Improving English exam skills for dyslexics in primary education in Singapore

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Abstract

Many children with dyslexia show problems with English language skills and grammar, and struggle to obtain results which reflect their potential. Problems with decoding, fluency and comprehension can all impact on progress, and this has particular impact in Singapore, where good performance in primary education has particular significance. Parents and teachers have high expectations for their children and students, especially when they sit for their Primary School Leaving Examinations (PSLE). The results of the PSLE can determine a child's educational pathway following their primary school education. Students with dyslexia struggle with the English PSLE subject, and score badly in several components of the paper. In response to this need, curriculum developers with the Dyslexia Association of Singapore (DAS) have developed an English Exam Skills Programme (EESP) to help Dyslexic learners in the DAS overcome their difficulties in the PSLE English Paper. The EESP focuses on teaching skills and strategies that directly helps students in the Grammar, Editing, Synthesis and Transformation, and Comprehension components of the PSLE paper. In this paper, we present a continuous evaluation of the results of students on the EESP over a period of 4 terms, with group sizes ranging from 29 to 46. This evaluation revealed that students made consistent progress and significant improvements in their skills, particularly in the Editing and Synthesis and Transformation components of the programme. Implications for wider applications of this approach are discussed.

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Introduction

The primary emphasis in dyslexia has traditionally been on learning to read and spell, these problems are causing dyslexic learners from keeping up with their peers across the school curriculum, particularly affecting progress in English language skills in the primary stage. If reading remains laboured, slow and errorful, it is difficult not only for learners to extract meaning but also to understand the underlying structure of the language that is being read – a process known as statistical learning that underlies language acquisition. This means that many children with dyslexia will show problems in components of their English language skills, and this may be compounded for children who are learning in their second language.

Structured educational systems tailored for primary school children have been implemented in countries such as the US and UK for several decades. In the US, children embark on their journey in elementary schools after nursery or kindergarten (U.S. Department of Education, 2015). In the UK, the national curriculum is divided into key stages (Gov.uk, 2014). Young children and toddlers will embark on education in Key Stage 1 before starting on Key Stage 2, which is the equivalent of the elementary school in the US. Education in Singapore follows a similar structure where formal education starts at age 7 when children enrol into primary schools after kindergarten and nursery. Children within these three primary school education systems will progress to High School, Stage 3, and Secondary School in the US, UK, and Singapore school systems respectively. A clearer comparison between the three educational systems is presented in Table 1 below.

Although a similar educational structure can be observed in all three systems, there is a distinct difference in emphasis on examinations at the end of primary school education. In the US system for example, children do not have to sit for any major examinations in elementary school. The first major examination students in the US sit for is the SAT's after high school, for entry to undergraduate programmes. Children in Stage 2 of the UK system, and in Singapore primary schools however have to sit for examinations before they can move on to secondary schools. Children have to sit for the Statutory Assessment Tests (SATS) in

Table 1. Comparison of educational systems in US, UK, and Singapore.

Country	US	UK	Singapore
Before Primary	Nursery/Kindergarten	Stage 1	Nursery/Kindergarten
Primary	**Elementary School**	**Stage 2**	**Primary School**
After Primary	High School	Stage 3	Secondary School

the UK where they will be tested for spelling, punctuation, grammar, reading, and maths (Gov.uk, 2014). In Singapore, children will have to sit for their Primary School Leaving Examinations (PSLE) where they will be tested on English, Mother Tongue, Maths, and Science subjects (Ministry of Education (MOE), 2014). In both the UK and more significantly in the Singapore education system, these examinations are considered as high stake examinations since results will determine students' placement in secondary schools. However, the emphasis on good performance differs between Singapore and the UK, where results may only determine the set level that the child is assigned to on entry. By contrast, there is a cutoff which determines which type of secondary education a Singaporean child is able to access, similar to that in the traditional UK grammar school and 11 plus system prior to the introduction of the comprehensive system. In Singapore, most parents and teachers have high expectations for their children and students to perform in their PSLE, because an Asian society such as Singapore is predominantly result based. Students will need to perform in several high stakes examinations to progress to better educational opportunities throughout their academic years.

Children in the Singapore education system will enrol in primary school at the age of 7. They will be in the primary school education system in Singapore for 6 years before sitting for their first major examination at the end of their sixth year. They will be sitting for their PSLE (MOE, 2015), one of the first and most important examinations every Singaporean child has to take.

Considering the importance of performing in the PSLE, students with dyslexia in the Singapore education system struggle to keep up with their peers and meet their parents expectations. Because of their difficulties in reading and writing, they often struggle to cope with their school work. It is particularly challenging for these students to progress, perform, and excel in their PSLE English paper, since most of the English paper requires these students to demonstrate language competence in writing (Singapore Examinations and Assessment Board (SEAB), 2015). These are skills that are difficult for dyslexic learners to grasp and master. Despite their acknowledged difficulties, there are still huge expectations for most of them to perform well in their PSLE, and indeed this result dictates their future school placement.

Intention and features of the EESP

Taking into consideration the struggles of a dyslexic child in Singapore schools, and the emphasis on performance in national examinations in Singapore, the English Examination Skills Programme (EESP) was implemented with the intention of addressing the examination needs of upper primary students with dyslexia in Singapore and with the DAS, who will be sitting for their PSLE.

Unlike the established MOE-aided DAS Literacy Programme (MAP) implemented in DAS that addresses the literacy issues and demands of a learner with dyslexia, the EESP aims to address the examination expectations and needs of these learners. Thus, a very clear distinction between the purposes of the MAP and the EESP is established. It is essential that learners in

DAS are remediated in the MAP to develop and progress in their literacy skills, the EESP on the other hand works on the several skills acquired during the MAP remediation, teaching learners to apply these skills in their examinations in Singapore schools. In short, the MAP addresses the long term literacy needs a learner with dyslexia is lacking, while the EESP caters to the national and cultural demands of a learner's performance in examinations.

In line with the examination expectations and demands on Singaporean children, signing up for tuition lessons and classes on top of and after school is not an uncommon practice in Singapore. With similar goals, tuition programmes have been compared to the EESP. It is thus important to establish a distinction between tuition programmes in the public and the EESP.

The EESP is specially tailored to cater to the needs of a learner with dyslexia. As such, it addresses the minute necessities of these learners and their profiles. For example, classes are kept small to ensure that teachers are able to attend to every child's individual needs; lessons are structured and cumulative referencing the Orton-Gillingham (OG) Principles (Gillingham and Stillman, 1997) to ensure students are given opportunities to understand and review concepts and skills taught; moreover, detailed and in depth mental processes and meta-cognitive strategies are explicitly taught to provide learners with the skills and structure to equip themselves for examinations, given that implicit learning can be impaired in these children.

In practical terms, it is important the EESP lesson activities are comparable to the actual PSLE paper. This is obvious since the end goal of students who are enrolled in the EESP is to improve in and excel in their PSLE paper. The structure of the EESP lesson activities generally starts off with the introductory skills and concepts required for individual components of the PSLE paper. Again referencing the OG principles, these lessons start of as engaging multisensory and cumulative activities during the introduction of these skills. Lessons however will end up with actual practice activities replicating the PSLE format, that require the use of skills taught within the lessons. Taking into account the vast amount of topics and skills covered in the PSLE paper in accordance with the Singapore Examinations and Assessments Board (SEAB)(2015), and the limited time (1 hour) the EESP teachers have with students each week, only selected topics were taught. Careful consideration had been taken before the team decided to focus on teaching the 'Grammar', 'Synthesis and transformation', 'Editing', and 'Comprehension' components of the PSLE paper.

Literature Review

Topics covered in the EESP

The four components mentioned that are covered in the EESP were decided based on close monitoring of marked school examination papers. The EESP team realised that most students in DAS tend to struggle with similar components of their examination papers. Specifically, several students were failing badly or getting zero marks for these components. Analysis of

their mistakes revealed that their answers to these components demonstrated a lack of understanding of certain skill sets, or the inability to apply skills and concepts that they already know. These could be due, as Snowling and Hulme (2011) described, to 'higher level' language difficulties such as problems or deficiencies with grammar and vocabulary. The EESP thus aims to address these weaknesses within the four PSLE components. As well as ensuring that students in DAS who will be sitting for the PSLE paper can get a firm grasp and improve in their PSLE scores for these components, we considered several other reasons for the implementation of these components. Detailed descriptions of the rationale and purpose of each of the components taught in the EESP will be presented in the paragraphs below.

Grammar

There are several components in the PSLE paper that require the knowledge and use of appropriate grammar. The main grammar components include the Grammar MCQ with a weightage of 10 out of 95 marks (SEAB, 2015), the Grammar Cloze with a weightage of 10 out of 95 marks, and Editing for Grammar, with is part of Editing for Spelling, and Grammar with a total weightage of 12 out of 95 Marks. In addition, PSLE candidates will also be assessed on their ability to demonstrate the correct use of grammar throughout the PSLE paper (SEAB, 2015). For example, students will also be marked for grammar in Synthesis and Transformation as well as Comprehension components in the PSLE paper. This suggests the importance of having a firm grasp of grammatical concepts in order to

answer questions throughout the PSLE paper. Grammar was thus considered as one of the core components in the EESP curriculum.

Synthesis and Transformation

The Synthesis and Transformation component takes up 10 out of 95 marks of the PSLE paper (SEAB, 2015). One of the reasons why students with dyslexia struggle with this component is strictness in the marking. Students are required to transform sentences from one form to another in this component. For example, if a direct speech is presented as a question in the Synthesis and Transformation section, students will need to know how to transform the sentence to its indirect speech form. Any form of spelling or grammatical mistake within each question would cause students to lose marks for the entire component. This component is also difficult since it involves students needing to synthesize and transform sentence into grammatically perfect forms. Such sentences are uncommon in the actual spoken language of Singaporeans. Thus, Singaporean students will have to learn how to write sentences in a form that they may not be at all familiar with. The synthesis and transformation of these sentences follow certain grammatical patterns. These patterns are structured, thus, the EESP teaches students to remember and apply mechanisms to synthesize and transform sentences.

Editing

Editing takes up 12 out of 95 marks in the PSLE paper 2 (SEAB, 2015). Considering the need to be familiar with grammatical

concepts and spelling, students with dyslexia in DAS very often lose out in this component of the PSLE since these are two of the distinct difficulties a child with dyslexia faces. Teaching students to tackle Editing questions for spelling is not impossible. Since all of the students in DAS are enrolled in the MAP, they are familiar with a wide range of spelling rules. The EESP taps onto their knowledge of these rules and teaches students to retrieve and reinforce concepts taught in MAP, and apply them into editing questions. Processes taught during Editing lessons for example would start off with the teacher reviewing a concept taught in the MAP, after which the student would be exposed to words mistakenly spelled and flouting the spelling rules reviewed. Students will then be taught how to identify the rules the wrongly spelled word is violating, and make necessary changes to correct the spelling of the word.

Comprehension

Reading comprehension is one of the biggest components in the PSLE paper. With a weightage of 20 marks out of 95 in Paper 2 of the PSLE paper. (SEAB, 2015) According to the examination guidelines, (SEAB, 2015), students taking the paper are expected to demonstrate literal and inferential comprehension ability by answering questions after reading a text passage. Students in DAS however struggle with both literal and inferential comprehension skills since they are having difficulties understanding the text they are given. The EESP team thus took on the challenge to ensure that these students will be equipped with skills and strategies that could help them better understand text passages literally and inferentially

despite their reading difficulties. One of the established strategies to ensure better comprehension of text is through reference tracking. Several studies including Pretorius (2005) and Walter (2004) suggested that reference tracking while reading impacts inference forming skills. Reference tracking is a strategy used to identify various mechanisms that can signal readers to recover ideas, persons, or objects that are previously mentioned in a text (Pretorius, 2005; Walter, 2004). Lessons designed for comprehension strategies in the EESP involved tasks and strategies using reference tracking. For example, students were taught how to identify personal and demonstrative pronouns in the text passages, and learn how to track and refer them to the nouns, clauses, or sentences referring to these pronouns. These tracking processes and skills taught are mechanisms for coherence building (Gernsbacher, 1990, 1997). This means that students who track are able to comprehend these texts more fully. These tracking activities are also important to teach because most PSLE papers have direct questions asking for students to identify what personal pronouns (he, she, it, I, etc.) or demonstrative pronouns (this, these, that, etc.) refer to.

Limitations

While the EESP aims to help learners with dyslexia in their PSLE paper, there are limitations to the programme. Considering the student's busy schedule and the logistic and financial practicality of lessons, the EESP only runs one hour lessons weekly. Thus, topics and components taught within the EESP are limited. This is the main reason for

teaching only four out of the several components in the PSLE paper. With these limitations, the EESP aims to focus on the students' weaknesses in the PSLE paper. An emphasis on practical skills for each of the components are also key features of the EESP.

Material design and curriculum development

Several material design principles were taken into account when developing the EESP. This was to ensure that while the ultimate goal of the programme is for students to be able to make use of strategies taught in their national examination paper (PSLE), all the lessons

that were conducted also had to be suitable for learners with dyslexia. With this in mind, the EESP curriculum was designed adhering to the structured and sequential schema of the OG principles (Gillingham and Stillman, 1997) while addressing the examination needs of the students. An example of how this was achieved was how lessons were designed to be partially multisensory to ensure that students are given activities closest to examination conditions as possible, but also given opportunities to experience several possible pathways to learning, increasing the chances of retention of concepts learnt (Gillingham and Stillman, 1997). Created and adapted text and worksheets were also scanned to ensure
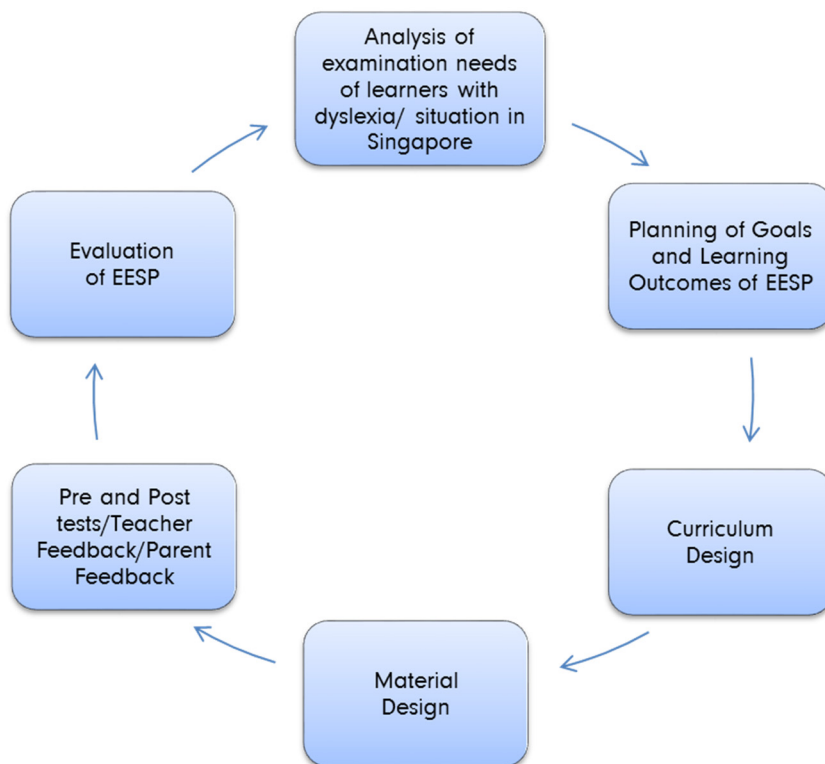

Figure 1. Curriculum design processes for the EESP, adapted from Nation & Macalister (2010), and Richards (2001)

if adaptations were necessary. The most common adaptations made in the material were what McDonough, Shaw, and Masuhara (2013) described as 'Modifying', 'Simplifying' and 'Deleting'. For example, texts were modified by changing the font of text to a larger and dyslexia friendly font (Century Gothic Font). Passages that were too long were simplified by presenting only selected sections of passages to be used in class.

The curriculum development processes of the EESP references Nation & Macalister (2010), and Richards (2001), who suggested a systematic and cyclical curriculum development process, involving the analysis of needs and situation, goal and learning outcome planning, syllabus, assessment and evaluation. Adhering to these processes, the developers were able to consistently analyze, review, assess, and evaluate the designed curriculum from the feedback acquired from teachers, students, as well as the pre and post tests conducted at the start and end of each term. An example of how the EESP curriculum was evaluated every term is presented in Figure 1, adapted from Nation & Macalister (2010), and Richards (2001).

The cyclical framework and the consistent review of the curriculum not only ensures the quality of the designed intervention, it also enables teachers and developers to consistently modify the EESP to suit the changing demands of a student with dyslexia. These also enable teachers to track the progress of students attending the programme. This information, at the end of the day was for the purpose of supporting students in DAS with the PSLE examination paper.

Research Question

With its curriculum developed with a sound rationale, it is important to validate and evaluate the effectiveness of the EESP. This is with reference to Nation & Macalister (2010), and Richards (2001) curriculum model, which emphasises the importance of repeatedly evaluating programmes implemented. Thus the following research questions were formulated:

1. Do students effectively show improvements in various skills required for exam components after EESP classes?
2. Is the quality of EESP improving after implementing the cyclical curriculum design framework suggested by Nation & Macalister (2010), and Richards (2001)?

Methodology

Participants

This study consists of students who were enrolled in the EESP in 2014. These students were learners with dyslexia, and are current students of the MAP. All of these students were in Primary 5 and 6, and in the Standard PSLE stream. The EESP welcomes enrolment of students at the beginning of every term, and graduates students after their PSLE. Although attempts were made to collect full data on all the students, several students tend to miss the pre-test or post-tests since they may be away on holiday or studying for examinations during the first and last week of the EESP. Thus, the students in each term may fluctuate across 2014. Tabulation and

analysis of the data should also take into account that there may be a different set of students in each term. The numbers of EESP students who participated in the study each term are presented in the table below.

Table 2. Number of students involved in the study in each term.

Term	1	2	3	4
No. of Students	37	46	26	29

Instrumentation

Pre-tests and post-tests were the primary tools that were used for data collection of this study. Pre-tests and post-tests were carefully designed by teachers to ensure that these tests test for concepts, skills, and strategies taught in each term. These are cross checked between curriculum developers and validity checklists recommended by Brown and Abeywickrama (2010) to ensure the validity of the test items. The same paper was used as the pre-test and the post-test for a single term, different papers however were used across the terms with respect to the topics covered within terms. The practice effect was initially a concern for pre and post-tests within each term, since students participating in the study will be sitting for the exact same test only after a 10-week time frame. This concern was addressed after taking into consideration the content of the tests. Grammar, Editing, Synthesis and Transformation, and Comprehension

questions are not prone to the practice effect since students for example, will not be able to realise grammatical rules, correct spelling of words, or understand the syntax of transforming sentences just by completing the pre-test. Any of these skills or knowledge acquired will be solely from the EESP curriculum in the period between the pre and the post-test. Also, considering the scale of this study, it is not practical to attempt to design alternate forms for pre-tests and post-tests since it may compromise the validity of the results which would be of greater concern.

Data collection

Results of each of the four terms were collected independently. Both the pre-test and post-test for each term were marked and compared against each other. These data were used to present the quality and effectiveness of the EESP by revealing the percentage of students who did better in their post-test as compared to their pre-test. Further analysis of these results were also considered to unveil how much this improvement was across the board. t-tests were conducted for these two sets of results across the four terms, and analysed as a whole.

Limitations

Results of this study cannot fully evaluate any student progress over the full four term period, because of changes in the students participating over time. The data collected however will be able to reveal the effectiveness of the programme in each individual term, as well as the progress of the EESP curriculum as a whole.

Results

The pre-test and post-test results of all students across four terms were tabulated and analysed to evaluate the effectiveness of the EESP. The first set of data was tabulated to reveal the number of students who have shown improvements after each term. In Term 1, 89.5% of the students who completed the programme scored better in their post-test compared to their pre-test. In Term 2, 89% of students did better. There was an observable improvement in the students who improved in Terms 3 and 4 compared to Terms 1 and 2. In Term 3, all of the students performed better in their post-test. In Term 4, 96.5% performed better, and the 4 students who made up the 3.5% who did not improve in Term 4 were borderline. *t*-tests were conducted to ensure that all of the improvements were statistically significant. Results of the t-tests suggested that percentage improvements across all four terms were statistically significant (P<.001). A summary of consolidated results of the percentage of students who improved in their post-test after each term's remediation is presented in Table 3.

Evaluating and revealing the percentage of students who have improved after undergoing a ten week EESP can provide useful information about the general effectiveness of the EESP, however, it will not be able to evaluate the extent of the improvements these students made. Therefore, further analysis of the data was conducted to demonstrate the differences or improvements of scores between their pre-tests and post-tests across the four terms. In Term 1, students scored an average of 48.4% for their pre-test. This

score was increased to 81.1% in their post-test. In Term 2, students scored an average of 46.4% for their pre-test. This score was increased to 55.7% in their post-test. Similar trends of increase of scores from pre-tests to post-tests can be observed in Terms 3 and 4. Students scores increased from 39.2% to 67.6%, and 50.6% and 64.1% respectively. The scores of the students revealed that the average percentage of scores improved across all four terms, with the largest increase in Term 1. A *t*-test comparing performance at pre and post-test showed highly statistically significant improvements in all 4 terms. Similarly, a summary of these consolidated results are presented in Table 4.

Both tables revealed that there was progress for students who underwent the EESP. Indicating that students were able to grasp and perform increasingly well in the several skills taught during each term. Following term 1, the difficulty of the tests was increased, because the original test was deemed too easy. The slight increase in the total number of students who improved in Term 3 and 4 as compared to Term 1 and 2 also revealed that the quality of the curriculum had improved across the terms.

Further analysis of the results of each term were conducted to evaluate how students performed in each of the four components. A breakdown of the percentage score of each of the four components across the four terms were presented in Tables 5 to 8.

Post-test scores of all four components were better compared to the pre-test scores in Term 1. The difference in the

Table 3. Percentage of students out of total students who improved in their post-test.

Term	T1 2014	T2 2014	T3 2014	T4 2014
% Improvement	89.5	89	100	96.5
P value	P<.001	P<.001	P<.001	P<.001

Table 4. Percentage of scores of students comparing pre-test and post-test

Term	T1 2014	T2 2014	T3 2014	T4 2014
Pre test %	48.4	46.4	39.2	50.6
Post test %	81.1	55.7	67.6	64.1
P value	P<.001	P<.001	P<.001	P<.001

Table 5. Individual component progress (T1 2014)

	Pre-test % score	Post-test % score	Difference
Grammar	58.4	65.4	7
Synthesis & Trans.	23	62	39
Editing	47.6	67.6	20
Comprehension	26.1	36	9.9

Table 6. Individual component progress (T2 2014)

	Pre-test % score	Post-test % score	Difference
Grammar	71	70.4	-0.6
Synthesis & Trans.	36.5	57.9	21.4
Editing	33.9	44.3	10.4
Comprehension	42.5	32.3	-10.2

Table 7. Individual component progress (T3 2014)

	Pre-test % score	Post-test % score	Difference
Grammar	53.8	80	26.2
Synthesis & Trans.	32.3	71	38.7
Editing	65.4	83	17.6
Comprehension	37.7	41.5	3.8

Table 8. Individual component progress (T4 2014)

	Pre-test % score	Post-test % score	Difference
Grammar	discontinued	discontinued	discontinued
Synthesis & Trans.	56.7	70.9	14.2
Editing	34.8	47.9	13.1
Comprehension	33	42.5	9.5

grammar and comprehension components however were not as significant as the difference in Synthesis and Transformation and Edition. In Term 2, post-test scores were only better for Synthesis and Transformation and Editing components. Scores were not better for the Grammar and Comprehension components. In Term 3, students improved in their post-test scores for all four components. The improvements for Comprehension however were not significant. In Term 4, all components shown improvements in post-test scores.

Discussion

It was encouraging to observe the increase over time in the percentage of students who improved from Terms 1 and 2 to Terms 3 and 4. Across the terms, pre-tests, post-tests, and worksheets were analysed with respect to Nation & Macalister (2010), and Richard's (2001) evaluation stage of the curriculum development cycle. After observing classes and looking at students' completed work in Term 1 and 2, teachers and curriculum developers realised that students were already performing in grammar exercises even during their pre-

test. Thus, their grammar performance was at a plateau in Terms 1 and 2 resulting in little improvements and progress in grammar. Upon considering the situation of the grammar component of the EESP, curriculum developers considered revising the grammar curriculum in Term 3 which resulted in a poorer performance in the pre-test but a bigger improvement in the post-test. After further evaluation, the team eventually discontinued the grammar component to emphasise on the other weaker components in Term 4. (The grammar component however was introduced in the newer Primary 3 and 4 EESP curriculum). These decisions in Terms 3 and 4 resulted in the improvements in scores in Terms 3 and 4.

Students were generally performing in both the Editing and the Synthesis and Transformation components throughout the four terms in the EESP. Considering the constant improvements in both components of EESP lessons, the structure, difficulty, and lesson execution plans of these lessons remained similar throughout the terms. Different topics and skills within each component however were taught in each term. The consistent improvement in the Editing component could be based on the fact that lessons were in line with the MAP course students were concurrently enrolled in, allowing students to relate lessons from both the MAP and the EESP. Being familiar with spelling rules in MAP allowed these students to easily apply these rules in editing activities. Students' improved performance in the Synthesis and Transformation component could be due to lessons being taught systematically and progressively referencing the OG Principles. For example, major Synthesis

and Transformation topics such as 'Direct and Indirect Speech' were explicitly taught over several weeks systematically. Students were taught words that they need to look out for to transform every week. This gave students ample time to retain the information as well as transforming skills to work on actual 'Direct and Indirect Speech' questions in exam papers. Figures 2 and 3 show a sample of a student's Synthesis and Transformation section in the pre-test and post-test. The figures illustrates the vast improvements observed in the scores of the Synthesis and Transformation components in each term. It may be seen that the student struggled to successfully complete the pre-test, but that the post-test by contrast, showed only three errors.

Evaluation of the pre-test and post-test scores of each term revealed the difficulty in helping students perform in the comprehension component of the PSLE paper. Comprehension results across the terms were not ideal. Teachers and curriculum developers discussed and agreed that these results can be explained by how comprehension requires long term remediation before skills can be taught and applied. Further analysis of the pre-tests and post-tests and students' worksheets revealed that students were able to make use of skills such as annotation and reference tracking that were taught. Most of these skills however were only able to help students perform in questions asking to identify pronouns within the text passage. Teachers and curriculum developers believe that improvements in the comprehension component may not be observable within short single term periods.

Pre

4. "Why did you push Samantha during recess yesterday?" Mrs Tay asked Bala.

    Mrs Tay asked Bala _why did he push Samantha during recess_ _yesterday._   ✓ ✗ ✓ ✗ ✗ ✓   **3**

5. "Where were you when I needed you?" Sharon asked her best friend.

    Sharon asked her best friend _where were you when I needed her_ _B._   ✓ ✗ ✗ ✗   **1**

6. "Did you tell Mr Quek that I was late for school today?" Mei Hua asked Polly.

    Mei Hua asked Polly _did you tell Mr Quek that I was late for_ _school today._   ✗ ✗ ✗ ✗ ✗ ✓   **1**

7. "Is Gary visiting his grandfather tomorrow?" Nala asked Wendy.

    Nala asked Wendy _is Gary visiting his grandfather on the_ _fowlling day._   ✗ ✗ ✓ ✓ ✓ ✓   **3**

8. "Who were you talking to at the mall last week?" Ben asked Tina.

    Ben asked Tina _who were you talking to at the mall_ _last week._   ✓ ✗ ✗ ✗ ✓   **2**

9. "What is that smell coming from my bedroom?" Harry asked me.

    Harry asked me _what is that smell coming from my_ _bed room._   ✓ ✗ ✗ ✓   **2**

10. "Did you switch off all the lights and fans yesterday?" Mrs Toh asked Karen.

    Mrs Toh asked Karen _did you switch off all the lights and_ _fans yesterday._   ✗ ✗ ✗ ✗ ✓   **1**

Figure 2. Example of a student's Synthesis and Transformation work in a pre-test.

Post

4. "Why did you push Samantha during recess yesterday?" Mrs Tay asked Bala.

Mrs Tay asked Bala _why did he pushed Samantha during recess ~~the previous days~~_. **4**

5. "Where were you when I needed you?" Sharon asked her best friend.

Sharon asked her best friend _where was she when she needed her._ **4**

6. "Did you tell Mr Quek that I was late for school today?" Mei Hua asked Polly.

Mei Hua asked Polly _if she had told Mr Quek that she was late for school that day_ **6**

7. "Is Gary visiting his grandfather tomorrow?" Nala asked Wendy.

Nala asked Wendy _if Gary is visiting his grandfather the following day._ **4**

8. "Who were you talking to at the mall last week?" Ben asked Tina.

Ben asked Tina _who was she talking to at the mall the previous week_ **4**

9. "What is that smell coming from my bedroom?" Harry asked me.

Halry asked me _what was that smell coming from my bedroom_ **4**

10. "Did you switch off all the lights and fans yesterday?" Mrs Toh asked Karen.

Mrs Toh asked Karen _if she had switched off all the lights and fans the previous day._ **5**

Figure 3. Example of a student's Synthesis and Transformation work in a post-test.

On top of the observable progress of the individual components, it was interesting to note how the percentage average score of the post-test of students in Term 1 was a great deal better than the rest of the terms in comparison to their respective pre-tests (Table 4.). This could be because the general difficulty level of the curriculum was raised when teachers and developers realised certain components were not challenging enough.

Feedback from teachers, parents and students indicated a general high level of satisfaction with the outcomes of the EESP. Specific feedback from parents included the following:

> "I am impressed that Jack's English Exam has improved from a low grade C during prelims to achieving a B in PSLE. His Comprehension has shown great improvement. I hope he will continue to apply the skills throughout his learning journey. Thank you DAS! "

> "I am very happy that Ken has passed his English for PSLE. He has never passed his English before."

> "Thank you for your coaching. John has shown such significant improvement that he will be receiving his Edusave Good Progress award. We are very glad that he has applied his skills on his exam, especially English"

The development and evaluation of the EESP revealed interesting information that was very useful for curriculum developers to improve on and design EESP curriculum for subsequent terms. From the analyses and results of this study, developers were aware that students were able to grasp Editing and Synthesis and Transformation concepts and skills taught. Future lessons should maintain topics in these two components. Results of the comprehension component however need to be further analysed. Perhaps future research could look in to longitudinal studies especially in the comprehension component to better track the progress of these students. With a more established EESP curriculum, the team could also look into implementing a single and more elaborate pre-test and post-test when students enter the EESP and leave the programme after their PSLE rather than pre-tests and post-tests every term, using a refined curriculum that has been shown to impact on comprehension skills. This would provide opportunities for more longitudinal results to be revealed, and also makes it possible to track the long term progress of students.

We are now seeking further feedback from parents on the impact of participation in the EESP programme on PSLE results, in comparison with students who have not taken part in this particuar programme. We also plan to compare the progress of students in the EESP with students who have benefitted from an extra hour of intervention in Math of Chinese. This can be done by conducting EESP pre and post-tests for students in Math and Chinese classes as a control. Comparisons of scores between these groups would take into account several other variables demonstrating that any improvements made in scores of the EESP students are specific to the EESP curriculum.

What are the implications of this approach for other programmes of intervention? Many dyslexic children fail to do

themselves justice in formal timed examinations because they lack the study skills to approach this type of assessment. This model of designing a curriculum, refining the curriculum in a cyclical fashion, and pre and post testing to evaluate progress is a model of good practice that can be used in intervention more widely. Recent reviews of intervention have generally shown that support for around 1 hour weekly in small groups, as demonstrated here, can be beneficial for improving students literacy over a period of 1 term. This can be more effective and cost effective than more intensive remediation. Support for phonology and reading has been consistently evaluated, but it has been hard to demonstrate transfer of skills to areas such as comprehension and grammar. This is one of the first examples of a successful evaluation of exam skills intervention. Given the importance of demonstrating improvement in timed examination format, there is considerable potential in extending this approach more generally in order to achieve success and build confidence in dealing with formal assessments of this type.

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