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Exploring the classroom practices of the English Exam Skills Programme for Singaporean primary school children

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Abstract

Grammar, vocabulary and comprehension are key skills that are impaired in dyslexic children. In previous studies in Singapore, we have shown that dyslexic children can improve these skills significantly with structured intervention. In this controlled study, we demonstrate a highly significant improvement in these skills in a group of dyslexic children in comparison with a group of dyslexic children who did not receive the intervention. The strong effect sizes indicate that these improvements are not the effect of maturation and school based teaching, but reflect the impact of this targeted teaching on overall progress. Implications for dyslexia are discussed more generally.

Keywords: English Exam Skills, Classroom Practices, Teaching Styles, Teaching Processes

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Introduction

The British Dyslexia Association (BDA, 2007) defines dyslexia as "...a specific learning difficulty which affects the development of literacy and language related skills ...characterised by difficulties with phonological processing, rapid naming, working memory, processing speed and the automatic development of skills that may not match up to an individual's other cognitive abilities." (Crisp, Johnson & Novakovic, 2012, p. 815). These students may experience difficulties in reading, vocabulary and spelling. Others who have difficulties with short term memory or processing speed may experience problems navigating through long sections of text, keeping track of sequence of events or ideas in a text, navigating through long sections of text and text comprehension. As such, "...producing clear and written answers will be harder for those with dyslexia than for other students." (Crisp et al., 2012, p. 817). In terms of language abilities, there is now clear evidence internationally that children at family risk of dyslexia show increasingly divergent skills from controls in receptive grammar and expressive vocabulary between the ages of 3 and 8, with expressive grammar and comprehension showing large effect sizes by age 8 (Snowling, Duff, Nash & Hulme, 2016) as control children become more skilled.

In recognition of these issues, the English Exam Skills Programme (EESP) was introduced and implemented in 2013 by a team of curriculum developers at the Dyslexia Association of Singapore (DAS) with the primary aim of helping primary school students cope with English examination needs in the hope of enhancing their confidence and preparedness for the Primary School Leaving Examination (PSLE) English paper in Primary Six. A comprehensive and detailed study of the performance of Primary 5 (P5) and Primary 6 (P6) students enrolled at DAS centres in their schools' English Exams demonstrated their struggles in four key components of the English Exam Paper 2 – Grammar, Editing, Synthesis & Transformation and Reading Comprehension. The EESP team has since selected and developed a curriculum focusing on these components.

An evaluation of the performance of groups of P5 and P6 students in the Standard PSLE Stream who enrolled in the EESP over a period of four terms in 2014 demonstrated 'progress and significant improvements' (Leong, 2015, p. 184) in the learning of concepts and acquisition of skills and strategies based on data obtained from Pre Test and Post Test results collected at the end of each of the four terms.

Whilst this demonstrated the effectiveness of the EESP in helping students perform better in English Exams, a further investigation would be useful in examining aspects of the programme that might have contributed to the improvements made by students such as classroom instruction, delivery and practice. There is a need to further assess the impact of participation in the EESP on performance in the Pre Tests and Post Tests as compared to students who have not. These considerations may

provide deeper insights into the enhanced performance of EESP students that could possibly be attributed to the unique approach and curriculum of the EESP.

The need for the EESP has been largely driven by the highly competitive learning environment in Singapore's education system. Although the landscape is gradually changing with schools placing lesser emphasis on grades and being exam smart, scoring well in school examinations and the PSLE still remains a pre-requisite to entry into a secondary school of choice or stream that may determine access to future educational pathways. Performance in examinations is still very much relied on as a measure of progress and a stepping stone for advancement to the next educational level. This presents challenges to students with dyslexia who are currently attending mainstream schools. A study that analysed and tracked the language performance and literacy outcomes of children with language impairment (LI) from the age of 3½ to 8 years demonstrated development in three different trajectories – "resolving", "emerging" and "persisting literacy difficulties" such as comprehension and vocabulary knowledge, with a significantly high percentage of the students with "emerging" and "persisting difficulties" associated with familial risk of dyslexia (Snowling, et al., 2016).

Taking into consideration the difficulties faced by students with dyslexia in attempting specific components of the English Paper 2, the syllabus and demands of the mainstream schools' English Exams and PSLE, as well as the limited time duration of the EESP class of one hour per week, the EESP team decided to focus on teaching 'Synthesis and Transformation', 'Editing' and 'Reading Comprehension' components to P5 and P6 students. Intensive teaching of Grammar is conducted at Primary 3 (P3) and Primary 4 (P4) since a firm grasp of grammatical concepts would be required for the P5 and P6 students to be able to attempt the rest of the components such as Synthesis and Transformation and Reading Comprehension successfully.

To cater to the unique learning needs of the students, lessons were designed to adhere to the 'structured and sequential schema of the Orton-Gillingham (OG) principles', provide them with 'opportunities to experience several possible pathways to learning' and enhance their ability to retain concepts learnt (Gillingham and Stillman, 1997 cited in Leong, 2015, p. 190). Topics in the Synthesis and Transformation component were delivered explicitly in a progressive and cumulative manner such that students are taught to identify patterns and given ample time to practise with guidance before being given opportunities to apply skills and strategies independently. Lengthy Comprehension passages were also simplified such that only selected sections that target the teaching of specific skills were presented for use in the classroom.

As students were exposed to actual exam -style questions for practice during lessons in the EESP, the team had to ensure that their curriculum aligned very closely with the latest format and syllabus of the PSLE

English paper. The latest change was implemented in 2015 in the open-ended Comprehension component (SEAB, 2015). The questions were designed to test both literal and inferential comprehension and understanding of the contextual use of lexical and grammatical items in a text through a mixture of question constructs such as True/False questions, Vocabulary-Context questions and Sequencing questions. This is a departure from the ten Question-Answer type of construct used previously (SEAB, 2015). The EESP curriculum team has since incorporated the teaching of skills to answer True/False questions in its Reading Comprehension lessons.

Given the specialised curriculum and teaching of the EESP, this study therefore aims to ascertain if students in the EESP perform comparatively better than their non-EESP peers in English Exam-type questions and how classroom practices in the EESP influence the outcomes.

Literature Review

As a country that is dependent on human capital as its critical resource for continued survival and sustainable participation in the fast-changing global economy, huge investments have been made into making English the medium of instruction in Singapore schools and businesses (Rubdy, 2010).

Communication and equality amongst its multi-ethnic and multi-lingual society have since been facilitated by its bilingual language education policy in which English is officially made the first language (L1) since it is the first school language and the ethnic languages, otherwise known as the Mother Tongue, the second languages (L2) (Cheah, 2002).

The Ministry of Education (MOE) stresses the importance of students acquiring a good command of English so that it can provide them with an advantage throughout their school years and better engage themselves with the wider and more global community. Due to its critical role and strong emphasis in the Singapore education system, students' proficiency in the subject is assessed through national examinations such as the Primary School Leaving Examination (PSLE). Every child in Primary Six aged between 11 to 12 years old, who has attended six years of compulsory primary education in the mainstream schools will take the PSLE. Results obtained are then used to determine their eligibility for the next level in the school system. Although the PSLE assesses students' performance in four subject areas namely English Language (EL), a Mother Tongue Language, Mathematics and Science, it is a requirement for students to attain a pass in English before they can access the next level of education. Students' performance in the subject is therefore, a critical factor in charting their educational paths (Loh & Shih, 2016).

So high are the stakes involved that in a study conducted by Goh, Zhang, Ng and Koh (2005) to examine teachers' perceptions of the real objectives of learning and teaching the EL syllabus in Singapore, the most common response was to ensure that students are well-equipped with the knowledge and skills to meet examination and curriculum

requirements rather than for communicative and functional purposes. In fact, teachers from different levels and school environments expressed the unanimous view that 'meeting examination requirements' (p. 65) and 'helping students pass examinations' (p. 106) were their top priorities.

The PSLE English examination is administered by the Singapore Examinations and Assessments Board (SEAB) in collaboration with the Ministry of Education (MOE) and assesses students' proficiency in four main skill areas - Oral (15%), Listening Comprehension (10%), Composition (Writing, 27.5%) (Paper 1) and Grammar, Vocabulary and Reading Comprehension (47.5%) (Paper 2). The last component of the English Paper with the heaviest weighting of marks accorded, is given a duration of 1 hour 50 minutes. Consisting of 9 sections of 80 test items, it is designed to assess students' ability to use different aspects of language correctly and comprehend visual and textual information (SEAB, 2015) (n.e. PSLE, pp. 3-5). It is divided into Booklets A and B, with Booklet A having 28 multiple-choice questions (MCQ) covering visual text comprehension (with a flyer or an advertisement used as a stimulus), grammar and vocabulary. Booklet B contains 52 questions covering five sections that assess students' competence in Grammar, Editing (correcting spelling error of given words), Synthesis and Transformation and open-ended Reading Comprehension. Selection of content areas to be assessed, examination format and task types are determined by the periodically revised MOE EL syllabus. The latest change in the PSLE EL examination format was implemented in 2015 in the Composition paper (Paper 1) and open-ended Reading Comprehension question format in Booklet B (Paper 2) (Loh & Shih, 2016).

However, implementing the EL syllabus and teaching students the skills required to meet examination needs have not been a smooth-sailing experience for teachers in the mainstream schools. Teacher interviews conducted in the study by Goh et al., (2005) reported that weaker students struggle in key aspects of language development such as poor phonological awareness and phonics background resulting in low decoding abilities and poor spelling abilities, lack of vocabulary, difficulty in comprehending simple ideas, inadequate background knowledge or schema, poor inferring skills and poor knowledge and application of grammar rules (p. 79). As a result, the teachers found it challenging to achieve the learning outcomes mapped out for students of their designated levels. Majority of the language difficulties mentioned are indeed synonymous with those faced by students with dyslexia attending mainstream schools. The definition of dyslexia by the International Dyslexia Association (IDA, 2002) included 'secondary consequences' such as 'problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge'. The Ministry of Education (MOE, 2011) has further extended this definition to include 'aspects of language' as co-occurring difficulties. According to the findings of a

study by Snowling et al., (2016) that identified patterns of literacy development in children with language impairment (LI) from the age of 3½ to 8 years, over 40% of students with emerging and persisting LI who continued to demonstrate literacy and language difficulties in later years, were 'identified as dyslexic at age 8' (p.1367).

In Singapore, students diagnosed with dyslexia attending mainstream schools have been supported by Allied Educators, who have undergone specialised training at the Dyslexia Association of Singapore (DAS) which uses the multi-sensory and structured Orton-Gillingham (OG) approach to dyslexia remediation and work alongside school EL teachers since 2012. The Allied Educators conduct specially-designed OG-based extra-curricular classes, provide in-class support and collaborate with parents and teachers in a two-year intervention programme targeting Primary 3 and 4 students (aged 9 to 10 years old) who struggle with reading and spelling to catch up with their peers (Ho, 2015).

Since then, improvements have been noted in the reading and spelling skills of the first batch of students who went through the programme in 2012. The effectiveness of the OG approach has also been documented in a study conducted by Lim and Oei (2015) in which significant improvements have been observed in the reading and spelling abilities of a group of 39 students aged between six and 14 years old enrolled in a OG-based intervention programme at DAS over a period of one year.

Despite the positive results in reading and spelling abilities, the same have not been observed in students' performance in their school English examinations. A majority of them are found to be struggling in the English Paper 1 (Composition) and Paper 2 (Grammar, Vocabulary and Reading Comprehension) components (Leong, 2015). This implies that apart from reading and spelling remediation, these students may require additional support to help them cope and manage the demands of their school English examinations. However, in the context of the typical mainstream classroom environment where an average class size ranges from 25 – 40 students, Poon et al. (2013) highlighted that EL teachers are much constrained by time and resource in their quest to meet the demands of curricular content and examination needs. Response gathered through teacher interviews in the study by Goh et al., (2005) pointed out that 'a lack of time to focus on weak areas in lesser ability pupils', 'attend to individual errors and corrections' and 'practise and revisit areas of emphasis' (p.103-104), are some difficulties faced by school teachers.

The widespread use of the OG approach to dyslexia remediation in Singapore and the positive results obtained from studies on Singaporean students conducted by Lim and Oei (2015) suggest that the application of the teaching principles of the OG approach to address the examination needs of students with dyslexia could be further investigated. Kiss and Lin (2016) suggested that a common value system on pedagogical practices should be created within an organisation for effective language

teaching to learners with dyslexia. This implies that consistency is key in providing effective instruction to learners with dyslexia. As the literacy remediation programme attended by students at DAS uses the OG approach, the English Exam Skills Programme (EESP) thus, adopts the same principles to support students in English examination components such as Grammar, Editing, Synthesis & Transformation and Reading Comprehension through its curriculum design and delivery.

A key feature of the OG approach is its simultaneously multisensory instruction. Teaching and instruction enable students to use multiple learning pathways in order to enhance memory and learning. Rather than isolating a particular learning style, the multisensory approach integrates all learning styles of visual, auditory, kinesthetic and tactile (VAKT) through sensory activities (Moustafa, 1999). Multi-sensory learning in EESP classes is facilitated through the use of manipulatives, Grammar games, the use of coloured and shape symbols in the teaching of 'Synthesis & Transformation' and annotating 'Reading Comprehension' texts, as well as the use of interactive SMART board to teach students how to approach questions in 'Reading Comprehension'. Another characteristic of the OG approach is the teaching of new concepts in a systematic and structured manner, beginning with the easiest and then progressing gradually to acquire increasingly complex skills. Students are also given opportunities to transfer and apply their knowledge of phonogram concepts and spelling rules when attempting the 'Editing' component of the English paper. Apart from that, they are also taught various learning strategies in a sequential, incremental and cumulative way such that increasing confidence is attained at every step of the way.

The study by Leong (2015) aimed to evaluate if the EESP curriculum framework, which uses the OG approach, has helped students to improve in their knowledge and skills to cope with the demands of the PSLE English Paper. The EESP curriculum was developed in a cyclical manner, adapted from Nation and Macalister (2010) and Richards (2001) covering four components of the Paper 2 of the English Examination namely – Grammar, Editing, Synthesis & Transformation and Reading Comprehension – areas which have been identified as those in which students with dyslexia have performed poorly in. Learning materials and instructional approach in the EESP classroom adhered to the OG principles, in particular, its multi -sensory, structured and sequential style of delivery (Gillingham & Stillman, 1997).

Students enrolled in the EESP programme undertook a Pre Test and Post Test in each term from Term 1 to Term 4 in 2014, and data from these tests across the terms were tabulated. Results from the t-tests of the Pre Tests and Post Tests suggested significant progress in students after the EESP across all terms. Within each term, the combined results of the Post Test were also significantly higher than the Pre Test, with majority of the students (ranging from 89% to 100%) showing improved scores in their Post Test results (Leong, 2015).

While the positive results are indicative of the effectiveness of the EESP, there was a lack of empirical data on classroom practices, teaching processes and the nature of teacher-student interaction in the EESP classes that might have contributed to the students' improved results. Another limitation of this study was the absence of a non-intervention or control group. An inclusion of a control group could provide an added dimension to the study that may potentially demonstrate further implications in the evaluation of the programme's effectiveness.

To address these limitations, this paper thus attempts to gather and examine both qualitative and quantitative data through the inclusion of a control group, consisting of students with dyslexia who are not enrolled in the EESP to provide a sound basis for comparison. In addition, classroom observations and a detailed analysis of transcripts of student-teacher interactions could provide more detailed information on the effectiveness of the programme.

Methods

Participants

A total of 75 students who were current students from DAS participated in the study. These students were either in Primary 5 or Primary 6 in their respective primary schools. They were between ages 10 to 12. Forty-four out of the 75 students who participated in the study were part of the experimental group. The remaining 31 students participated as the control group. Five of the 44 students in the experimental group also participated in the qualitative aspect of this study. Classroom observations were conducted for these 5 students who were placed in two separate classes.

Research Design

Each of the students who were part of the experimental group will start off with a Pre Test during their first week of lessons. After which, these students will undergo 20 weeks of intervention. Upon completion of the 20-week intervention, these students will complete a Post Test. Classroom observations in the form of video recordings were also conducted for two separate classes for four hours each. This study follows a mixed method research framework with both quantitative and qualitative data collected simultaneously. This ensures the triangulation of data collected.

Instruction

Students in the experimental group attended one hour of instruction per week throughout the 20 weeks of intervention, covering three components – Editing, Synthesis & Transformation and Comprehension. Topics and skills selected and taught in each component align closely with those taught and tested in schools and the PSLE. The components and topics covered over the period of 20 weeks of intervention are summarised in the Curriculum Scope & Sequence shown in Table 1.

Lessons for every component were designed to follow the OG approach. Concepts in the curriculum were designed

Table 1.—Scope & Sequence: Weeks 1-20

Week	Component	Topics / Skills
1	Pre-Test Editing 1	Drop-e rule
2	S&T (1)	Parts of Speech
3	S&T (2)	Changing Verbs to Nouns
4	Comprehension (1)	Graphic Organisers : Descriptive
5	S&T (3)	Changing Verbs to Adjectives
6	Comprehension (2)	Graphic Organisers : Narrative
7	Comprehension (3)	Graphic Organisers : Descriptive
8	Editing (2) Editing (3)	1-1-1 rule s vs es
9	Comprehension (4)	Graphic Organisers : Narrative
10	S&T (4) Editing (4)	Review Y to i rule
Term Break		
11	Editing (1&2)	Ending & Other sounds of /j/
12	S&T (1) Editing (3)	Introduction to Direct & Indirect Speech Missing / Additional Syllables
13	S&T (2)	Changes in Punctuation & Special Words
14	S&T (3)	Changes in Verb Tenses
15	S&T (4)	Changes in Pronouns & Time References
16	Comprehension (1)	Question Analysis – Instruction & Target Words
17	Comprehension (2)	Question Analysis – Instruction & Target Words (Review)
18	Comprehension (3)	Question Analysis (Review – Guided)
19	Comprehension (4)	Question Analysis (Review – Independent)
20	Review Post Test	

to be introduced in a direct and explicit manner, incorporating multi-sensory learning opportunities where possible, such as using technological tools like videos, Smart board and hands-on activities such as drawing, cutting and pasting. Students were taught simple strategies and encouraged to actively identify unique patterns that can help them retain concepts better, apply them in questions with some guidance before eventually acquiring the ability to do so independently. Students learn new material while also reviewing previously-taught material until their skills become automatic. Lessons are also delivered in a sequential and cumulative manner.

An example of a component that demonstrates this is Synthesis & Transformation (S&T) where a topic such as 'Direct & Indirect Speech' is broken down into four separate lessons or sub-topics as shown in the curriculum Scope & Sequence: Weeks 11-20.

Transformation of a sentence in Direct Speech to Indirect Speech requires students to identify and execute changes to different parts of the sentence such as punctuation, special words, verb tenses, pronouns and time references. Students were first taught to recognise and distinguish sentences in the Direct and Indirect Speech. Each change to be executed in the transformation was taught separately. Students were then given ample opportunities to practise executing each change till they were able to do so independently before moving on to the next sub-skill.

To facilitate meaningful learning and promote retention of concepts, a typical lesson in the English Exam Skills class is therefore structured and conducted using the implemented RIMAIR approach:

R	Review previous concepts / skills learnt
I	Introduce new concept / skill
M	Model the application of new concept / skill
A	Apply with some guidance
I	Independent application of concepts / strategies
R	Recap new concept / skill learnt

In Editing lessons, students' knowledge of phonogram concepts, spelling and suffixing rules taught in the DAS' literacy remediation programme is capitalised for application in Editing questions. Students were provided with ample opportunities to utilise them to identify and rectify errors in the spelling of words in this section of the English paper.

Comprehension lessons target the acquisition of skills in two broad areas – text processing and responding to questions. Text processing skills involve the teaching of text annotation to facilitate better understanding. Students were taught to identify and take note of content words and contextual clues such as nouns, verbs, adjectives and adverbs. Subsequent lessons focus on the function of pronouns and specific signal words such as contrast words and cause-and-

effect words in helping them make specific connections to relevant parts and sections of text.

In responding to questions, students were first taught to recognise and identify question words and their demands. Subsequently, they were then encouraged to pay attention to keywords in questions that will direct their attention to specific parts of the text that may help answer the questions. Students were also exposed to a variety of question types and formats that appear frequently in their school examinations and the PSLE. The same strategies and skills are taught consistently regardless of text type and question format to promote better retention of skills and automatic application.

Data collection procedures

a. Pre Tests and Post Tests

Pre Tests and Post Tests were designed and administered to reveal possible positive impacts of the EESP curriculum on students undergoing the intervention. Significant improvements in the Post Test will be able to suggest progress of the students after the completion of the EESP. Test items in the Pre Test and Post Test consist of questions that were designed according to what students were taught during the 20 week intervention.

The same paper was used as the Pre Test and Post Test for both experimental and control groups considering that it is highly unlikely that these students will be able to remember items tested leading on to the practice effect. This was based on the previous study conducted by Leong (2015). A comparison between the Pre Test and Post Test results of the control group of this current study could later confirm that no practice effect exists.

The Pre Test and Post Test consist of three sections. One for each of the three components taught during the EESP (Synthesis and Transformation, Editing and Comprehension). Each section consists of five questions. Students are awarded a mark for each correct concept applied to the question items. The total score for the Pre Test and Post Test is 34.

b. Classroom observations

Classroom observations were conducted to explore the classroom practices in the EESP classroom. The classroom observations provide an avenue for data collection in an authentic setting. Taking into account the small class size, having an external observer in the classroom may risk the obtrusive researcher effect. Thus, video recordings were used for the classroom observations. Having video recordings of the class also provides the researchers with the opportunity to relook at incidences observed in the classroom that they could have missed during their first viewing.

Although video cameras in the classroom may also distract the administration of a class, DAS students are familiar and comfortable with recordings in the classroom since recordings are conducted every term within DAS. Parents' consent was also sought before the implementation of video recordings. For confidentiality, pseudonyms were used to

identify students in the two classes that were observed. For ease of reference, the first class will be labelled as Class A and consists of two students - Alice and Ben. The second class will be labelled as Class B and consists of three students - Edward, Charlie and David.

Results

Quantitative analysis of Pre Tests and Post

A 2-factor ANOVA was conducted on the scores with the factors being group (independent samples experimental and control) and time of test (repeated measures pre-test vs. post-test) to compare the progress of both the experimental group and the control group in their Pre Test and Post Test scores. The descriptive statistics obtained are presented in Table 2.

A simple plot in the Figure 1 provides a visual representation of the Pre Test and Post Test scores of the experimental and control group.

Comparison of the two groups (experimental and control) indicates that the experimental group's scores were accelerated from Pre to Post Test, whereas the control results were similar to Pre Test. Results ($p<.001$) suggest that there is an overall significant difference when comparing the experimental group with the control group. Results are detailed in Table 3.

Results ($p<.001$) suggest that there is an overall significant difference when comparing results within subjects, indicating that there was a significant effect of the intervention, with the interaction between time and group indicating that scores for one group were significantly higher. Results are detailed in Table 4.

Table 2. Descriptive Statistics

	Group	Mean	Std. Deviation	N
Pre Test	Control	11.23	5.655	31
	Experimental	13.80	6.829	44
	Total	12.73	6.456	75
Post Test	Control	12.00	5.266	31
	Experimental	17.89	7.042	44
	Total	15.45	6.970	75

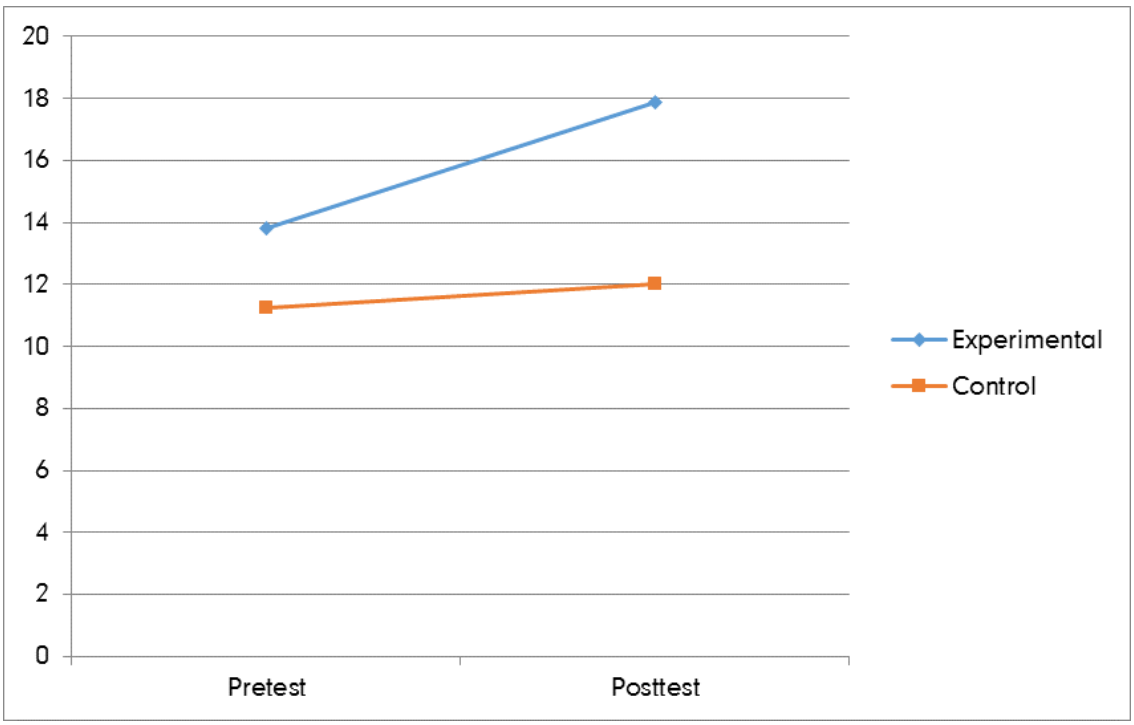

Figure 1. Mean Pre Test-Post Test scores of the experimental and the control group.

Table 3. Test of between-subjects effects

Source	Type III Sum of squares	df	Mean square	F	Sig.
Intercept	27415.011	1	27415.011	368.327	.000
Group	650.211	1	650.211	8.736	.004
Error	5433.482	73	74.431		

Table 4. Test of within-subjects effects

Source	Type III Sum of squares	df	Mean square	F	Sig.
Time	215.232	1	215.232	31.707	.000
Time* Group	100.032	1	100.032	14.736	.000
Error (Time)	495.528	73	6.788		

In order to break down the results further and establish statistically which group contributed to the significant differences, further analysis was undertaken of the difference from Pre to Post Test for the two groups using t-tests.

The first t-test conducted was an independent samples t-test comparing the difference in Pre Test-Post Test scores of the experimental group with the difference in Pre Test-Post Test scores of the control group. Results of this t-test suggest that there is a significant difference in the difference between the Pre Test and Post Test scores of the experimental group and the control group. Results are detailed in Table 5.

The second t-test conducted was an independent samples t-test comparing the Pre Tests of the experimental group with the Pre Tests of the control group. Results of this t-test suggest that there is no significant difference between pre-test scores of the experimental group and the control group. Results are detailed in Table 6.

The significant difference observed when comparing the difference between the Pre Test and Post Test of the experimental group and the difference between the Pre Test and Post Test of the control group clearly suggests that students were able to perform better after the intervention. The insignificant difference between the experimental group and the control group in their Pre Test scores confirms that both groups of students were of very similar performance prior to the programme.

Table 5. Results of Independent Samples t-test comparing difference in pre-test post-test scores of experimental group and difference in pre-test post-test scores of the control group

Group	n	Mean	SD	df	p
Experimental Difference	44	4.09	3.59	73	*p<.001
Control Difference	31	0.774	3.81		

Table 6. Results of Independent Samples t-test comparing pre-test of experimental group and control group

Group	n	Mean	SD	df	p
Experimental Pre-test	44	13.80	6.83	71	.080
Control Pre-test	31	11.22	5.66		

Finally, in interventions of this type it is customary to perform an effect size analysis, Cohen (1977). The effect size is calculated as the amount of improvement divided by the standard deviation of the control group. An effect size of 0.2 is seen as small, 0.5 as moderate and 0.8 or above as large. In this analysis, an effect size of 1.1 indicates a highly significant impact of the intervention.

Classroom Observations

Transcripts from the classroom video recordings were analysed and evaluated to discover emerging trends on the classroom practices in the Exam Skills classroom. Transcripts from the two classes observed revealed consistent classroom practices. The classroom practices observed could be categorised into general observations; that were the underlying teaching processes and procedures the teacher abided to, and specific observations; that portrayed how incidences in the classroom played a role in the students' learning and understanding of concepts.

a. General observations

i. RIMAIR approach

One of the general observations noticed in the classroom was how the teacher adhered to the pre-planned RIMAIR approach in administering the class (As earlier described in the methods section of this paper). It was evident that at the start of every lesson, the teacher would review concepts taught previously. For example, in Class A and Class B, Lesson 1, the teacher started the class by asking "What did we learn last week?" As students started to respond, the teacher then guided them along in recalling and summarising the content of the previous lessons.

It was also observed throughout all the classes that the teacher introduced a new concept or topic by defining the terminologies and keywords related to it first. Subsequently, she modelled how the concept can be applied before guiding them in answering exam type questions using the concepts taught. Finally, when the students have demonstrated a clear understanding of the concept, the teacher allowed them to attempt a set of questions independently. These were in line with the 'I', 'M', 'A', and 'I' processes of the RIMAIR approach.

An example of how the teacher guided the students in applying a newly introduced concept (strategy to answer True or False questions) is presented in the extract from Class B, Lesson 4 (Figure 2). In the example, we are able to see how the teacher occasionally provided her students with prompts to the various steps they needed in answering a True or False question. Where possible, the teacher also provided opportunities for her students to verbally sequence the steps independently.

At the end of each lesson, the teacher concluded the session by verbally checking the students' ability to remember the main concept taught for each of the 4 lessons. This practice of recapping what the students had learnt can be observed in Class A, Lesson 1 (Figure 3). In this extract, it was evident

Teacher:	Search. Now your answers are all over the place. Kay for true and false questions, what is the first step that you must do?
Charlie:	Read.
Teacher:	Read and understand. Very good. Secondly?
David:	Highlight.
Edward:	Highlight.
Teacher:	Highlight the?
Charlie:	The keywords.
Teacher:	The keywords right? In the statement.
Teacher:	Secondly, eh thirdly?
Charlie:	Then find the keywords in the passage.
Teacher:	Ah you find...
Charlie:	...in the passage
Edward:	Search!
Teacher:	Oh ya search and then find right, eh oops sorry.
Teacher:	What am I saying?
Teacher:	Highlight and find right? Okay. And then lastly?
David:	Match.
Teacher:	Uh say it loudly.
David:	Match.
Teacher:	Match, okay you match to the statement given, the statement given, as well as the passage and see whether it matches.
Teacher:	Okay. If it, if it matches, its what?
Charlie:	The answer.
Teacher:	True or false?
Edward:	True.
David:	True.
Teacher:	If it doesn't match, it's?
All students:	False!
Teacher:	False. And then give your reason for it, okay.

Figure 2. Extract from Class B, Lesson 4

Ben:	Time to go back already ah?
Teacher:	Soon. We still have about 5, no no, 9 minutes? Come give me your files. Take a seat first. Hold on, I'll take it for you. Take a seat first. So guys.
Ben:	What have we learnt today?
Teacher:	Yes very good! You know what I wanted to say.
Ben:	Yeah, cause I heard you.
Alice:	We have learnt,
Ben:	We have learnt,
Alice:	About true and false statements

Figure 3. Extract from Class A, Lesson 1

that the student was familiar with the recap aspect of the lesson. This suggests that the teacher had been consistent in conducting recaps frequently at the end of her lessons.

ii. Consistent use of the VAKT

A second general observation recorded in the classes was the consistent use of various VAKT elements when introducing and teaching new concepts or vocabulary. For example, in Class A, Lesson 1 (Figure 4), students were unsure of the meaning of the word 'teeter'. Instead of giving them the definition verbally, the teacher utilised the multisensory approach by acting as an old man moving in an unsteady manner. The visual cues she provided the students gave them an opportunity to tap on their vocabulary knowledge in order to guess the unfamiliar word.

Teacher:	Then, she saw him teeter and fall backwards into the pond's deep water.
Teacher:	What's the meaning of this? [underlines teeter on the board]
Teacher:	Teeter...
Ben:	I don't know
Teacher:	*(Pretends to fall down)*
Ben:	Shaking
Teacher:	Shaky, unstable. Very good.

Figure 4. Extract from Class A, Lesson 1

Teacher:	To look alike, the contours, contours? Contours. What does it mean? Contours of the human body. *(Teacher gestures to physically show the contours of a body)*
Charlie:	It sounds like content
Teacher:	The contours of the human body. *(Teacher gestures again)*
Charlie:	Shape?
Teacher:	The shape! Yeah! The shape, the outline of the human body.

Figure 5. Extract from Class B, Lesson 1

Teacher:	The contours of the human body. Okay so what's the meaning of smeared you were asking
David:	Melt.
Teacher:	Smeared *(points to board)* . Okay so you have strips of fine linen that had been smeared *(gestures)* with gum.
Charlie:	Throw.
Teacher:	*(gestures)* smeared with gum. This is the linen, it's like a cloth.
Charlie:	*(takes up hole puncher and does a smearing gesture)* is it like this?
Teacher:	So what is that?
Charlie:	I don't know.
Teacher:	*(takes a piece of paper)* okay let's say I have a piece of cloth –puts paper down, takes file- over here okay. this is my cloth.
Charlie:	*(offers hole puncher)* then this one.
Teacher:	*(takes stapler)* then this is my gum. *(uses stapler to demonstrate smearing action on file)* smeared with gum. What does it mean? The linen is smeared with gum.
Charlie:	Put some gum on it.
Edward:	Spread.
Teacher:	Spread! Very good.
Charlie:	Yeah that's the word.

Figure 6. Extract from Class B, Lesson 1

A similar strategy was used in Class B, Lesson 1, see Figure 5, where gestures were used to aid the students in guessing the meaning of an unfamiliar words in the text.

In the same lesson, the teacher was also seen making use of the materials available in the classroom to explain an unfamiliar word found in the text. The extract in Figure 6. reveals how the teacher was trying to explain the word smeared using items within the classroom.

iii. Emotionally sound

A third general observation revealed was how the teacher was consistently emotionally sound in the classroom. To be emotionally sound would mean that the teacher takes into account the feelings of the students and ensures that students are given equal opportunities to experience success. These were evident throughout the lessons where the teacher consistently affirms her students' accurate responses. The teacher typically responds to her students' answers by using words like 'good', 'very good', 'good guess' and 'good job'. These words of affirmation were given even if students did not provide an accurate response. An example of this positive affirmation given can be observed in the extract from Class A, Lesson 4 (Figure 7).

b. Specific observations

i. Getting students to question

One of the specific observations noticed in the classes was how the teacher guided her students through a series of thought processes to get them to understand or guess the meaning of unfamiliar words. By doing this, the teacher was seen scaffolding the students into developing their own metacognitive strategies when reading a text. The following extracts (Figure 8) show two separate comments from the teacher in Class B, Lesson 1 that demonstrated how the teacher modelled the thinking processes so that her students would be equipped with the skills when they are reading independently.

It can be observed in the 4th lesson (Figure 9) of the same class that students are able to automatically recall the processes that their teacher had previously modelled. This suggests that they are now able apply these metacognitive strategies independently.

This observable process of how the lesson progressed from the teacher modelling a skill leading on to students' independent application is consistent with the 'M', 'A', and 'I' components of the RIMAIR approach.

Teacher:	What's a dock?
Ben:	A place where...you can sit down?
Teacher:	Okay, very good guess. Excellent guess. But I'll show you what is a dock. Okay. *[googles for the image]*

Figure 7. Extract from Class A, Lesson 4

Teacher:	Maintain it so that it will not rot okay? So preserve means to maintain or to keep alive *(writes on board)* Alright, uhm now how do you know the meaning of uhm embalming. What is the meaning of embalming? What is embalming? If you don't know a word, please put a question mark there and ask yourself. What is the meaning of embalming? You can get the clues from the passage
Teacher:	You're supposed to be underlining, making links so that later on when you do the questions you won't be confused okay?

Figure 8. Extract from Class B, Lesson 1

Teacher:	You have to number the? Paragraphs. And then when you read the passage and you come across a difficult word, what do you do?
David:	Underline it.
Teacher:	Underline and?
Edward:	Try to figure it out.
Teacher:	Try and?
Charlie:	Try to give the meaning.

Figure 9. Extract from Class B, Lesson 4

ii. Using contextual clues

A more detailed example of how students were taught metacognitive strategies can be demonstrated in how the teacher taught students how to use contextual clues to guess the meaning of words they were unfamiliar with. The teacher was observed to be consistent in using and referring to contextual clues as a strategy to help them guess the meaning of unfamiliar words in the reading comprehension passages. An example of such an incidence was observed in Class A, Lesson 1 (Figure 10.). Students were unclear of the word 'extracted' when reading the sentence: 'Not all of the brain could be extracted this way'. The teacher then used the sentence prior to that in prompting students to derive the meaning: 'First, the embalmer drew (emphasis added) out the brain through the nostril.' Students were then able to relate the word 'drew' to 'extracted' and subsequently guessed the meaning as 'to pull out'.

Ben:	Not all of the brain could be extracted this way.
Teacher:	What's the meaning of extracted? *(Underlines the word extracted on the projection on the board.)*
Ben:	Like, like make it disappear. *(puts two palms on head.)*
Teacher:	Disappear.
Ben:	No like a tube.
Teacher:	It's something to do with the line before that.
Alice:	Iron hook.
Teacher:	First, the embalmer drew *(emphasis added)* out the brain through the nostrils. Not all of the brain could be extracted this way.
Ben:	So oh, they put like the.
Alice:	Pull out.
Ben:	Get out.
Teacher:	*(Points to Alice and nods.)* Yeah to pull out. Okay to pull out. *(Writes on board.)*

Figure 10. Extract from Class A, Lesson 1

The students' background knowledge was also tapped on to explain unfamiliar words, by giving them relevant examples which they can relate to in their everyday life. For example, in the same lesson, students were asked to explain the meaning of 'elaborate' in a sentence. The teacher then gave an example, "the wedding was so elaborate". Students could guess the meaning of 'elaborate' as 'nice' and 'beautiful', before the teacher led them to deriving the definition as 'detailed' (Figure 11.).

As students acquired the habit of using contextual clues to guess the meaning of unfamiliar words, they have also initiated in asking the teacher meaning of words they were unsure of. For example, in Class A, Lesson 1, Alice initiated to ask the meaning of the word 'soul'. This, together with how the teacher explained the definition of 'soul' to Alice, can be observed in the extract represented in Figure 12.

iii. Repetition of keywords

Another specific observation noticed during the classroom observation was how the teacher was consistent in guiding her students in attempting questions. The

Ben:	The most elaborate method of embalming was used for a per..person of great wealth or promi... *(Can't read the word prominence.)*
Teacher:	Prominence. What is the meaning of elaborate? The most elaborate method *(Underlines the word elaborate on the projection on the board.*
Alice:	Method.
Teacher:	The most elaborate method of embalming was used for a person of great wealth.
Ben:	Oh, help.
Teacher:	So what's the meaning of elaborate?
Ben:	Help!
Teacher:	Let's say the most uhm, the wedding was so elaborate.
Alice:	Best, was very beautiful.
Ben:	Happy.
Alice:	Very nice.
Teacher:	Very detailed. Elaborate means detailed. Okay. So now you know, alright. Was used for a person of great wealth or prominence. What is the meaning of prominence then?

Figure 11. Extract from Class A, Lesson 1

Teacher:	*(points to board)* over here right, uhm the ancient Egyptians believe that your soul, your soul and body are two separate things.
Ben:	Yeah, yeah.
Alice:	What's a soul?
Ben:	Soul comes out at night.
Teacher:	*(laughs)* yeah okay the soul is uhm is like a spirit inside you
Ben:	Yeah.
Alice:	*(nods)*
Ben:	Yeah inside you.
Teacher:	It's like your own soul. *(gestures to herself)*
Alice:	*(nods knowingly)* oh okay.

Figure 12. Extract from Class A, Lesson 1

Teacher:	Try to give a good guess right? Okay, give it a good guess kay. And then after that when you come to the questions what do you do?
Charlie:	Read.
Teacher:	Read and?
David:	Write the keyword.
Edward:	Highlight.
Teacher:	Highlight the keywords and go back to the text and from there on, you can find the answer okay.

Figure 13. Extract from Class B, Lesson 4

teacher repeatedly prompted students to take note of important keywords in the passages and questions by highlighting them. In doing so, she have been consistently repeating the words 'highlight' and 'keyword' during her lessons.

These guided her students in their search for answers in the passage. By the fourth lesson, as seen in the extract from Class B, Lesson 4 (Figure 13.), the students were able to independently process the steps needed to answer a comprehension question aided by the consistent prompts provided by the teacher.

iv. Labelling of paragraphs

The last specific observation identified was how the teacher was consistent in asking the students to number the paragraphs when reading a comprehension text. Throughout the lessons, the teacher seemed to be emphasising on the importance of labelling the paragraph numbers of the reading comprehension passages. An extract from Class A, Lesson 1 (Figure 14.) revealed how the teacher was guiding the students in searching for their answers from the relevant paragraphs.

The extract from Figure 14. reveals how the student realised that it would be easier to search for answers if she knew which paragraph the question was referring to. Another extract from the fourth lesson of the same class (Figure 15.) demonstrated how the students were able to identify 'Paragraph 5' in the question as an important keyword, and subsequently narrowing down their search to paragraph 5 of the passage.

Summary

Classroom observations have highlighted several key features of the EESP and underlying teaching processes that are consistently evident and practised in the lessons delivered. These were earlier labelled as general observations. Both the teacher and students were observed to be closely guided by the RIMAIR approach which emphasises a review of

Teacher:	*(Laughs)* made up of is embalmment? Are you sure?
Alice:	*(Looks at worksheet)* no it's...
Teacher:	'Made up of' is not in that paragraph right? You're supposed to look at which paragraph?
Alice:	It doesn't say.
Teacher:	It's, it does! *(Points to worksheet)* paragraph three!
Alice:	Oh okay *(flips worksheet to front)* it's composed.
Teacher:	Yes.

Figure 14. Extract from Class A, Lesson 1

Teacher:	Now uhm question number two.
Teacher:	Based on paragraph five, state two things that Cara had to do before she...
Ben:	Paragraph 5. *(Student able to remind himself to search for keyword and find answers from the correct paragraph)*
Teacher:	Paragraph 5, good, some more?

Figure 15. Extract from Class A, Lesson 4

concepts and skills taught previously and during the lesson and gives opportunities for teachers to teach new concepts or skills by modelling them explicitly and enable them to monitor students' understanding through semi-independent and independent application. Two other distinct features observed are the teacher's attempts to appeal to students' VAKT modalities in her efforts to engage them, thereby facilitating a greater understanding and retention of concepts, as well as the practice of giving verbal praises and affirmation with every positive effort and response demonstrated by her students throughout the lesson.

Apart from these, there have also been several aspects of the teacher's classroom practices (the specific observations) that were observed to have been demonstrated which align with the 'Model (M)', 'Application (A)' and 'Independent (I)'aspects of the RIMAIR approach. For example, students who initially did not have the habit of asking questions and using words in text as clues

Table 7. Summary of classroom practices observed.

GENERAL OBSERVATIONS	SPECIFIC OBSERVATIONS
RIMAIR approach	Getting students to question
VAKT	Using contextual clues
Emotionally sound	Repetition of keywords
	Labelling of paragraphs

to help them predict the meaning of unfamiliar words are later observed to be able to recall the thought processes modelled by their teacher and more importantly, become more self-initiated to look for contextual clues in the last lesson.

The teacher's repetitive use of words such as 'highlight and keywords' and consistent practice of asking students to label the paragraphs on comprehension passages have also enabled them to independently apply these routines when approaching questions and locate the accurate section of text referred to in questions with less hesitation.

Discussion and Conclusion

Results obtained from the quantitative data collection procedures demonstrated that the students who underwent the EESP have significantly improved in their test scores after a 20 week intervention. On top of this being consistent with the study conducted by Leong (2015), the results of this study provided a more robust evaluation of the EESP since the experimental design includes comparisons with a control group.

The longer period of 20 weeks between the Pre Test and Post Test in comparison to 10 weeks in the previous study (Leong, 2015) suggests a consistent retention of concepts and skills over a longer period of time which play practical importance as students will need to remember and bring with them the concepts and skills they have learnt in the EESP into their exams.

The qualitative results obtained from the classroom observations revealed trends that could be categorised into general observations and specific observations. The general observations describe a consistent teaching style that was observed throughout the classes. This explains a certain teaching habit or value system that the teacher follows. The specific observations were useful in pointing out actual teachable incidences, tracking and understanding the progress of the students in the classroom. As described in detail in the results section,

each of the specific observations made recorded progress in a student's learning in the classroom. All of these observations seem to revolve around scaffolding students into establishing their own metacognitive strategies in answering English questions. Students were seen to progressively be more able to think and complete activities more independently. These scaffolding processes are collectively systematic, repetitive and progressive.

Careful analysis of the general and specific observations revealed an interesting emerging trend. That is how they seem to match the OG principles. Figure 16. illustrates how each of the observations relates to some of the OG principles.

This was an interesting discovery since although the designed EESP curriculum was planned with the OG Principles in mind, the study revealed how the administration of the OG principles in the classroom by the teacher is equally or possibly even more important for the success of the students in the programme than the curriculum. This reveals the importance of a teacher's ability to administer a lesson adhering to the OG Principles.

The importance of administrating an OG based classroom could be due to how learners with dyslexia as defined earlier by the BDA have difficulties with a range of several language and cognitive abilities, impeding them from understanding and producing exam concepts and answers (Crisp et al., 2012).

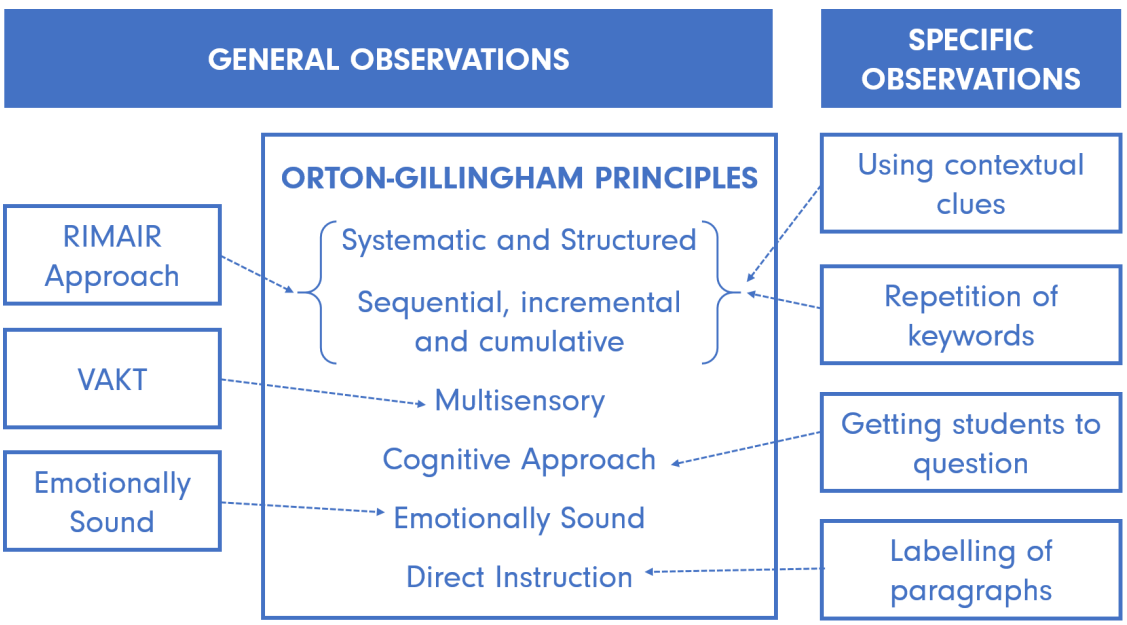

Figure 16. Relationship between results of the classroom observation and the Orton-Gillingham Principles.

The systematic approach of the OG principles provides learners with dyslexia the opportunity to learn in a more systematic and progressive manner.

While EESP teachers were trained to teach their classes using the RIMAIR approach, they also had prior training in the organisation when they were initially recruited, and at least a year of teaching experience in DAS before they started EESP classes. This initial training and experience provided these teachers with the background knowledge and the expertise to administer a class or an intervention programme in an OG based manner. It is through this study that revealed how the initial teacher training and the practical teaching experience play important roles in building up a teacher's ability to conduct an OG based class, and provided a common value system on pedagogical practices amongst the teachers in DAS. This would as Kiss and Lin (2016) suggested foster an effective language teaching environment for learners with dyslexia.

The results of this study, together with the understanding of the relationship between the observed classroom practices and the OG approach suggests that the key to the success in the Exam Skills programme lies in an OG based teaching practice of EESP teachers, on top of the curriculum design. These can provide pedagogical implications on teaching practices globally throughout the field of special education. Curriculum developers, teachers and practitioners should take into account understanding the needs of learners in developing a curriculum specifically designed for any group of learners with specific learning difference. On top of looking into the curriculum, these stake holders should also understand the importance of establishing a common value system or teaching practice throughout their school or community. Teachers in the school or community should not only be familiar with the curriculum they will be teaching, they should also be taught specific teaching practices.

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