long-term process of improving the daily situation of students with Autism Spectrum Disorder. Finally, it helped not only in diagnosis, but also in improving the living conditions for children with Autism Spectrum Disorders (Butcher and Mineka 2017).

Asperger's syndrome as well as all of the disorders from ASD are very controversial and difficult issues to understand. Autism Spectrum Disorders may be treated as one of the most challenging areas for specialists to deal with. Still, English language teachers do not have proper strategies and training to work with AS children successfully and fully tackle appearing difficulties. Language teachers must work on preparing and implementing that kind of educational programmes which are effective and those which match the school curriculum as well as AS learners' needs. English language skills among children with ASD may vary from totally correct language in grammar and speaking to full muteness. Although, Asperger's syndrome impairments may affect every or selected aspects of using English language, such as lexical, phonological, phonetic, pragmatic, syntactic and morphological (Johnson 2005).

2. Asperger's syndrome and High Functioning Autism – comparison

For the diagnosis of Asperger's syndrome it is required to appear of at least two symptoms of impairment in social interactions and one symptom of restriction in interest and behavioral restriction. What is more, there is a requirement of cognitive functioning in norm and the absence of a general delay in linguistic abilities. Moreover, there should be an absence of diagnostic criteria for autistic disorders. These are the most significant diagnostic differences between autism and Asperger's syndrome which help in the distinction of these two terms. Thus, some inaccuracies have been found in the diagnosis of autism while the aspect of cognitive delay is taken into consideration. One more type of autism has been described as High Functioning Autism (HFA), which is characterized by no cognitive delay (Beardon 2019).

Moreover, patients with this type of impairment present average or above average intellectual skills (IQ higher than 70). That is the reason why the debate over the distinction between AS and HFA appeared. The most significant issue discussed was the presence of intellectual functions in norm. Both of these two disorders have one common feature, but the ground of etiological and neurobiological mechanisms remain different. Both may share a similar neuropsychological functioning level and that is why in these terms they should be regarded as different variants of single disorders (Frith 1991).

The unsolved doubts in defining terms of AS and HFA led to the assumption that neither of them can be reliably described and differentiated from each other. That is why the latest edition of DSM named as DMS-5, included AS into the category of Autism

Spectrum Disorder (ASD). Moreover, in case of better characterization of the diagnosis, the presence of linguistic and cognitive impairment and severity levels have been incorporated (Beardon 2019).

Firstly, the study has shown that in both Asperger's syndrome and High Functioning Autism, some autistic core features appear, even though with some subtle differences. These can be features such as deficits in social interactions and communication or repetitive patterns of interests, activities and behaviours. That is the reason why it is so difficult to diagnose these disorders properly (Harrington 1998).

The most important and significant changes in DSM-5 classification are connected with new information on Asperger's syndrome. Separate diagnosis of Asperger's syndrome has been removed. Moreover, a new category - Autism Spectrum Disorders - has been created, which involves autism, Asperger's syndrome and other forms of generalized developmental disorders (Butcher and Mineka 2017).

According to recent studies, the term 'autism' does not exist. It is too wide and not precisely determined and that is why - it needs to be modified. The current state of knowledge indicates that the correct designation for that is ASD, which is the abbreviation for Autism Spectrum Disorder. It means the area in which different types of autistic symptoms are grouped into categories. Each category indicates different mechanisms which cause developmental difficulties. The term 'spectrum' refers to both differences in symptoms and their intensity among the group of patients with diagnosed ASD. What is more, it also shows some kind of continuum between general population and diagnosed patients (Beardon 2019).

According to the DSM-5 classification, ASD includes disorders which previously were classified as Asperger's syndrome, highly functioning autism, atypical autism, childhood disintegrative disorder and PDD-NOS - pervasive developmental disorder (Mikołajczak 2017).

New diagnostic criteria are as followed:

- a. it is a neurological disorder so it must appear in the infancy or early childhood, but it may not be recognized in these periods because of minimum social requirements and support from parents in early years of child's life,
- b. persistent deficits in social communication and social relationships in different environments must appear,
- c. patterns of behaviours, interests or activities must be restricted and repetitive (Beardon 2019).

Pupils with autistic spectrum disorders are a highly diverse group in intellectual, communicational and social functioning. Symptoms of autism are very often wrongly categorized as rude or strange patterns of behaviour which are not connected with autistic disorders (because it is very difficult to diagnose). Clinical picture of children with disorders from autistic spectrum shows global disorders of central nervous system, such as integrated, coordinative and regulating functions. Child's brain is not able to recognize and understand every incoming information by sight, hearing, touch or smell. Disorders from autistic spectrum last the whole life in the majority of pa-

tients. Minimizing the symptoms is possible only by an early therapeutic intervention. Studies show that there are a lot of methods which help in the therapeutic process, but there still is no evidence which of them is the most effective one (Williams 2003).

3. ASD children's difficulties in learning foreign languages

ASD learners without any doubts present serious difficulties during the language learning process, especially when it comes to foreign languages. It is connected with a huge amount of abstract material which needs to be memorized and understood. Lack of concentration, difficulties in speech and maintaining social contacts are serious sources of failures (Wire 2005).

3.1. The role of distractors in learning process

ASD children are highly sensitive to any changes which appear during their daily routine. That is the reason why students from ASD may come to lessons highly distracted. When the language lesson is full of instructions from the English teacher and there is slight visual support on the board or a worksheet, it is almost sure that ASD learners do not deal with the learning material. Moreover, many of such students experience problems with processing information which they have heard. Any type of distractors may lead to a situation when students just do not hear the given instructions. They do not follow the instructions, which may anger the teacher who must speak back and repeat everything once again. When other students start their work on the first task, ASD students may still look for something in their bags or pencil cases. Once started, the tasks performed by a child with ASD are done more slowly than those done by others, because of a great number of distractors, such as noise, lights, unneeded objects, irritating tone of other children and teacher's voice (Baron-Cohen 2004).

ASD children usually react with negative emotions to any appearing changes in his or her natural environment, even to the very slight ones. They like doing their daily routines step by step with using sequences and following patterns which are well-known to them. Any type of changes, especially made by other students or adults, may evoke anger or even anxiety among children with ASD disorders. Any kind of unexpected changes brings serious distractions to their functioning not only at school but also at home (Stuart-Hamilton 2004).

A great amount of ASD children present difficulties and barriers in understanding words and phrases of foreign languages, especially when they have more than only one meaning. The students have serious problems with dealing with metaphors, idioms, colloquial or slang expressions which are hard to explain even in their mother tongue. They understand and interpret such abstract forms literally, this is word for word, and more slowly (Atwood 2017).

3.2. Learning strategies to help learners with ASD

It is truly important to understand AS children's strategies of learning and ways of acquiring knowledge. They can slightly differ between children so the individualization of the teaching process is needed without any doubts. The triad of impairments as main ones may lead to disorders in accessing the knowledge of especially English language, even if at the first sight it is not observed. Teachers must be prepared for any kind of possible distractors and problems if they are eager to achieve progress and access of the curriculum by students with AS during the English learning lessons (Lawson 2001).

These children need a systematic lesson which is connected with the patterns or strategies that they prefer. Any kind of changes which can be predicted must be minimized as fast as possible. If changes are hard to predict or they cannot be prevented, children should be informed about them or prepared for them earlier to avoid their being surprised or anxious. ASD students should be monitored during their work simultaneously and proper remarks must be given to them to help in improving their actions. The most important thing is to make that kind of learning environment possible which helps in avoiding stress to the most possible range (Jerzak 2016).

To teach English as a foreign language successfully in the context described in the current paper, some requirements need to be fulfilled during the work with ASD students. Routines in the classroom must be kept with clarity and consistency. Children with Asperger's syndrome should be provided with some additional guidance during transitions and more unstructured times. What is more, when there is a change of disruption in the student's schedule noticed, the teacher should be quite aware of it. Secondly, avoiding eye contact by children with Asperger's syndrome does not mean they do not listen or pay attention to the presented material (Rhode and Klauber 2004).

A lot of children with Asperger's syndrome present difficulties in organizing themselves. The idea to help them in this area is to create a schedule with the students to keep track of learning assignments and homework. The next difficulty may appear during taking notes. The best idea is to prepare and give students with AS a copy of the notes or let them copy from another student's notes. Being direct and explicit while explaining feelings and thoughts may minimize troubles in taking the perspectives of others in students with AS learning process. Language used by teachers also needs to be adapted to specific needs of AS students – always concrete rather than based on the use of sarcasm, idioms, difficult phrases, metaphors or analogies. If there is one student with Asperger's syndrome in the classroom, it is highly important to prepare a social ground for it. While children with AS may present difficulties in understanding social situations, students without disorders should be informed and taught by a teacher some useful strategies of how to help their friend with AS to face these challenges. That kind of empathy can decrease the possibility that students from Autism Spectrum Disorder will be left out or teased by other friends (Powers 2003).

Another important aspect which is very often underestimated during teaching process is establishing a safe place where a child with AS can go to calm down in the sit-

uation if he/she becomes overstimulated. Children with AS are very often perceived as ill-mannered, but it is an erroneous assumption. Over-stimulation during learning process often manifests itself in abrupt behaviours or in being angry. Instead of maintaining conflicts or escalating them, the best solution is to back off from the student with AS and give him or her time to calm down (Bromfield 2010).

The next strategy worth remembering is the fact that children with AS may be speaking extremely intelligibly about even difficult subjects, but still they might not understand the whole meaning of what they are talking about. It results from the fact that children from Autism Spectrum Disorders are more advanced in language production than in comprehension (Attwood 2008).

One more fact should be taken into consideration because of its high importance in the development of children with AS in learning process. Namely, students with Asperger's syndrome present a tendency to repeat the same question or statement over and over again. Teachers should avoid repeating the answer for the child with AS, pointing out that the question is being repeated or raising their voice. A better solution is to try redirecting the student or find a different or alternative way to respond to him or her. In that way, the effect of relieving some of student's stress may be achieved. It happens that children with AS present intense strengths, interests and preoccupations and they should be creatively incorporated in the teaching curriculum. Moreover, these aspects can be also used as positive reinforcements for presenting and strengthening an appropriate behavior (Child 2007).

3.3. Support in social communication and social contacts

ASD children present specific kind of speech and different tendencies in communication. Their voice differentiates between too soft and too loud. They speak too quickly while in their speech patterns they have a tendency to garble what they say. On the contrary, children with diagnosed AS who have little speech or an elective mute, can have at the same time very good understanding of English and the ability to respond by nodding, drawing or even using the translator. That is the reason why using modern technologies seem to be a good idea during the teaching process in working with children with Asperger's syndrome (Littlewood 1998).

Developing communication skills among children with ASD is a great challenge, not only for teachers, but also for their families, and it needs constant practice. Nowadays, the level of development among children with AS varies so much that we cannot give one clear picture of this syndrome, especially when talking about communication and learning foreign languages areas. It also should be mentioned that children without any disorders achieve the communication abilities automatically and naturally, so frequently, a lot of people are not aware of how complex and difficult this function is. Helping students with AS in this field should be a major priority. Language skills are taught most efficiently in the social context so this is the place where they should be used and that is where they gain the real meaning. Teachers and parents should be

aware of the necessity of using language which is concise and simple. Vocabulary should be appropriate to children's capability and level which means familiar, specific and concrete words, repeated if it is necessary. Very often AS students should be given more time to process the given information by talking slowly or taking pauses between spoken words. The pace of speech needs to be adjusted individually to ASD learners (Wetherby and Prizant 2000).

While planning lessons for AS learners, teachers must remember that a lot of odd or obscure behaviours presented by the children may be associated with other peripheral factors, for example a hyper-sensitivity, hypo-sensitivity to stimulation, problems in – even minor – changes of their daily routine, anxiety, being angry without any particular reason, difficulties in understanding or interpreting social situations. That is the reason why every instructional plan should incorporate special strategies. They are helpful in expanding and improving students' interests, developing skills, understanding responses to every stimuli and finally, preparing them for previously planned or unexpected changes. Obviously, sometimes it might not be possible to eliminate every repetitive behaviour fully, but it is still helpful in making some environmental adaptations to decrease inappropriate actions. Presenting and teaching AS learners the proper one which has the same functions as those inappropriate, is still possible (Willey 2001).

4. The study: Methodology of a comparative case studies

The present study set out to explore the relationship and connections between the choice of teaching techniques to children with diagnosed Asperger's syndrome and the learners' knowledge gains in the selected aspects of the English language, especially and mainly in the vocabulary. Accordingly, it was hypothesized that if some modifications in English teaching process are adopted with particular reference to the specificity of Asperger's syndrome disorder, children with diagnosed AS learn English faster, better store the taught material in their long-term memory and understand given abstract material better as well. Not only does the modification of teaching process make learning English easier and facilitated, but it is also conducive to developing the flexibility of learners with AS' skills during the teaching process. As research suggests, in the case of children with diagnosed Asperger's syndrome functioning, the domination of pictorial thinking predominates over auditory functions. According to this assumption, teaching English to children with Asperger's syndrome should be mainly based on visualization, flashcards, pictures, mind mapping and schemes. Metaphors and too complex tasks should be avoided, because they cause some discouragement in children's thinking about learning processes. Teaching material should be closely connected with learners' with AS interests and so-called fixations. All these aspects gathered together will improve the English language learning during the teaching process to children with Asperger's syndrome.

4.1. Research questions

The hypothesis was formulated on the basis of the following research questions:

1. Does the children's with Asperger's syndrome progress in learning English vocabulary depend on the choice of the teaching method or technique?
2. Are there any visible differences in the acquisition of English vocabulary by children with AS if two different teaching techniques are used?
3. May introducing some modifications to standard teaching techniques by taking into account the specificity of learners with AS be an effective instrument for reducing the level of stress during English lessons?
4. Can inflexibility, which characterizes children with Asperger's syndrome, be turned into flexibility through the modification of techniques used to teach and learn vocabulary?
5. What are the differences in remembering and memorizing vocabulary when two forms of teaching (i.e. regular school way and a way modified with reference to AS children learning preferences) are taken into consideration?

4.2. Methods and instruments

The present study employed a comparative case studies which in theory are based on covering two or more cases to produce general knowledge about the research questions and hypothesis. What is more, they are conducted as longitudinal studies. Their main goal is to focus on comparing more than only one context. The present study involves analysis and synthesis of similarities and differences between learners of English and contexts in which the learning process is conducted. The assumption of comparative case studies is to incorporate not only qualitative, but also quantitative data (Goodrick 2020).

In the course of the study, a number of instruments were used. First of all, pre- and post-tests were given to learners to compare their levels of knowledge before and after the whole process of a comparative case study. Additionally, Stanford-Binet 5 Intelligence Scale was used to measure the level of intelligence and to ensure that students with AS chosen for the current study present the similar level of functioning. For the purpose of the study, observation was used as an important instrument in measuring peripheral factors. Finally, lesson scenarios were prepared and constructed to make the whole process based on main assumptions of the teaching process.

The pre-test collected data on the participants' knowledge before taking part in the didactic experience and intervention. The pre-test covered the material which is concerned around the issues that learners were expected to learn during the regular school lessons. It contained only diagnostic tasks connected with the lexis and not grammar. Each of the tasks was provided with clearly constructed instructions in Polish without using complicated or metaphorical phrases (not to make the understanding difficult for learners with Asperger's syndrome). All of the diagnostic tasks were in line with the core curriculum for primary school children with special needs.

Scenarios of the English lessons for each participant were different and constructed with the reference to the main assumptions of the teaching process. One series of lessons was based on a more traditional approach to teaching process, whereas the other one employed some modifications recommended for children with the diagnosed Asperger's syndrome. Each scenario was connected with a different learning issue and separate lexis topic.

4.3. Research procedure

4.3.1. Selecting the respondents

The whole process of teaching two children with diagnosed Asperger's syndrome lasted 6 months. The two children with the Asperger's syndrome, both at the age of nine and with the same IQ level, took part in the research. Both of them present the similar IQ in the developmental norm, which was one of the most crucial and needed factors in the selection process. What is more, during the teaching process it was helpful to eliminate disruptive factors such as, for instance, unequal educational chances or lowered functioning in understanding, concentration, attention level or emotional attitude. Those factors may influence learning English vocabulary in a meaningful way. Moreover, both students present similar fixations, which helps in selecting the teaching methods and learning material.

First of all, the criteria for the selection of the participants to the educational experience and for the conducted research were as presented below:

- a specialised opinion about diagnosed Asperger's syndrome from the psychological counselling centre,
- the agreement of the children's parents for taking part in the researching process,
- administering the Stanford- Binet test to find and select two participants with the same IQ level, but being in the intellectual norm, presenting similar skills without distinct aberrations,
- analysis of the children's documentation (medical, psychological, pedagogical) to choose two learners with a similar spectrum of Asperger's syndrome,
- the pre-test checking the English vocabulary knowledge to select two children with Asperger's syndrome who had similar proficiency level of English lexis and a similar range of difficulties in this area of learning the language.

All the expected disruptive factors were minimized to the least possible level thanks to taking into consideration the above-mentioned criteria and assumptions.

4.3.2. Supplementing post-treatment results with observation data

During the whole educational and modified teaching process, both participants were observed by the researcher in a very careful manner. The post-test results needed to be complemented with these observational data. The observation mainly fo-

cused on children's behaviours during each separate lesson with measuring their level of motivation during each part of the process, their reactions to proposed and various tasks and finally, their attitude to the whole English lexis teaching process. Moreover, the additional aim was the attempt to estimate the possible noticeable progress in presented disordered areas of their development.

4.3.3. Description of the cases

Kamil and Bartek are 9-year-old students who suffer from diagnosed Asperger's syndrome. The character of their disorders and presented symptoms was not so harsh, but they display similar difficulties in all of the functioning aspects. The similarity of the intensity of symptoms was helpful in planning and conducting the research process. Both of them learned in State Primary School and they presented difficulties in the area of learning the English language. They were able to talk, communicate and do some tasks, but still to the very extended limit. Moreover, they displayed huge difficulties in social interactions so both of them needed some time to interact with the teacher or therapist to be able to start taking part in the research process. Their lack of ability to understand metaphors, attachment to their fixations and domination of visual thinking created a great barrier and serious obstacles in understanding the rules of the English language. Both of them were hypersensitive to such stimuli as high and intensive sounds, light or touch, which needed to be eliminated to the most possible extent. It was also very difficult to pay their attention, because they did not always understand verbal instructions given by the teacher. It was highly important to ensure that they clearly knew, what they had to do, and what their tasks were about. They also presented a tendency to focus on their fixations and topics which were especially interesting for them. Sometimes they were very excited and they behaved as they were irritated in some way. The level of emotional intensity was sometimes so high, that a lesson needed to be paused to do some relaxation or exercises which calmed them down to make the learning process more effective and eliminate all possible distractors. Both boys were usually very talkative, but their speech tended to be chaotic and hard to understand because of torrent of words and thoughts. Both of them preferred working on their own, without a partner.

4.3.4. Teaching procedures

After the selection of the participants, the learning – teaching procedure different for each student was launched. The teaching process for the first child – Kamil – was based on traditional approach to teaching process and lesson scenarios close to those used in school. The other child – Bartek – had lessons fully based on modified scenarios, but still in accordance with the school curriculum. Those scenarios were created in such a way to use all helpful strategies and techniques to AS children, for example: flashcards, short films, mindmaps, schemes, presentations. 60-minutes lessons were

conducted twice a week and differently designed and constructed lessons were delivered to each participant.

Each lesson unit was closely connected with a new part of the vocabulary material, the same for each learner. The topics included such thematic vocabulary issues as numbers, colours, wild animals, farm animals, domestic animals, food, toys, home, parts of the body, emotions, family members, weather, seasons of the year, fruit, vegetables, places in town. Each lesson was also led in accordance with some state parts such as revision from the previous lesson, time for play and fun and maintaining a good and friendly atmosphere. Everything was constructed according to the school curriculum and child psychology. Every step of lessons was created in such a way to minimize possible distractors and increase these actions which may encourage learners to acquire new knowledge. In addition to this, a good atmosphere and all helpful tools for learners with Asperger's syndrome were prepared.

4.3.5. Assessing the subjects' post treatment vocabulary knowledge

After the whole period of teaching intervention, a written post-test (similar in construction to the pre-test, but with different content to minimize the possibility of memorising answers from the pre-test by children) was administered to the learners. It was created to check children's acquired knowledge and vocabulary range related to the lexis material covered during the conducted lessons. The results showed differences between acquired knowledge in the two different approaches to teaching.

4.4. Results

Firstly, in the case of the two learners with the Asperger's syndrome and their efficacy in learning English, some noticeable differences between the traditional class approach to teaching English and the modified lesson scenarios could be clearly observed. The student who during the whole experiment learned English with the use of traditional methods and teaching techniques made minimal or, it can be claimed, no progress. The comparison of his pre- and post-test has shown that there was no visible difference in growth of knowledge and scores at the beginning and the end of the study. What is more, his attitude to the proposed English lessons and activities showed little effort and positive attitude. All in all, it did not have a good influence on making progress and achieving new knowledge in acquiring more new English words. Table 1 presents the results achieved by Kamil at the pre- and post-test stages of the conducting research.

Table 1. Kamil's results on the pre-test and post-test

Ex.	Pre-test	Post-test
1	3	3
2	3	4
3	1	1
4	0	0
5	3	5
6	0	1
7	4	5
8	3	3
Total	17	22

Contrary to the learner described above, the student whose teaching method was modified to be tailored to the preferences of students with Asperger's syndrome, made quite visible and considerable progress during the few months of the study. It was quite evident when his scores from both pre- and post-tests were compared. First of all, he presented more positive attitude to the situation of learning English. He tended to work faster and took tasks more eagerly. He had fun during lessons, especially, when they were modified and based on his fixations and visual materials, such as flash-cards, short films, mind mapping or colourful pictures, schemes and diagrams. He showed a lot of interest in dealing with given activities even though they seemed to be difficult at the first look. Not only did he acquire the presented material faster but also managed to store the knowledge with success in his long-term memory. The acquired new knowledge was easy to retrieve from his long-term memory even after a long time of lessons. The growth of newly learned English words was clear to see not only in the post-test, but also at the end of the entire procedure. It was a proof that a correctly chosen method of teaching may visibly increase the knowledge of AS learners. Table 2 shows the obtained results by Bartek at the pre- and post-test stages of the conducted study.

Table 2. Bartek's results on the pre-test and post-test

Ex.	Pre-test	Post-test
1	4	6
2	2	7
3	1	3
4	0	3
5	4	8
6	0	2
7	3	9
8	2	5
Total	16	43

As presented above, the achieved results suggest that the choice of modified method (matched to the learning preferences of students with the Asperger's syndrome) affected the language learning process. The acquisition of the English language was also strengthened by some modifications and personal traits of the learner. Bartek, whose learning was based on definite modifications, remembered twice as much material compared to Kamil. Bartek's scores in post-test were much higher, not only than those in pre-test, but also in comparison with the results achieved by Kamil. It shows that less traditional approach to the long-term teaching process can improve the efficiency of gaining new vocabulary. What is more, Kamil did not improve his scores and in the consequence, made no visible progress at all in the course of the study.

The results achieved in the course of the study present that changing and adapting materials, methods, techniques and scenarios to the needs of a particular pupil are extremely beneficial during the work with children with Asperger's syndrome.

Firstly, such an attitude to the teaching process is helpful in stimulating almost every area of the development and functioning, such as communication, speech, hearing, brain activity and even emotional or social development.

As shown by the results and progress obtained during the course of the study, after only two months of the lessons led on the regular basis with the use of some modifications of the rules and assumptions, considerable progress can be seen.

What is more, using games, songs, plays and movement helps in reducing the stress level. Taking part in English lessons whose atmosphere and schemes are completely different from those during traditional classes can improve the efficiency of whole learning-teaching process. Due to the fact that the recommended lessons and activities involve a lot of fun, play and creativity, stress as an inseparable and normal part of every lesson, in that way can be reduced to the minimum.

5. Conclusions

Working with learners with diagnosed AS syndrome is a great challenge for English teachers. Designing and constructing the teaching process so as to meet these students' needs requires having a full and deep knowledge of neurological and psychological roots of Asperger's syndrome. In that way only the best tools, techniques and methods of teaching English can be adapted to students with this kind of disorder.

The findings of this experimental study demonstrated that when introducing proper techniques of teaching and the adaptation of learning process to AS students preferences help them to achieve better results and gain more knowledge easily. They are able to learn important life skills and new vocabulary in accordance with their interests. If the process of English teaching is constructed with taking into consideration all of described in this paper aspects, students with AS have a chance to benefit from it.

It can also be concluded, on the basis of the present study, that a variety of methods and tools make the learning tasks easier and more pleasant for AS learners. They – despite all the difficulties in the neurological and psychological functioning – are able to gain success in the process of English vocabulary learning. It appeared that they learn in a quick way and acquire the same number of words and phrases as children without any disorders.

Also, since the chosen way of working with AS learners relies on using games, mnemotechniques, play and songs, it helps in reducing the level of stress connected with the elements of the competitions and failures. Creating a pleasant atmosphere while gaining new knowledge is completely different in comparison with that created during the traditional classes.

As an English language teacher and clinical psychologist I know exactly how important it is to combine theory, neurobiological and psychological roots of Asperger's syndrome and a style of teaching to personal preferences of learners with AS. Without taking into consideration the full range of aspects mentioned above, it is not possible to adapt the whole teaching process to AS learners needs in that way they are able to achieve the success.

In spite of the advantages and benefits of this attitude to teaching English vocabulary, it should be pointed out that inflexibility and some strict manners in behaviours of children with Asperger's syndrome cannot be totally and fully eliminated. However, some actions and efforts may be taken to reduce or lessen them during the teaching process.

To sum up, it is possible that in the case of children with Asperger's syndrome, the choice of the teaching method is really significant because it has an influence on the final results which students obtain and to what extent their future chances increase. If wrongly chosen or modified, the teaching method may only deepen difficulties which learners with AS experience. It can also lead to the withdrawal and discouragement in the learning process.

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