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# An Evaluation of the Preference-Based Teaching Approach for children with Dyslexia and Challenging Behaviours

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*Abstract*

*Dyslexia is characterised by difficulties in accurate and/or fluent word recognition, reading comprehension, written expression and poor spelling. Research studies have focused mainly on helping students diagnosed with dyslexia through educational remediation. Less research has been undertaken on increasing on-task behaviour and attentiveness while reducing behavioural problems for students diagnosed with dyslexia. This small-scale qualitative case study used a non-concurrent multiple baseline design across three participants and was conducted at DAS in Singapore between August 2016 and March 2017. The study examines the effectiveness of a preference-based teaching approach, based on identifying students preferences within the classroom setting and designing individual teaching programmes incorporating these preferences. An evaluation of the preference-based teaching approach was carried out through questionnaires and video observation of 15 teaching sessions. Analysis of the questionnaires revealed that the participants enjoyed the sessions and found the preference-based approach fulfilling. The video recorded sessions were analysed by the researcher and Inter-observer agreement (IOA) obtained. The sessions revealed that all three students performed 100% on-task behaviours and active engagement from sessions eight to 12. The study concluded that the preference-based teaching approach had a major effect on the on-task behaviour and attentiveness level for all three students diagnosed with dyslexia. These findings can be used to improve teachers lesson planning skills with the aim to increase students' on-task behaviour and active engagement levels.*

Keywords: preference, on-task behaviour, attentiveness, active engagement, classroom setting, inter-observer agreement (IOA), attentiveness hyperactivity disorder, dyslexia.

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## INTRODUCTION

Dyslexia is defined as difficulties in accurate and/or fluent word recognition, reading comprehension, written expression, and poor spelling. These are due to deficits in the phonological component of language that are often related to other cognitive abilities which can cause behavioural or emotional problems (Rutter and Maughan, 2005). Dyslexia is often accompanied by challenging behaviours which are defined as externalising disorders. Externalising behaviours refer to conflicts with other people, such as rule-breaking behaviour, aggression, social problems and problems with attention (Dahle et al., 2011; Rescorla et al., 2007).

These behaviours are often manifest in students with dyslexia, who may display externalising behaviours. These students frequently suffer from attentiveness and concentration issues, which may result in losing interest in the tasks that are assigned to them (Knivsberg and Andreassen, 2008). This group includes students diagnosed with dyslexia with co-morbid ADHD. Research has suggested that interventions should address both the educational needs and the behavioural needs of children with reading and behaviour problems (Morgan et al., 2008).

Studies have examined the effects of the preference-based teaching approaches for adults and children (Green et al., 2005), with multiple disabilities, typically for those with intellectual disabilities. In these studies, preference-based teaching has been described as a useful tool to increase attentiveness and manage behavioural problems in students with multiple disabilities. At DAS, teachers often find it challenging to complete their lesson plans because students diagnosed with dyslexia lose engagement and interest in the classroom. As an Educational Advisor at DAS, the primary purpose of this research is to help teachers to complete their lesson plans and engage students diagnosed with dyslexia to stay on-task and increase attentiveness during lessons. For this study, the preference-based teaching approach will tap into a student's interests and existing knowledge. These will be integrated into the lesson to increase on-task behaviour and improve attentiveness in the classroom setting.

At the DAS, students are taught the basic concepts of reading, spelling, and writing by adopting the Orton Gillingham (OG) principles of structured, sequential, multi-sensorial and phonics-based teaching (Ritchey & Goeke, 2006; Rose & Zirkel, 2007). This study aims to include a preference-based teaching approach that is aligned with OG principles in the classroom, which will help increase on-task behaviour further, and improve attentiveness, as well as manage behavioural problems for students with dyslexia. The effectiveness of the preference-based teaching approach on students with dyslexia and challenging behaviours such as ADHD will be evaluated.

In examining the preference-based teaching approach with OG approach in the DAS classroom, this study aims to help teachers to better manage students with dyslexia and

their challenging behaviour and at the same time aim to increase engagement of students with dyslexia. This study hopes to enhance the current intervention for students with dyslexia by using students interest and preferences in planning lessons so that students can remain on-task. Moreover, it also aims to increase the knowledge of teachers on how to handle students with challenging behaviour. The preference-based teaching approach will help teachers create a better rapport with students which is predicted to subsequently impact the overall effectiveness of the students learning.

## LITERATURE REVIEW

The preference-based teaching approach is based on designing lessons which include students preferred activities. The lesson plan consists of students' hobbies and interests (Reid & Green, 2006) to keep students on-task and engaged. Preference-based teaching can also fall under the category of students preferred learning style, based on preferred sensory modalities such as visual, auditory and tactile. Sensory modalities can have a significant impact on students learning behaviour (Renzulli and Smith, 2010). In their study, students preferred learning styles were matched with the teacher's learning style. However, in the current study, students are given a list of preferred activities to choose from which are not dependent on the teacher's preferred learning style. The teacher will then create a lesson integrating the students' hobbies and interests in the lesson plan. The preference-based teaching approach adopted here taps on student's hobbies and interests, and this assessment indirectly allows the students to also choose their preferred learning style as they have the chance to state their preferences.

Preference-based teaching approaches can be traced back to a study carried out by Pace et al., (1985), who conducted an experiment to assess preferred and non-preferred stimuli with six adults with profound disabilities. The results showed that when the preferred stimulus was given, there was a higher response rate to target behaviour in comparison with the baseline and non-preferred stimulus condition. The key objective is to ascertain the preferred activities of adults to achieve the target behaviour ( Green and Reid,1999). Target behaviours are the desired behaviour, such as completing the assigned task and concentrating in class (Slattery, 2013). Each individual can have different target behaviours assigned to them.

Since 1985, many researchers have adopted preferred activities in a range of studies with adults and children with profound disabilities to achieve target behaviours in training or teaching programmes (Green and Reid,1999). For example, Green and Reid, (1999) experimented with 18 adults with profound disabilities to evaluate the preferred stimuli or reinforcers in training programmes. The results revealed that highly preferred stimuli were likely to function as reinforcers or motivators in training programmes conducted for adults with profound multiple disabilities, yielding similar results to Pace et al., (1985).

According to Parson and Reid (1999), preferred activities may be applied in any teaching programme to enhance students enjoyment, which involves four basic components, namely: (1) task analysis, (2) prompting, (3) reinforcement and (4) error correction. Parson and Reid's study revealed that strategies for teaching students with severe disabilities needed to differ from those involving students with moderate or mild disabilities because students with severe disabilities require more guidance. Therefore all four components were necessary as teaching guidelines for para-educators.

On the other hand, the preference-based teaching approach can come across as similar to a permissive parenting style, because the students are given their preferred activities before, during and after each teaching activity (Maccoby and Martin, 1983). It has been suggested that parents are more lenient and less authoritative with their children. This would be consistent with Romi and Freund (1999) study that compared the attitudes of parents and teachers in one school in Israel catering to low ability students with disruptive behaviours. Their results indicated that 80% of the parents tended to be less strict with the students and did not acknowledge the severity of students disruption. Moreover, learning styles themselves have recently fallen into disrepute as a vehicle for teaching, arguing that supporting evidence is weak, although 76% of teachers in the UK for example, follow these principles (Simmonds, 2014).

However, despite these potential limitations, all the above research studies have proven to increase attentiveness and manage behavioural problems with adults and children with mild to severe disabilities during a training and teaching programme.

In this study, the preference-based teaching approach is adopted with OG principles to increase on-task behaviour further, increase attentiveness and manage behavioural problems for students diagnosed with dyslexia. At the DAS, the educational therapists apply the OG approach involving the four basic components (Parson and Reid,1999). This is necessary to provide the highest level of support for special needs students with the most significant difficulties. Nevertheless, teachers still face issues completing the lesson plan because students with dyslexia often lose interest in the classroom and start showcasing challenging behaviours such as rule-breaking and attentiveness problems (Dahle et al., 2011).

The similarities between students diagnosed with dyslexia and students diagnosed with dyslexia and attention deficit hyperactivity disorder (ADHD) are that both groups of students can lose interest and engagement in the classroom and in turn display challenging behaviour. The preference-based teaching approach will benefit the two groups of students in areas of improving students engagement and at the same time manage the behavioural problems of these students.

## RATIONALE

Three research questions guide this study:

1. What are the effects of the preference-based teaching approach on students diagnosed with dyslexia?
2. What are the effects of the preference-based teaching approach on' on-task behaviour for students diagnosed with dyslexia?
3. What are the effects of the preference-based teaching approach on attentiveness for students diagnosed with dyslexia?

These research questions aim to evaluate and understand the usefulness of preference-based teaching approach in producing positive results in terms of on-task behaviour in children diagnosed with dyslexia between the ages of 11 to 13.

## PARTICIPANTS

Students at DAS have been formally diagnosed with dyslexia by psychologists and range from 7-17 years old; most of them come from mainstream schools under the Ministry of Education (MOE). They attend a two-hour literacy class as additional educational support each week during the school term. Most students attend the literacy classes at the DAS learning centre after school hours, with classes kept to a maximum of five students per class. Lessons are based on the OG approach which involves a diagnostic and prescriptive, multisensory, structured and sequential way of teaching (Gillingham & Stillman, 1997).

The DAS Integrated lesson plan follows a systematic way of teaching students phonics within a structured scope and sequence; they will then apply the phonics concepts taught for reading, spelling and dictation. The DAS integrated lesson plan also includes comprehension and writing skills which are essential to learning the English language.

In this study, all three participants were selected from a group of 12, based on the following three criteria, diagnosis, behaviour and age. The first criterion is a formal diagnosis of dyslexia with or without co-morbidities of ADHD from psychologists from MOE or DAS. The second criterion is their score on conduct problems and hyperactivity in the Strengths and Difficulties Questionnaires (age 4 - 17), administered by parents (Goodman, 1997). The third criterion is for the participants to be between the ages of seven to 17; they have to be current DAS students enrolled in the DAS Main Literacy Programme. In this study, the three students participating were between 11 to 13 years of age.

## THE RESEARCH DESIGN AND PROCEDURES

A qualitative case study that uses a non-concurrent A-B-A multiple baseline design was selected as the method of data collection and analysis across the participants. This research design has been chosen as it helps to stagger the timing of (A) baseline-to-(B) intervention to-(A) baseline. The data collection process commenced with the recruiting of students based on their MOE psychological reports for confirmation of the diagnosis of dyslexia with or without co-morbidity of ADHD. A pre-behavioural screening followed this, through the Strength and Difficulties Questionnaire which were handed out to all by mail. (Goodman, 1997).

The selected participants completed a face-to-face interview to fill out a child preference assessment (see Appendix A). These sessions of baseline to intervention phases were video recorded. During the baseline phase, one inter-observer and a researcher identified the targeted behaviour, that needs to be improved in the intervention phase. In the intervention phase, the targeted behaviour was broken down into the duration of on-task and off-task. After the video recording session, participants were asked to evaluate the preference-based teaching approach through an evaluation questionnaire and semi-structured open-ended questions which were mailed separately to the participants. The following list summarises the steps that were involved during this data collection process:

In this section, we will go through the 6 steps to recruit the participants.

1. During the recruitment of participants, the researcher examined all MOE psychological reports for 12 participants from the researcher's class to confirm the diagnosis of dyslexia. The researcher only opens up the intake of students to the researcher's class due to time constraint.

2. All 12 participants went through the pre-behavioural screening with the use of a Strength and Difficulties Questionnaire (Goodman,1997) rated by the participant's parents on 'conduct problems' and 'hyperactivity'.

3. Three participants were selected: two were diagnosed with dyslexia and co-morbidity of ADHD as well as another participant diagnosed with dyslexia; two boys and one girl. The first participant selected scored six for hyperactivity and five for conduct problems, the second participant selected scored six for hyperactivity and six for conduct problems and the third participant selected scored eight for hyperactivity and three for conduct problems. All the three participants chosen for the study scored in the range of six-10 for the component of 'hyperactivity'' and in the range of three-10 for the component of 'conduct problems' in the Strength and Difficulties Questionnaire (Goodman, 1997) which falls under the categorisation of borderline to abnormal.

4. The first participant displayed task avoidance and disruptive behaviour such as running around in the classroom. The second participant showed traits of disruptive behaviours such as talking out loud and refusing to follow the teacher's instructions. The third participant often talks about topics that are out of context during the lesson. These students are selected for the study because they are not interested in learning, not motivated in class and not engaged during lessons. They also have shown disruptive behaviours in the Strength and Difficulties Questionnaire and these are the students we are targeting in this study.

5. The children and their parents were contacted by phone and agreed to participate in the study. Approval was gained from the ethics committee at the University of South Wales, UK and DAS through the submission of the University Research Ethics Review Form. This process was put in place to ensure an upholding of ethical standards when studying human subjects. Informed consent was obtained from the participants and parents for the video recording of the 15-week sessions. The informed consent contained a confidentiality agreement between the researcher, and the participants and their parents. This form was signed and returned to the researcher. The confidentiality agreement is to protect the identity of participants from the study. However, the researcher has the right to disclose confidential information to relevant parties in the event of dangerous occurrence during the study (Creswell, 2012).

6. The video recording of the A-B-A phases was obtained from the researcher for data collection from all three participants. In total, there were 15 sessions for each participant, of which each session is a one-hour video recording of lessons conducted at the DAS learning centre. All the three participants were in the DAS Main Literary Programme( MLP) for five years. The researcher who is the Educational therapist for the three participants in the study is familiar with the implementation of the preference-based teaching approach, for the sessions, an Inter-observer from DAS has been trained by the researcher to identify the behaviour that needs to be improved upon the baseline phase – this refers to 'targeted behaviour'. Before the video recordings, the inter-observer was trained for a month to identify the targeted behaviour for each participant. The duration of active engagement, and on-task and off-task behaviour for each participant were analysed with the behavioural categories listed in the Behavioural Observation of Students in School (BOSS) structured observation code (Shapiro, 2010).

7. The final step involves the researcher evaluating the study with the use of questionnaires that were mailed to the participants following the 15 sessions. The questionnaires entail the use of an Evaluation Rating Scale and semi-structured open-ended questions respectively. The questionnaires were to complete before being mailed back to the researcher.

## MEASURES

### Child preference assessment

A child preference assessment was conducted to find out a preferred list of items and activities that would motivate the three participants to be on-task for their targeted behaviour. (Slattery, 2013). The child preference assessment was a significant step in the data collection process as it determines the activities that will be conducted during the intervention phase. The assessment involves ascertaining six favourite items and five favourite activities of these children. These items and activities were subsequently used and incorporated into the one hour lesson for nine weeks during the intervention phase.

The one-hour lesson for each participant included one of the six preferred items or one of the five preferred activities chosen by the participants during the individual child preference assessment. The first participant's selected items include video games, stickers and Star Wars cards; their preferred activities include art and crafts, watching movies, playing video games and playing on the computer. The second participant's preferred items include puzzles, modulus, markets and their preferred activities include watching movies, playing video games and playing on the computer. The third participant's preferred items include crayons, markers, piano tiles, Pokémon go and their preferred activities include arts and craft, listening to music and re-creating volcano experiments.

### Questionnaires on the effects of the preference-based teaching approach on students diagnosed with dyslexia.

Two questionnaires were sent out to the three participants via mail at the end of the intervention phase. The first questionnaire was based on an Evaluation Rating Scale which consists of five questions (Slattery, 2013). Each question had been formulated to facilitate easy understanding and aims to find out how the participants felt about the preference-based teaching approach using the 5-point Likert scale: strongly disagree, disagree, undecided, agree and strongly agree.

The second questionnaire comprised four open-ended questions which aim to further understand the learning experience of the participants in a preference-based teaching approach. These questions were formulated for the participants to freely express their thoughts on the preference-based teaching approach (Slattery, 2013). More information on both questionnaires can be found in Appendix A and C.

### Lesson video recording: A-B-A multiple baselines

The purpose of making a video recording is to highlight the distinctions between a preference-based teaching approach compared to the regular teaching curriculum at

the DAS. For 15 weeks, each participant attended an hour session each week with the researcher on different days. For the first baseline phase, three weeks were allocated. The baseline phase was important for the researcher to determine the participants' behaviour that needs to be improved: this is referred to as the 'targeted behaviour'. In the following intervention phase, each participant's targeted behaviour is broken down into on-task and off-task behaviour. During the nine weeks of this phase, the video recordings were analysed by the researcher and IOA.

One of the key findings was the total time-on-task which was then converted to a percentage of on-task behaviour in all the sessions. During the second baseline phase in the final three weeks, the researcher then analysed the data collected to ascertain whether the targeted behaviour was still observable without the incorporation of the preference-based teaching approach. In all, the video recordings it was predicted will support the concept of an enhanced and more effective learning process for students diagnosed with dyslexia and challenging behaviours, using a preference-based teaching approach.

| PARTICIPANTS | BASELINE PHASE (A) | INTERVENTION PHASE (B) | BASELINE PHASE (A) |
|---|---|---|---|
| Student A | 3 weeks | 9 weeks | 3 weeks |
| Student B | 3 weeks | 9 weeks | 3 weeks |
| Student C | 3 weeks | 9 weeks | 3 weeks |

During the (A) baseline- (B) interventions (A) baseline phases, the data collection tools involved a video recording data sheet for the period of "on-task", "off-task" and total time for the duration of "on-task" behaviour for the participants (Slattery, 2013). The video recording data sheet can be found in Appendix B. The lesson plan used during the sessions were DAS Integrated curriculum lesson plan and the OG approach principals were being applied during all sessions. Both the baseline phases did not contain the preference-based teaching approach. The intervention phase contains the application of the preference-based teaching approach in the lesson plans. The on-task behaviour for each participant was highlighted in the data recording sheet which will prompt for further analysis of active- engaged time. The video recording data sheet can be found in Appendix B. The on-task behaviour in the intervention videos were further analysed for the actively engaged time.

### Target behaviour

The behaviour that needs to be improved from the first baseline phase is called 'targeted behaviour'. Targeted behaviour was determined from the baseline phase by the researcher and one Inter-observer, with each participant having a different targeted behaviour depending on the baseline phase. For Student A, the targeted behaviour was to not run around in the class and to complete the tasks assigned; for Student B, the targeted behaviour was to control one's voice projection and obey the teacher's instructions during the lesson; for Student C, the targeted behaviour was to ask questions related to the lesson and complete the tasks assigned. All observations were analysed by a researcher and an inter-observer. The targeted behaviour was then broken down into on-task behaviour and off-task behaviour according to the behavioural categories listed in the BOSS structured observation code (Shapiro, 2010). On-Task behaviour refers to targeted behaviour that was completed by participants. By contrast, off-task behaviour refers to behaviour that deviated from targeted behaviour: participants who did not perform the tasks that teachers have assigned them to complete are considered to be engaging in off-task behaviour. The on-task behaviour and off-task behaviour was analysed using the BOSS code under the data analysis section. The BOSS code was used to analyse the actively engaged duration for each participant too.

### Active engagement:

The importance of observing the active engagement duration from on-task behaviour was to gauge the attentiveness level for each participant. The actively engaged time was collected from the on-task behaviour for each participant in the baseline phase and the intervention phase. The targeted behaviour chosen for each participant was broken down into 'on-task', and 'off-task' based on the BOSS structured observation. The on-task behaviour was further broken down into passive engagement and active engagement by the BOSS code. The active engagement duration for all the 15 sessions refers to the actively engaged time. The actively engaged time was determined using the recording data sheet which was the same sheet used for on-task behaviour. The recording data sheet can be found in Appendix B.

## DATA ANALYSIS

### Inter-observer agreement

The procedure for data analysis involved one Inter-observer and the researcher viewing 15 video recording for each for the three participants and finding the average and coming to an agreement between the on-task behaviour and off-task behaviour.
For "on-task" behaviour, the researcher followed the behaviour categories listed in the

BOSS code structured observation code (Shapiro, 2010). The reason for adopting the BOSS code was to break down the on-task behaviour into active engagement and passive engagement and also to categorise the off-task behaviour under, off-task motor, off-task verbal or off-task passive. The BOSS code provides a clear indication of the on-task and off-task behaviour during the video recording for each of the three participants. The first step was to identify the duration of on-task behaviour for each participant for the intervention phase.

The identification of on-task behaviour, specifically active engagement by the researcher and the IOA for each participant was to evaluate attentiveness in the classroom setting. One observer was trained by the researcher to identify on-task and off-task behaviour, to provide Inter-observer-agreement.

For the percentage of time-on-task, an agreement occurred when both the researcher and the IOA recorded the same onset and offset for on-task behaviour with a 5 s variation (window of error). The percentage of time-on-task was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements then multiplied by 100. For the total on-task duration, an agreement occurred when both the researcher and the IOA independently recorded the same duration with a 10 s variation (window of error). The percentage of total on-task duration was calculated by dividing agreements by agreements plus disagreements then multiplied by 100.

**Analysis of actively engaged time during on-task behaviour**

In this study, the BOSS code was adopted to identify the participants on-task and off-task behaviour (Slattery, 2013). The reason for adopting the BOSS code was to further break down the on-task behaviour into active engagement and passive engagement and also categorise the off-task behaviour under off-task motor, off-task verbal or off-task passive.

The on-task behaviour, mainly the active engagement included the participant performing the targeted behaviour. For example, active engagement included writing, raising hands, answering a question asked by the teacher. The on-task behaviour-passive engagement included looking at a worksheet and listening to teacher directions. Different targeted behaviour was given to each participant depending on their first baseline phase.

For Student A, the target behaviour was to not run around in the class and complete the task assigned; for Student B the target behaviour was to control his voice projection and follow to teacher's instructions during lesson; for Student C the target behaviour was to ask questions that are related to the lesson and complete the task assigned.

The amount of time the participant engaged in the assigned academic task was considered to be an important instruction (Gettinger, 1986). The instruction was regarded as active engagement, to gauge how attentive the participant is in the classroom setting. The active engagement evaluates attentiveness in the classroom setting.

The BOSS code provides a clear indication of the on-task and off-task behaviour during the video recording, and this was identified by the IOA and the researcher.

The off-task behaviours were sorted into three categories, the off-task motor which included out of the seat, playing with pencil and doing things that were not according to teacher's instructions. The off-task verbal included talking about things that were not associated with the task at hand and calling out. The off-task passive included looking around and not doing the assigned task.

For the percentage of duration for actively engaged behaviour, the duration of the active engagement was chosen from the on-task behaviour in the video. An agreement occurred when both the researcher and the IOA recorded the same onset and offset duration for the actively engaged behaviour with a 5s variation (window of error). The duration of the actively engaged time was calculated and multiplied by 100 to get the percentage of the actively engaged time.

## RESULTS AND DISCUSSION

### 1. ON-TASK BEHAVIOUR

***Research Question 2: What are the effects of the preference-based teaching approach on students' on-task behaviour?***

#### i. Participant A: On-task behaviour

Percentage of time spent on-task for Student A is displayed in Figure 1a. Student A was diagnosed with dyslexia and ADHD. Student A displayed task avoidance and disruptive behaviour such as running around in the classroom; this behaviour was deduced by the IOA and the researcher after viewing the initial three weeks of the baseline phase. Therefore, the targeted behaviour for Student A was to avoid running around in the class and complete the task assigned.

During the initial three weeks of the baseline phase, it can be observed that the percentage of on-task behaviour decreased from 26% to 23% and further to 15%. This shows that during the initial first three weeks of the baseline phase Student A was engaged in low levels of on-task behaviours. The preference-based teaching approach from session four to session 12 resulted in an immediate increase in on-task behaviour

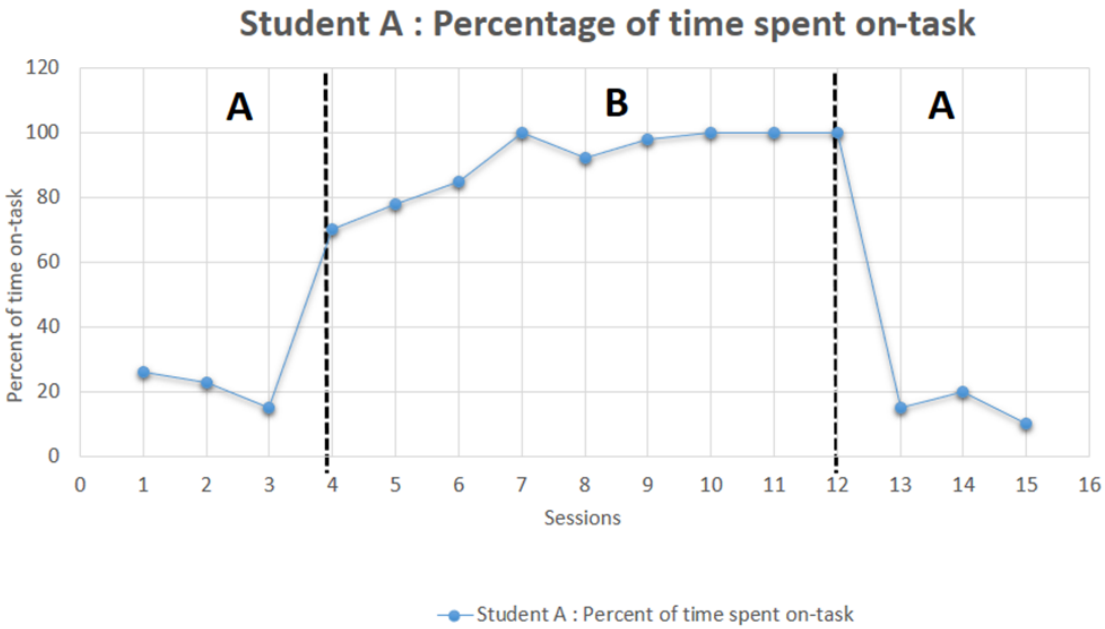


*Figure 1a: Percentage of time spent on-task for baseline and intervention phase for Student A*

for Student A (Mean: 91.4%, range, 70% to 100%). It shows an increasing trend in the percentage of on-task behaviour in Student A. In Session 10 - 12, Student A showed 100% of on-task behaviour.

To test the effectiveness of the preference-based teaching approach, the second baseline phase was implemented for three weeks after the nine weeks of the intervention phase. Once Student A was transferred back to the baseline phase for three weeks, Student A showed low levels of on-task behaviour. Figure 1a shows that the percentage of on-task behaviour decreases from 15% to 20% and further to 10%. Student A started to display task avoidance and disruptive behaviour such as running around in the classroom in the second baseline phase. Figure 1a showed that the introduction of the preference-based teaching approach was effective in keeping Student A on-task in session four to session 12 based on an increasing trend of on-task behaviour. The targeted behaviour was hence achieved during the nine weeks of intervention phase as the on-task behaviour increases.

The findings from Figure 1a showed that Student A is diagnosed with dyslexia and ADHD and with the introduction of the preference-based teaching approach, the on-task behaviour increased during the intervention phase. The above graph further supports the findings from Biderman et al., (1996) and Shaywitz et al., (2008) stating that is

important for interventions to address both the educational and behavioural aspect for students with dyslexia as students with dyslexia were 3 times more vulnerable than their peers to ADHD, CD or ODD (McGee et al., 1986).

With the introduction of the preference-based teaching approach into the lesson, the teacher was able to complete the lesson with minimal time spent on controlling the student's behaviour. This shows that a preference-based teaching approach can be applied in the DAS classroom to manage the behaviour of students with dyslexia and ADHD (Green and Reid, 1999).

### ii. **Participant B: On-task behaviour**

Percentage of time spent on-task for Student B is displayed in Figure 1b. Student B is diagnosed with dyslexia and show traits of disruptive behaviours such as talking out loud and refusing to follow the teacher's instructions. This behaviour supports the claim made by Miller et al., (2005) finding that students with dyslexia can display externalising behaviour in different ways even though their psychological reports do not state diagnosis of ADHD. This behaviour was deduced by the IOA and the researcher after viewing the initial three weeks of the baseline phase.

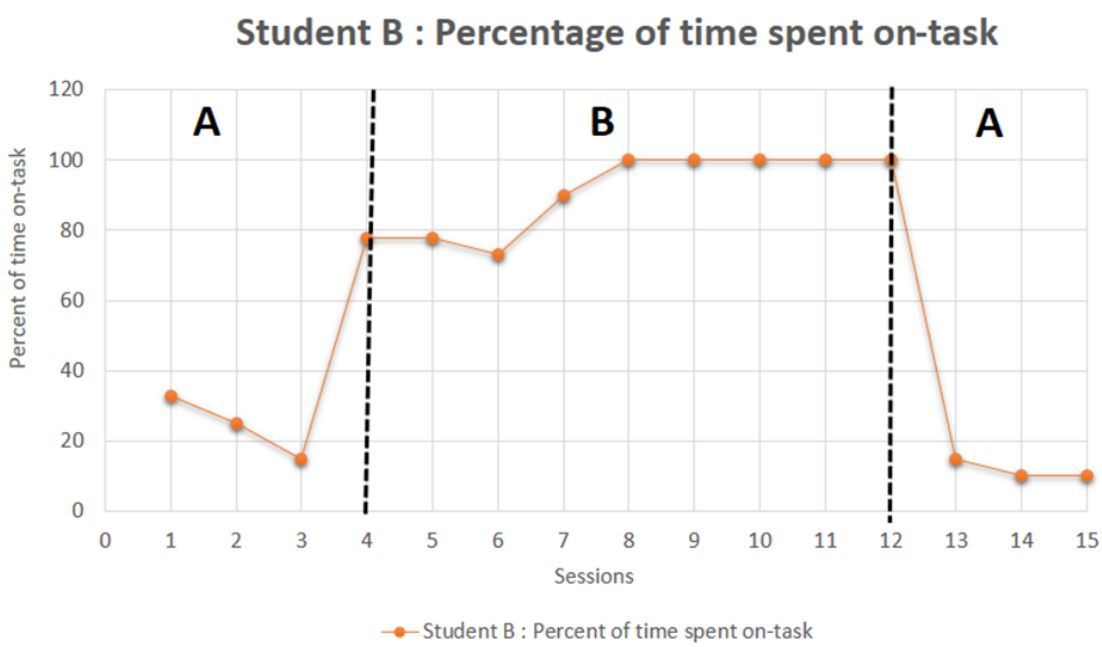


*Figure 1b: Percentage of time spent on-task for baseline and intervention phase for Student B*

Therefore, for Student B, the targeted behaviour was to control his voice while speaking and to follow teacher's instructions during the lesson. During the initial three weeks of the baseline phase, it can be observed that the percentage of on-task behaviour decreased from 33% to 25% and further to 15%. This shows that during the initial first three weeks of the baseline phase Student B was also engaging in low levels of on-task behaviours like Student A. During the intervention phase from session four to session 12, Student B showed an immediate increase in on-task behaviour (Mean: 91%, range, 78% to 100%). The range from 78% to 100 % shows a gradual increase in trends of the on-task behaviour in Student B. For Student B, the on-task behaviour of 100% was showed in session eight to session 12. The targeted behaviour was achieved during the nine weeks of intervention phase as the on-task behaviour increases.

To test the effectiveness of the preference-based teaching approach, the second baseline phase was implemented for three weeks after the nine weeks of the intervention phase. In the second baseline phase, Student B was transferred back to the baseline phase for three weeks, and Student B showed low levels of on-task behaviour. It can be observed from the figure 1a that the percentage of on-task behaviour decreased from 15% to 10% and stayed at 10% in session 15. Student B also started to display disruptive behaviours such as talking out loud and refusing to follow the teacher's instructions in the second baseline phase. Figure 1b shows the introduction of the preference-based teaching approach was effective in keeping Student B on-task and following to teacher's instruction from session four to session 12; figure 1b also showed that there was a gradual increased in on-task behaviour during the intervention phase. The results for Student B will be discussed at the end of the results section for the on-task behaviours.

### iii. Participant C: On-task behaviour

Percentage of time spent on-task for Student C is displayed in Figure 1c. Student C is diagnosed with dyslexia and often talks about topics that are out of context during the lesson; this can be very disruptive and leads to off-task behaviour. Students with dyslexia can show disruptive behaviours that lead to off-task behaviours (Biederman et al., 1996) this behaviour was deduced by the IOA and the researcher after viewing the initial three weeks of baseline phase. Therefore, the targeted behaviour chosen for Student C was to ask questions that are related to the lesson and complete the task assigned.

During the initial three weeks of the baseline phase, it can be observed that the percentage of on-task behaviour decreased from 30% to 25% and further to 20%. This shows that during the initial first three weeks of the baseline phase Student C was engaged in low levels of on-task behaviours. The preference-based teaching approach from session four to session 12 resulted in an immediate increase in on-task behaviour for Student C (Mean: 96.8%, range, 90% to 100%). It shows an increasing trend in the percentage of on-task behaviour in Student C. In session nine to session 12; Student C

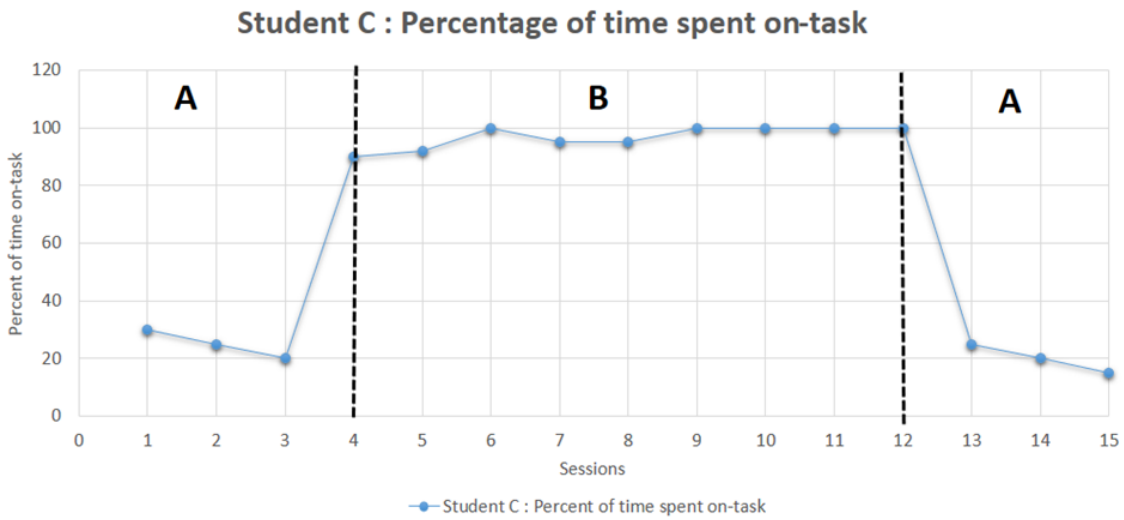


*Figure 1c: Percentage of time spent on-task for baseline and intervention phase for Student C*

showed 100% of on-task behaviour. The targeted behaviour was achieved during the nine weeks of intervention phase as the on-task behaviour increases.

To test the effectiveness of the preference-based teaching approach, the second baseline phase was implemented for three weeks after the nine weeks of the intervention phase. Once Student C was transferred back to the baseline phase for three weeks, Student C showed low levels of on-task behaviour. It can be observed from figure 1c that the percentage of on-task behaviour decreases from 25 % to 20% and further to 15%. Student C started to display task avoidance and talks about topics that are out of context during the second baseline phase. Figure 1c shows the introduction of the preference-based teaching approach was effective in keeping Student C on-task in session four to session 12 as there was an increasing trend of on-task behaviour and sharing about topics which are related to the lesson.

Student B and Student C are both diagnosed with dyslexia without any co-morbidities. However, they showed different externalising behaviours during the first baseline phase, and this leads to different targeted behaviour. This supports the claim made by Rutter and Maughan (2005) that students diagnosed with dyslexia may have behaviour issues due to their difficulties in reading (Shaywitz et al., 2004; Shaywitz et al., 2008). This behaviour can come in different forms of externalising behaviours (Sahoo et al., 2016) such as screaming out loud and talking about topics that are not related to the lesson in an attempt to avoid the task assigned.

In Figure 1b and 1c, it shows that during the intervention phase students stayed on-task

and the targeted behaviours for Student B and C are both achieved. The introduction of the preference-based teaching approach helped students to stay on-task, and the teacher was able to complete the lesson between week four to week 12.

The results of on-task behaviour for all three students in figure 1a, 1b and 1c have shown that the intervention phase has been effective in keeping students with dyslexia and challenging behaviours to stay on-task during the lessons. The research by Shaywitz et al., (2008) demonstrated that students with dyslexia may have co-morbidities, and this study shows that a reading intervention and the behavioural intervention can be placed together to create an effective combined intervention so that learning takes place in the classroom while disruptive behaviours are controlled (Sahoo et al., 2016). The study by Reid & Green, 2006 noted that a lesson that takes into account students preferences keeps a student on-task. The findings from the above research further supported this study. This section will now discuss the results of active engagement for the three participants.

## 2. ACTIVE ENGAGEMENT - BOSS CODE

***Research Question 3: What are the effects of the preference-based teaching approach on attentiveness for students diagnosed with dyslexia?***

The actively engaged time is important to determine the duration of attentiveness for each participant during the on-task behaviour. The actively engaged duration is collected by analysing the on-task behaviour for each participant using the BOSS code. The BOSS code further breaks down the on-task behaviour into passive engagement and active engagement (Slattery, 2013). The active engagement duration from all the sessions was referred to as the actively engaged time. The actively engaged time was determined using the recording data sheet which was the same sheet for on-task behaviour.

In respect of the research question on the effects of the preference-based teaching approach on students' attentiveness, each of the three students was chosen a different targeted behaviour based on the initial baseline phase, and the targeted behaviour is broken down into active engagement and passive engagement.

However, the expectation of active engagement for all participants in the study was a behaviour that shows the participant was attentive during the lesson; this involved the participants displaying the behaviours of raising hands and answering a question asked by the teacher (Shapiro, 2010). The amount of time the participant engaged in the assigned academic task was considered to be an important instruction (Gettinger, 1986). This was regarded as active engagement, to gauge how attentive the participant was in the classroom setting. The active engagement will evaluate attentiveness in the classroom setting.

The duration of the active engagement was chosen from the on-task behaviour in the video. An agreement occurred when both the researcher and the IOA recorded the same onset and offset duration for the actively engaged behaviour with a 5 s variation (window of error). The duration of the actively engaged time will be calculated and multiplied by 100 to get the percentage of actively engaged time (Slattery, 2013).

Percentage of active engagement for Student A, Student B and Student C is displayed in Figure 1d, 1e and 1f respectively.

For Student A, during the initial three weeks of the baseline phase, it can be observed that the percentage of active engagement decreased from 15% to 7% and remained at 7%. For Student B, the active engagement decreases from 17% to 15% and 0%. Student C active engagement decreased from 3% to 2% and increased to 10%. For Student A and B, the active engagement decreased gradually from session one to session three, however for Student C, there was an increase of active engagement during session two to session three by 1% which was very small. In session three, the levels of engagement remained at 10% which was still a minimal level of engagement. The sudden increase to 10% on active engagement for Student C can be hypothesised to occur as a result of reactivity, due to the Student C recollecting the presence of the camera in the classroom.

i. Participant A: Actively engaged behaviour

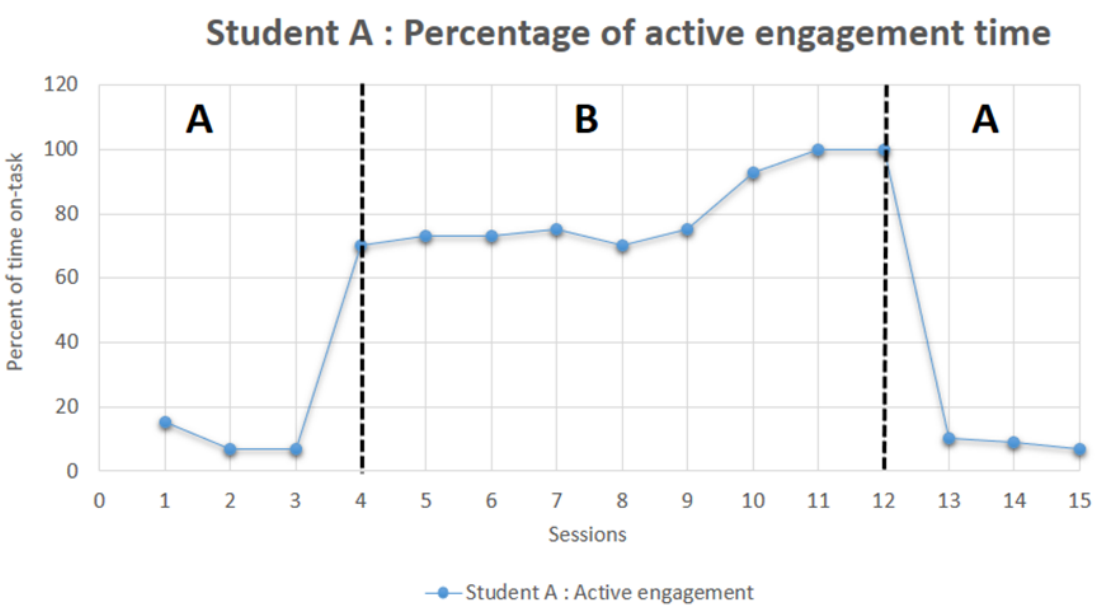


*Figure 1d: Percentage of active engagement for baseline and intervention phase for Student A*

ii. Participant B: Actively engaged behaviour

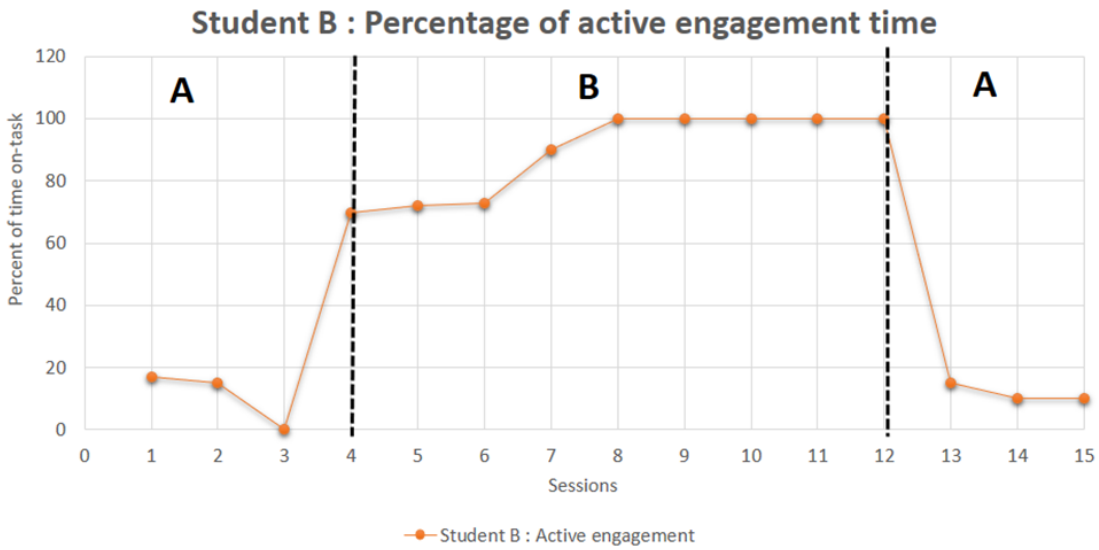


*Figure 1e: Percentage of active engagement for baseline and intervention phase for Student B*

iii. Participant C: Actively engaged behaviour

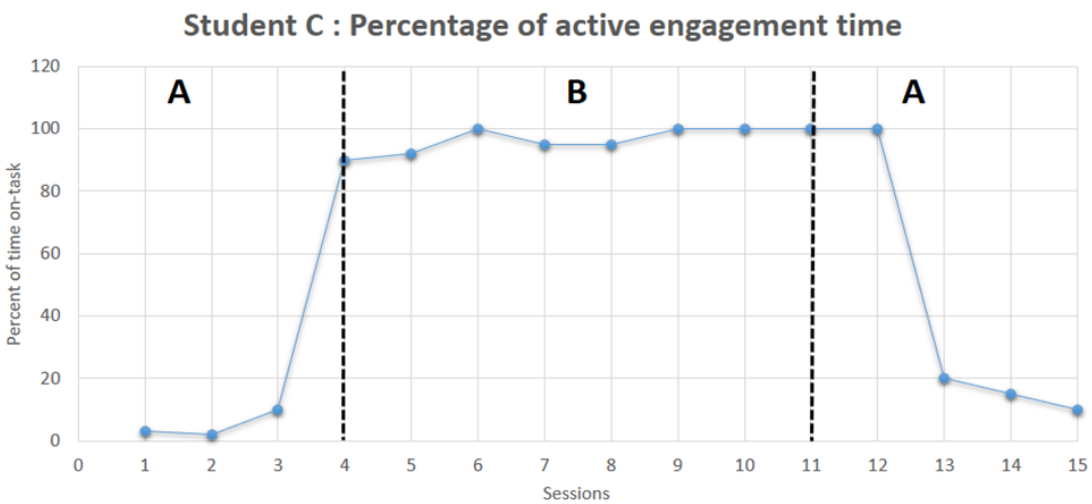


*Figure 1f: Percentage of active engagement for baseline and intervention phase for Student C*

The data shows that during the initial first three weeks of the baseline phase, all students had low levels of active engagement duration. During the intervention phase from session four to session 12, all students had a significant increase in the active engagement duration. Student A (Mean: 81% range 70% to 100%) Student B ( Mean: 84.9% range 70% to 100%). Student C (Mean: 96.8%, range 90% to 100%). This showed an increasing trend in the percentage of active engagement behaviour for all students during the intervention phase showing that the preference-based teaching approach had an impact on student's participation and engagement during the lessons. Student A had 100% of active engagement on session 11 and 12, Student B had 100% active engagement from session eight to session 12, and Student C had 100% active engagement from session 10 to session 12. This 100% active engagement by all students showed that all students were raising hands, asking and answering questions posed by the teacher and giving full attentiveness during these lessons.

To test the effectiveness of the preference-based teaching approach on the active engagement duration, the second baseline phase was implemented for three weeks after the nine weeks of the intervention phase. All students showed low levels of active engagement during the last three weeks of the second baseline phase. The active engagement decreased for Student A from 10% to 9% and 7%, Student B from 15% to 10% and remained at 10% and for Student C it decreased from 20% to 15% to 10%. All the students started to lose attentiveness gradually during the last three weeks of the second baseline phase as the topics taught during the lesson were not according to the student's preferences. Hence students started showing off-task behaviours which lead to disengagement during the lesson.

The on-task behaviour in Figure 1a, 1b and 1c were related to the active engagement duration in Figure 1d, 1e and 1f. The significant increase in on-task behaviour influenced the active engagement behaviour for all the students in the study. This study showed that when a student was interested in the topic of the lesson, the students were on-task and indirectly this has an impact on the active engagement of the students during the lesson (Parson and Reid, 1999).

The results of the active engagement duration for all three students in figure 1d, 1e and 1f showed that the intervention phase has been effective in keeping students with dyslexia and challenging behaviours on-task and increased the duration of their active engagement during the lessons.

This study further indicates that there is a need for a multimodal intervention as noted by Lovett et al., (1994). The multimodal intervention (Lovett et al., 1994 ) consists of two or more approaches to help students with dyslexia and challenging behaviours increased on-task and active engagement during the lessons (Sahoo et al., 2016). However, it should be noted that students with a diagnosis of dyslexia and ADHD may need other types of tools to keep them actively engaged in conjunction with the preference-based

teaching approach. Some students with dyslexia and ADHD need a trampoline to release their energy, and this can be tied in together with the OG approach and the preference-based teaching approach in a learning process to keep them on-task and actively engaged (Muligan, 2009).

## 3. EVALUATION OF THE QUESTIONNAIRE

***Research Question 1: What are the effects of the preference-based teaching approach on students diagnosed with dyslexia?***

In respect of the research question on the effects of the preference-based teaching approach on students diagnosed with dyslexia, it should be noted that all participants responded to both sections of the questionnaires. The questionnaires consisted of two sections. The first section is a participant's questionnaire - rating scale which consists of five questions (Slattery,2013). The second part of the questionnaire was an open-ended questionnaire to understand further the experience the participants went through during the intervention phase. However, there was insufficient information to conduct the coding analysis. Therefore the participant's evaluation of the open-ended questionnaire was not included under the results section. The focus of the questionnaire was to assess their thoughts on the effectiveness of the preference-based teaching approach during the nine weeks' intervention phase. The five questions presented in the participant's questionnaire are shown below:

Question 1: I think the preference-based teaching approach was beneficial and helped me stay on-task.
Question 2: The preference-based teaching approach had easy instructions to follow
Question 3: The preference-based teaching approach was easy to understand.
Question 4: I would be willing to use the preference-based teaching approach in other settings such as school
Question 5: I would recommend the preference-based teaching approach to other students.

The preference-based teaching approach appeared to be an accepted approach for all three participants in the study. All the participants rated 'strongly agree' for all five of the questions; the preference-based teaching approach was beneficial and helped them to stay on-task, has easy instructions to follow, they would be willing to use the approach of instruction in other settings such as school, it was easy to understand and they would recommend the approach to other students. Overall the ratings received were high for each participant's evaluation, and this shows that all participants enjoyed the preference -based teaching approach during the intervention phase.

This study further indicates that the preference-based teaching approach would benefit teachers in completing their lesson plan and having students motivated and actively

engaged during the lesson can help decrease challenging behaviour (Slattery, 2013).

The challenging behaviours discussed in this study by the three students caused teachers to spend more time managing behavioural issues which lead to the incomplete lesson. Challenging behaviours such as running around in the classroom, screaming out loud during the lesson and talking about a topic that is out of context can be very disruptive in class. These types of disruptive behaviours lead to teachers spending more time in behavioural management and consequently, an incomplete lesson.

There can be a range of reasons for students diagnosed with dyslexia showing disruptive behaviour in the classroom. One of the main reasons is their reading difficulties. In this study, Student B and C showed disruptive behaviours during both the baseline phases for the on-task behaviours and active engagement. In a study conducted by Shaywitz et al., 2003, it stated that a student diagnosed with dyslexia often puts in extra effort in reading a word and this affects their attentiveness level

(Shaywitz et al., 2004, Shaywitz et al., 2008) resulting in them showing disruptive behaviours in an attempt to avoid the task assigned. Students with dyslexia face reading difficulties and this may trigger frustration, agitation, acting out avoidance, and withdrawal from learning tasks (Fleming et al., 2004, Kellam et al., 1998, Walker et al., 1995)

At the same time, students with a diagnosis of dyslexia have high chances of co-morbidities. Co-morbidities may include internalising and externalising behaviours (Caroll et al., 2005; Maughan & Caroll, 2006). Cheung et al., (2012) research study demonstrated that dyslexia and ADHD often co-occur as genetic influences and familial correlations overlap. There is a 53% - 72% chance of overlaps between ADHD and dyslexia; this study also shows that the majority of students with dyslexia may have co-morbidity with ADHD which explains their externalising behaviours. In this study, Student A is diagnosed with dyslexia and ADHD, and disruptive behaviours were displayed in both the baseline phases for on-task behaviour and active engagement. For students with dyslexia and ADHD, it may be the symptoms of ADHD that cause the child to have reading problems, which then leads to off-task behaviours and disengagements (Corie,1996; Ialongo et al., 1999, Kellam et al., 1991; Reid et al., 1999; Walker et al., 1995). To counter this issue, besides the option of medications to control the hyperactivity, teachers can always plan and adjust the lesson to correspond to the needs of the child and target an intervention that focuses on both reading and behavioural deficits (Mc Gee et al., 1986).

At DAS, there is a gap between the practical teaching of the DAS Main Literary Programme lessons and the theories of behavioural problems that students with the diagnosis of dyslexia experience in the classroom setting. It is important to note that a student with the diagnosis of dyslexia encounters behavioural problems, both with or without any co-morbidity. Lessons that are delivered to the DAS student need to take into

consideration these aspects of on-task behaviours and active engagement so that the disruptive behaviour in students decreases and active learning can take place.

Students displaying disruptive behaviour are signs that students are often disengaged in the classroom. A study conducted by Christenson and Thurlow (2004) in schools in the United States, showed that more than 90% of students with learning disabilities that drop out of school do so due to disengagement. It is noted that students with learning disabilities are the students who have feelings of alienation, a poor sense of belonging and dislike for schools. Disliking school and lessons cause these students to have high disengagement in the classroom, and this can lead to dropouts.

At DAS, students display low levels of on-task behaviours, and low levels of engagement are evident in teachers not being able to complete their lesson. As an Educational Advisor working with teachers from different learning centres, it has come to the researcher's attention that this is an escalating issue at DAS that needs to be resolved. Teachers spend more time managing students' behavioural problems than teaching the necessary DAS Main Literacy Programme curriculum. It is important to take into consideration students preferences while planning a lesson to have more on-task behaviours and increase attentiveness during the lesson.

Applying the preference-based teaching approach gives students the intrinsic motivation to stay on-task and actively engaged during a lesson. The preference-based teaching approach is one way to promote and sustain active learning in the classroom (Pintrich, 1999) as it increases students' intrinsic motivation. However, there is a limitation to the intrinsic motivation as this effort need to come from the teacher in planning the lesson according to the students' preferences, if teachers do not plan the lesson according to the students' preferences, intrinsic motivation will be decreased, this may be one of the downsides of the preference-based teaching approach. It is evident, for example, that the effects of the preference-based approach have not generalised to student behaviour in this study, once the intervention has finished. Indeed, it can be seen that for all 3 participants, active engagement fell to the pre-intervention level. It would be interesting to adopt the ABAB design to maintain participants active engagement level and end the study with participants engagement level on the high side.

To achieve intrinsic motivation for students, the onus lies on the teachers in creating a lesson that corresponds to the preferences of the students. At DAS, teachers have a high quota of students, and this makes it difficult for teachers to plan a lesson according to each student's preference as it takes time and effort. However, this can be done in an Intensive Remediation (IR) setting where a one to one intervention takes place between the teacher and the students. The preference-based teaching approach also creates the opportunity for rapport building between teacher and students. The opportunity is created when teachers plan the lesson according to the students' needs and interest and the students will feel that the teachers make an effort in understanding their needs.

This, in turn, will create and build bonds between teacher and students, which can be maintained and strengthened over time with continued use of the approach. The study by Klem and Connell, (2004) showed that it is important for teachers to support and create a well-structured learning environment for students, this indicates that teachers care about the students and brings positive changes in students behaviour and increases engagement in the classroom. Teacher's efforts in building rapport will create positive behaviours that result in increased students' engagement.

Nevertheless, the introduction of the preference-based teaching approach was effective for all the students in this study to stay on-task and at the same time increased their attentiveness during the lesson.

## CONCLUSIONS

In terms of the first research question, the findings indicated that the three participants enjoyed the sessions and found the preference-based approach satisfying. All the five questions in the questionnaire were rated as strongly agree. The ratings were high, and this showed that the three participants enjoyed the preference-based teaching approach during the intervention phase. This also revealed that when the students enjoy the lesson and were on-task and actively engaged, it helps teachers to complete the lesson as the preference-based teaching approach contributes to decreasing challenging behaviour (Slattery, 2013).

The second finding of this research displayed that the two students diagnosed with dyslexia and one student diagnosed with dyslexia and ADHD showed a gradual increase in on-task behaviour during the nine weeks of the intervention phase. All three participants showed 100% of on-task behaviour in the period during session eight to session 12. It was important to note that the preference-based-teaching approach had an effect on the on-task behaviour for all the students diagnosed with dyslexia. The participants' targeted behaviour was achieved during the nine weeks of the intervention phase as the on-task behaviour increased. The findings from the second question suggest that students were willing to do the assigned task if the task corresponds to their preferences. This also showed that too little research has been done in the area of curriculum development for students with dyslexia and ADHD (Avramidis, Bayliss and Burden, 2000). Curriculum development may want to develop a curriculum that is in line with student's preferences to gain more on-task behaviour in the classroom and decrease challenging behaviour.

The third finding of this research confirmed that the two students diagnosed with dyslexia and one student diagnosed with dyslexia and ADHD showed a slow but gradual increase in their active engagement during the nine weeks of the intervention phase. All three participants showed increased attentiveness during session eight to session 12 of the intervention phase. This was important to note that the preference-based teaching

approach had an effect on students' attentiveness level for all participating students diagnosed with dyslexia. This finding suggests that attentiveness is directly linked to the adoption of student's preferences in the classroom. This shows that the education system needs to take into account students preferences and adapt their day to day teaching concepts in line with such preferences. It also shows that the teachers have to move away from the practical topics that typically bore students to interesting topics that engaged them in the classroom setting. These findings illustrate the direction that the education system may want to adopt in future for students in the special needs support field to increase attentiveness in the classroom.

From the above findings, it can be concluded that the on-task behaviour of students diagnosed with dyslexia is directly linked to the active engagement level that the students display in the classroom. The findings showed that the gradual increase in on-task behaviour in session eight to session 12 was also evident in the active engagement increase for session eight to session 12. A conclusion that could be drawn from these findings is that teachers need to be trained to plan a lesson with the preferences of the students; this will create a more positive learning environment. This will provide an environment to increase on-task behaviours and active engagement in the classroom. With on-task behaviour and active engagement increased during the lesson, teachers will need to spend less time managing students challenging behaviours, and a complete lesson can be achieved. It is important that this research study is disseminated to teachers in DAS and beyond.

The study presented here will help teachers at DAS to solve pressing issues, including not being able to complete their planned lesson because students diagnosed with dyslexia lose engagement and interest in the classroom. This research will serve as a platform for the teachers to take into account students preferences when planning lessons with the goal of increasing students on-task and active engagement behaviour, hence making each and every lesson a meaningful one.

## LIMITATIONS

This study contained some limiting conditions, some of which were related to the common critiques of qualitative research methodology and some of the limitations are related to the research design in this study.

The first limitation is the small sample size of three participants; the study focuses only on two participants with dyslexia and one participant with dyslexia and ADHD. This limited the generalisation of the study to other dyslexia groups, and this makes it more difficult to interpret and extend the results (Goodman, 1997). However, the small sample size was dictated by the criteria of the SDQ questionnaire, the participants selected for the study had to score in the range of six-10 for the component of 'hyperactivity'' and in the range of three-10 for the component of 'conduct problems' in the Strength and Difficulties

Questionnaire (Goodman, 1997) and this falls under the categorisation of borderline to abnormal. The remaining nine participants that went through the pre-behavioural screening with the use of a Strength and Difficulties Questionnaire (Goodman, 1997) rated by the participant's parents on 'conduct problems' and 'hyperactivity' did not fall under the categorisation of borderline to abnormal. With this criterion, only three participants out of 12 participants could join the study.

The next limitation lies on the reliability and validity of the participant's evaluation questionnaire and open-ended questionnaires; this may cause biases as participants may have expectancy effects of the intervention and this may skew the findings (Eccles et al., 1990). This may, for example, explain why the first baseline week was more positive for these students than the rest of the baseline weeks including the post-intervention baseline. Moreover, participants did not provide much information on the open-ended questionnaire, and hence it would not be reliable to perform coding on these brief responses. A better alternative to the participants' Evaluation Rating Scale and open-ended questionnaires would be a face to face interview. The interview could be transcribed, and the data analysed through the coding process. A face to face interview for both the questionnaires would allow the researcher to record the answers through a recorder, transcript and conduct a detailed coding analysis to facilitates better interpretation of the data( Eccles et al., 1990)

The next limitation lies in the ABA research design. The ABA design leaves the participant with no treatment at the end of the study, this might be seen as unethical. This practice is usually deemed unethical in a drug study, where the drug can promote recovery and the absence of drug can further aggregate the illness (Zhan and Ottenbacher,2001). However, in this study, there is no drug involved, and it is a treatment which can be applied in the daily lesson only if the teacher takes the time and effort to plan the lesson according to student's preferences. In this study, it is important to conduct the ABA design as the introduction and removal of the preference-based teaching approach created an opportunity to see the effectiveness of the approach during the intervention phase, and whether the effects persisted after the intervention.

The other limitation in the study was a reduced percentage of on-task behaviour and active engagement in the second baseline phase compared to the first baseline phase when traditional DAS support returned. This can be due to the relationship between interest and motivation (Ainley, 2012), when there is no interest in the subject, there is less motivation to complete a task, this can be linked back to the participants in this study. There was a further drop in percentage in the second baseline phase compared to the first baseline phase and this may be due to the loss of interest in the task assigned, and motivation to complete the task assigned was severely affected in the second baseline phase compared to the first baseline base resulting in the further drop in percentage in the second baseline phase.

In future studies, it would be beneficial to measure the behaviour through direct observation, interval recording of students on-task behaviour and active engagement for all participants. (Gardon, 2012), it is important to adopt both qualitative and quantitative analysis of the results for future research to further understand on-task behaviour and active engagement.

The next limitation lies in the Inter-observer agreement (IOA), despite the fact that having the IOA as a secondary observer is an effective way to avoid observer bias (Silverman, 2013). The limitation in this study lies in the short training that the IOA went through to identify the targeted behaviour for the on-task and off-task behaviour for each participant. This may cause inaccurate judgement, therefore, a longer training for the Inter-observer would have made the identification process more accurate and precise.

The final limitation of the study was the short baseline and intervention phase. Due to limited time, the researcher was only able to conduct three weeks for each baseline phase, and nine weeks for the intervention phase. It would be useful to have the participants undergo a third round of the baseline phase and a second round of the intervention phase to gather more data and further evaluate the effects of on-task and off-task behaviour with the preference-based teaching. A control group would also strengthen the study. It might be deemed unethical to prevent students from undertaking an intervention which may benefit them in learning, but it should be possible to use a group that are waiting to undertake this intervention in the following semester. Eventually, it would be predicted that the intervention would impact on future learning so that even without the continued personalised approach, the student could continue to improve. However, the transfer of learning is one of the hardest to achieve, and it is likely that many more weeks would be needed before the gains in learning and self-esteem could in themselves fuel continued engagement. A direction for further research would be to evaluate the impact of longer personalised interventions of this type in comparison with a control group in a cross over study.

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## APPENDIX A: CHILD PREFERENCE ASSESSMENT

Child's Name: _____

Date Completed: _____

### FAVOURITES TANGIBLE ITEMS

Please tick your preferred activity

- ☐ Books
- ☐ Puzzles
- ☐ Video Games
- ☐ Stickers
- ☐ Toys specify: _____
- ☐ Pencils, markers, crayons

### FAVOURITES ACTIVITIES

Please tick your preferred activity

- ☐ Arts and Crafts
- ☐ Listening to music
- ☐ Watching movies
- ☐ Playing video games
- ☐ Playing on the computer

(Slattery, 2013)

## APPENDIX B: REAL TIME RECORDING DATA SHEET

Participant: _____ Date: _____

Observer: _____ Phase: _____

Start Time: _____ End Time: _____

### OCCURRENCE OF ON-TASK BEHAVIOUR

| | On-task (real time) | Off-task (real time) | Total Time On-Task |
|---|---|---|---|
| 1) | | | |
| 2) | | | |
| 3) | | | |
| 4) | | | |
| 5) | | | |
| 6) | | | |
| 7) | | | |
| 8) | | | |
| 9) | | | |
| 10) | | | |
| 11) | | | |
| 12) | | | |

(Slattery, 2013)

## APPENDIX C: EVALUATION RATING SCALE

Directions: Please read each statement and circle one of the five choices that best describe the extent to which you agree with each statement.

1. I think the preference-based teaching intervention was beneficial and helped me stay on-task.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

2. The preference-based teaching intervention had easy instructions to follow.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

3. The preference-based teaching intervention was easy to understand.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

4. I would be willing to use the preference-based teaching intervention in other settings such as school.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

5. I would recommend the preference-based teaching intervention to other students'.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

(Slattery, 2013)

## APPENDIX D: SEMI-STRUCTURED INTERVIEW FOR PARTICIPANTS

Directions: Please read each statement and answer verbally to the interviewer.

1. Did the preference-based teaching approach help me to stay on-task?

2. Did the preference-based teaching approach help me to stay attentive during the lesson?

3. Did I find switching between the preferred activity and on-task activity challenging?

4. Will I introduce the preference-based teaching approach to my peers?