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Evaluating the Impact of the delivery of Synthetic Phonics Teaching on the Acquisition of Upper and Lowercase Recognition Skills of Omani Third Graders

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ABSTRACT

Letter name knowledge is regarded as being among the soundest indicators of later reading skill and an imperfectly established alphabetic knowledge is a well-known predictor of future reading challenges. Hence, the purpose of this study was to evaluate the effectiveness of a synthetic approach to phonics, specifically Jolly Phonics (JP), to determine its contribution to Omani third graders' acquisition of uppercase (UC) and lowercase (LC) recognition. The study sample consisted of 117 Omani male and female third graders in two cycle one schools in Al-Dhahira Governorate in the Sultanate of Oman during the academic year 2019/2020. The study employed a quantitative descriptive research design, in which data was collected using an UC and LC letter recognition test. The findings revealed that the although the third graders in this study's sample have on average achieved the JP programme's objective in terms of UC and LC letter recognition skills, not all students have achieved the minimum required level in this literacy skill; whereby 43.6% of the students were below the minimum required level and the remaining 56.4% of students were at or above the minimum required level. Besides, there was a statistically significant difference between third graders' scores in UC letter recognition and LC recognition in favour of UC letters. The study concluded with a set of recommendations for the MOE and English teachers, in order to develop the delivery of synthetic phonics teaching as a literacy-enhancing approach, namely JP, in the Omani context. To the best of the researchers' knowledge, this study is important for being the first to evaluate the impact of the delivery of synthetic phonics teaching (i.e. JP programme) on the acquisition of upper and lowercase recognition skills among Omani EFL third graders since the programme's implementation in 2014.

Key words: Jolly Phonics, Letter-name Knowledge, Literacy, Lowercase, Synthetic Phonics, Uppercase

INTRODUCTION

Within the field of early literacy, alphabetic knowledge involves familiarising learners with letter names and forms, and their matching sounds, which is achieved via recognition, construction, and writing tasks. Previous research demonstrated that pre-schoolers with poor alphabetic knowledge tend to struggle when learning to read, and can be categorised as 'at-risk readers' (Torppa et al., 2006). Moreover, the effect of this lack of knowledge appears to continue, predicting reading accomplishment from the start of schooling to grade seven (Blatchford & Plewis, 1990). Such reading disabilities mean that these children fall behind their peers, resulting in gaps in other skills, including vocabulary, spelling, reading fluency, and comprehension skills (Stanovich, 2009).

Alphabet knowledge encompasses recognition of the alphabet, identifying the names and sounds of letters, and producing letters (Scanlon et al., 2016). Among these skills, letter-name knowledge is fundamental, since the names of letters typically signify their corresponding sounds, and learners appear to use this knowledge for the purpose of learning letter sounds (Treiman et al., 1998). For instance, identifying the letter b assists the learner to remember its sound, /b/. It is suggested that when children spend time on this task, they have less time and energy available for using other decoding and writing strategies. Therefore, automaticity in recognising letters enhances the development of reading and writing skills. According to Trehearne (2011), fluency rather than accuracy in naming letters gives children an advantage when learning to read and write. This suggests that a learner with the ability to identify most letters easily has more time to learn about sounds and spellings, compared with a learner who still needs to exert effort to recall letters. In other words, an understanding of phonemically structured representations, together with letter-sound knowledge, is a precondition for learning to read and spell effectively (Andambi & Kariuki, 2013).

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Statement of the Problem

JP is a synthetic phonics programme piloted in Oman in 2013-2014, and then rolled out to all government schools from 2014-2015. Since the implementation of the JP programme, there have been no systematic efforts to evaluate its impact on students' literacy skills in the form of reliable quantitative data. Such knowledge could be used to enhance the implementation and overcome associated challenges. Moreover, investigating the effectiveness of JP has received minimal attention within the Omani context. There has been just one quasi-experimental study having examined the effectiveness of JP integration on phonemic awareness, phonics identification and word reading among 50 Omani first graders (Al-Mamary, 2012). Besides, an unpublished Master's thesis examined cycle one teachers' beliefs, practices and the contextual challenges they face when implementing the JP programme using a qualitative design, involving four EFL language teachers from two cycle one schools in Muscat Governorate (Al-Khaldi, 2019). Therefore, in order to address the lack of Omani studies in this area while taking into consideration the findings from previous Omani studies, this in-depth study advanced previous research by examining the effectiveness of the JP synthetic phonics approach on improving the letter-name knowledge of third graders

Significance of the Study

Considering there is a lack of Omani studies in this area, the study is expected to provide insights into the extent to which third graders successfully meet the criteria set out in the programme's objectives after completing the two-year programme in terms of UC and LC recognition. Thus, it serves as a guideline to assist Omani EFL teachers when determining which activities to focus and build upon, and which activities need to be changed, as it will increase their consciousness of the significance of alphabetic knowledge as a significant constituent of successful reading and spelling skills. Additionally, it will supply researchers, programme developers, and educators with supplementary data to enable them to modify or adopt certain literacy practices within the programme, by identifying gaps in the students' alphabetic knowledge, which in turn will help them maximise their chances of success by proposing possible ways to address them.

Purpose of the Study

The study aimed to analyse and evaluate the effectiveness of a synthetic approach to phonics, i.e. "Jolly Phonics", emphasising how the programme contributes to the attainment of UC and LC recognition skills for Omani third graders. This has been achieved by comparing students' performance in these skills with the intended programme objectives set by the MOE. In addition, the study is expected to provide insights into the extent to which third graders successfully meet the criteria set out in the programme's objectives concerning the letter name knowledge after completing the two-year programme. Thus, it serves as a guideline to assist Omani EFL teachers when determining which activities to focus and build upon, and which activities need to be changed, as it will increase their consciousness of the significance of letter knowledge as a significant constituent of successful reading and spelling skills. Additionally, it will supply researchers, programme developers, and educators with supplementary data to enable them to modify or adopt certain literacy practices within the programme, by identifying gaps in the students' letter knowledge skills, which in turn will help them maximise their chances of success by proposing possible ways to address them.

Questions of the Study

This study has been designed to answer the following question:

To what extent does the synthetic approach to phonics, JP, impact Omani third graders' uppercase (UC) and lowercase (LC) recognition when compared to the programme's objectives?

LITERATURE REVIEW

Importance of Letter-name Knowledge

Kindergarteners' letter name knowledge is regarded as being among the soundest indicators of later reading skill (Foulin, 2005), and an imperfectly established alphabetic knowledge is a well-known predictor of future reading challenges (McCardle et al., 2001). Some previous researchers argued that there is a causal correlation between letter-name knowledge and reading, suggesting that letter-name knowledge helps to bridge the disparity between speech and print (Levin et al., 2002). In contrast, other researchers argued against a causal relationship, claiming that the perceived relationship between letter-name knowledge and reading can be attributed to the point that the families that encourage mastery of letter names during the pre-school years are the same families in which academic accomplishment is emphasised (Benson, 2011). In fact, some proposed that letter-name instruction might be downright harmful to learners during the initial stages of learning to read (Feitelson, 1988). However, this lacks veracity when considering the fact that many letters contain phonological clues that help children to create connections between these letters with their corresponding sounds.

Although learning UC letters is important, LC letter recognition is a critical ability for reading (Adams, 1990), because much of a text is comprised of LC letters (Worden & Boettcher, 1990). In their study, Jones and Mewhort (2004) explored the rate of occurrence of UC and LC characters, and found that LC letters appear nearly 17 times more frequently than UC letters. Moreover, many researchers agreed that an influential phase during a beginner's literacy development is recognising that the alphabetic system characterises spoken sounds using symbolic figures (Foulin, 2005). Knowledge of UC and LC forms by name constitutes a vital element in mastering letter names; because reading development entailing the symbolic awareness of letters can be impeded due to deficient knowledge of both forms (Treiman & Kessler, 2004). Familiarising learners with the visual shapes of letters is therefore a requirement for learning to read (Adams, 1990), and an important aspect of acquiring letter names is to differentiate between their shapes and their associated sounds. Thus, letter-name knowledge accelerates the alphabetic principle's attainment.

Approaches of Letter-name Instruction

There is currently no clear consensus regarding the appropriate approach for letter name instruction (Justice et al., 2006). While some curricula propose a defined order for teaching LC letters (Lehr, 2000), others propose introducing LC before UC letters (Gerde et al., 2019). Moreover, while some curricula emphasise the teaching of letters alphabetically, others concentrate on letters that appear regularly, or follow a defined sequence (Justice et al., 2006). Previous research suggested that letters are not equivalent, in terms of their difficulty (Arciuli & Simpson, 2011), as certain features of a letter can influence the potential to name it correctly (Evans et al., 2006). Therefore, a number of letter sets may be more easily recognisable, and do not require as much time to learn as others, for instance ***Oo*** and ***Xx***, whereas extra emphasis is required for learning other pairs, such as ***Bb,*** and ***Dd***. Moreover, Worden and Boettcher (1990) believed that the letter pairs that children find easy, or difficult, to recognise tend to be the same in adulthood. Consequently, time should be allocated according to the difficulty level that letters present, in order that letter-name teaching and learning is effective (Piasta & Wagner, 2010). However, this aspect of letters' differential difficulty levels is not considered in JP alphabet teaching, rather letter names are introduced and practised in their alphabetical order.

Factors Contributing to Letter-name Knowledge

Letter-confusability factor

In terms of the aspects that make learning some letter names easier than others, letter confusability is a factor. Whether this is due to either their visual or phonological similarity, or their UC-LC similarity, this is a significant contributory factor to accurate letter naming, a fact supported empirically by the majority of researchers. Concerning the letter confusability factor, Treiman and Kessler (2004), found out that one aspect involved is the degree of visual similarity when compared with other letters, and Huang et al. (2014) named this factor 'the letter-confusability factor'. Similarly, other studies proposed that letters that are visually or phonetically similar might be confused with other letters (Ehri & Roberts, 2006; Levin et al., 2008; Treiman et al., 2006), indicating that letters that are shaped distinctively, for example an LC ***s*** might surmount letters that are similarly shaped, such as an LC ***d***. Moreover, LC letters can be confused (Block & Nell, 2015) when compared with UC letters, which tend to be graphically distinctive (Ehri & Roberts, 2006). For example, the UC letters ***B, D, P,*** and ***Q*** are more distinguishable in terms of their visual distinctiveness than their LC counterparts, ***b, d, p***, and ***q***. Several previous studies highlighted the visual misperceptions of LC letters (Block & Nell, 2015; Evans et al., 2006), as well as those of UC letters (Treiman et al., 2006). In their study, Huang et al. (2014) coded LC letters in terms of their visual confusability as "not often confused such as ***o, r, x***, sometimes confused such as ***a, c, e, f, s, t, y, z***, often confused such as ***i, j, k, l, m, w***, and very often confused such as ***b, d, g, h, n, p, q, u, v***" (p. 10).

As well as misperception due to visual similarity, previous studies also addressed phonological similarity as an additional cause of confusion (Treiman et al., 2006). Phonological similarity was found to have a significant impact when letter-names were phonologically like other letters names, resulting in fairly poor learner performance. In their study, Treiman and Kessler (2003) found that letters are more likely to be confused when they share sounds with other letters, such as ***b–p, a–h***, and a subsequent study replicated this finding, demonstrating that the visual and phonological misperception caused UC letters to be less widely recognised (Treiman et al., 2006). In an attempt to classify the sounds that letter-names share, Huang et al. (2014) classified a letter as phonologically confusable when letters share sounds in the same position, namely the first, second, or third phoneme, such as **P**/**pi**/, which is phonologically confusable because it shares a sound with other letters in the second position, for instance ***B*/*bi*/, *T*/*ti*/,** and ***V*/*vi*/**. Accordingly, only the letters ***e, o, i, r, u***, and ***y*** can be labelled as phonologically distinctive.

UC-LC similarity

Another potentially important factor is the degree of similarity between a letter's UC and LC shape, such as ***O-o*** and ***C-c***. It is assumed that UC and LC letters with a similar form tend to be easier to identify than letters with relatively divergent forms, and vice versa (Treiman & Kessler, 2003). This is referred to as UC–LC similarity, indicating that there is a greater chance of appropriately identifying the letter when an LC letter shape is like its UC equivalent. In their study, Treiman and Kessler (2003) examined the impact of the UC–LC similarity factor among American and Australian preschool children, and found that whether the LC letter had a similar shape to its UC counterpart played a key role in influencing children's performance when naming letters. In a later study, Treiman and Kessler (2004) re-examined the two groups of pre-schoolers, and found that UC and LC letter pairs that were visually similar tended to be more accurately recognised than UC and LC letter pairs that were visually different. Meanwhile, Evans et al. (2006) also found that the percentage of correctly named letters was high when there was a strong UC–LC similarity, with the exception of the letter pair ***U-u***, and Turnbull et al. (2010) observed that visually similar UC and LC letters have a higher probability of being appropriately recognised by kindergarteners. Since these findings provide compelling evidence of the impact of the UC-LC similarity factor in accurate letter recognition, this should be considered when planning the teaching of UC and LC letters in the JP programme.

Letter-frequency factor

Other factors discussed by previous studies were the letter-order factor and the letter-frequency factor, although not all of the studies concurred regarding their contribution to learning, with some offering support for their significance, while others did not. The studies that addressed the letter-order factor suggested that letters that appear at the start of the alphabet have a great likelihood of being identified than those that follow, such as in ***a*** versus ***b***, ***d*** versus ***e***, and ***m*** versus ***n***. According to McBride-Chang (1999), this may be a consequence of familiarity with the alphabet song, of the introduction of letters alphabetically by some literacy programmes, or of the emphasis on the start of alphabet chain during alphabet instruction. In a later study, Treiman and Kessler (2003) explored this supposition and concluded that the position of alphabetic letters did not have a significant impact, in terms of whether the letter belonged to the first half of the alphabet, namely ***a*** to ***m***, or the second half of the alphabet, namely ***n*** to ***z***. In a study conducted with Canadian pre-schoolers, Evans et al. (2006) also found that there was no statistically significant association between the sequence of letters and LC letter recognition. However, in contrast, Justice et al. (2006) found evidence to support the letter-order supposition, demonstrating that the letter ***A*** was 1.5 times more likely to be recognised than the letter ***Z***. These differing findings concerning the letter order supposition may to an extent explain why some children find it easier to recognise letters that are earlier in the alphabet, which is to say why the letter-order factor affects their letter-name knowledge, while it has no significant impact on other children's learning. Moreover, the differing results also suggest that the letter-order factor varies according to the context, which is to say that the approach employed for teaching the alphabet by different literacy programmes, as well as the degree of emphasis placed on certain letters during alphabet instruction, are both intervening factors in children's letter-name knowledge.

Meanwhile, previous studies also found that letter frequency is associated with success in naming letters (Turnbull et al., 2010), hence the possibility of a learner naming a letter appropriately appears to be higher when a letter is present more frequently in print. According to Treiman et al. (2006), parents and teachers tend to discuss letters that appear commonly in print, which subsequently attract children's curiosity. As children are exposed widely to writing at home, or in school, it might be expected that their performance will be higher for regularly seen letters than for those to which they are less frequently exposed (Treiman & Kessler, 2011). However, a recent study signposted that the relationship between a letter's rate of recurrence, and the ease of naming that letter, tended to be low and nonsignificant (Bowers, 2020). This was supported by a former study conducted by Treiman and Kessler's (2003), who investigated the impact of letter frequency on American and Australian pre-schoolers, and concluded that it was not a significant indicator of letter-name knowledge. This concurred with the findings of Evans et al. (2006), who asserted that the correlation between letter frequency and the proportion of learners correctly identifying a letter's name was not statistically significant. Although some studies in the field have failed to provide strong evidence regarding the relationship between letter frequency and letter naming knowledge, others have succeeded in providing a degree of evidence. For instance, Treiman et al. (2006) determined that the number of learners in their study who were able to identify UC letters increased when the letters occurred frequently. This constructive relationship between letter-name identification and letter rate of recurrence was also supported by other studies, such as that conducted by Turnbull et al. (2010), who found that LC letters were 1.05 times more recognised when their frequency of recurrence was high. Moreover, the findings showed that the most recurrent LC letter, ***e***, was 3.8 times more recognised than the least frequently recurring letter, ***q*** (Turnbull et al., 2010).

As discussed previously, multiple factors contribute to letter-name knowledge, some of which are related to the letter itself, such as visual and phonological similarity to other letters, UC-LC similarity, and letter order, and some are environmentally determined, such as letter frequency. Although the findings of previous studies indicated that all these factors contribute to letter-name knowledge, UC–LC similarity, along with the letter-confusability factor, appear to contribute most highly to accurate letter recognition, whereas phonological confusability, letter sequence, and letter frequency appear to have a smaller effect size in comparison (Treiman & Kessler, 2003).

Relationship Between Letter-name Knowledge and Reading

Letter-name knowledge has an indirect influence on learning to read, in terms of its facilitation of letter-sound knowledge, hence it might be assumed that knowledge of letter sounds can assist reading skills (Teirman and Kessler, 2003). In their study conducted with Brazilian Portuguese-speaking learners, Cardoso-Martins et al. (2011) found that the learners were able to create sound-based networks by using their letter-name knowledge to assume basic spelling, with graphemes corresponding to phonemes, rather than letter names. The potential advantage of letter-name knowledge for reading growth can be determined by a learner's phonological awareness, which entails the ability to isolate sounds in a letter's name, and hence results in acquiring and solidifying awareness of letter-sound correspondences (Evans et al., 2006). In an experimental study, Share (2004) found that there was a correlation between phonological awareness and acquisition of letter-sound correspondences when letter names incorporated the sound of the letter.

Moreover, previous research suggested that letter-name and letter-sound knowledge have a reciprocal interaction (Treiman & Kessler, 2003), which Evans et al. (2006) found to be as high as 0.88. In a study involving English speaking pre-schoolers conducted by Kim et al. (2010), the results indicated that the likelihood of a learner recognising a letter sound increased from 4% if a letter name was unfamiliar, to 63% if it was known. Similarly, previous studies proposed that when the letter name is known, children are more likely to know its letter sound (Ehri, 1983; Treiman et al., 1998), while other studies argued for a causal effect of letter-name knowledge, due to the possibility of predicting letter sounds via the names of letters, but not contrariwise (Kim et al., 2010; Share, 2004).

Meanwhile, a growing body of research proposed that letter-name instruction can accelerate letter-sound recognition, particularly for letter-names that incorporate their sounds, such as /***b***/ in the initial part of the letter name ***b***, or /***f***/ in the last part of the letter name ***f***, as learners employ this phonological information to derive matching sounds (Levin et al., 2006).

METHODOLOGY

Research Design

This study applied a quantitative descriptive research design, and was conducted in four grade three classes from two cycle one schools in Al-Dhahira Governorate. The students in all four classes had completed the synthetic phonics programme, JP alongside the EFM syllabus over the two previous years; that is, when in grades one and two. The rationale for the choice of design is various. First, the study sought to describe quantitatively the impact of the synthetic phonics teaching approach, JP, on Omani third graders' UC and LC recognition. The quantitative descriptive research design is ideal for systematically investigating phenomena by collecting data quantifiably, and subsequently analysing that collected data using statistical techniques, which can be presented numerically (Aliaga & Gunderson, 2002; Nassaji, 2015). Quantifiable data was collected for this study to evaluate third graders' performance across the different previously identified variables, and then a statistical analysis of the data was carried out to allow a numerical representation of the results.

Additionally, within quantitative research, generalisation has been broadly accredited with being a quality standard, since it implies the need to derive inferences based on observations (Polit and Beck, 2010). Among the different types of generalisation, statistical generalisation supports inferences from the sample to the wider population, primarily when the sample is representative of the population, i.e. when individuals in the sample share the same characteristics as the population. Hence, the findings obtained can be generalised to the larger population of Omani third graders from which the study sample was selected. Moreover, there exists a wider scope for data collection within this type of research design, in which structured procedures and techniques can be implemented to gather data from larger samples, representative of the entire population (Lowhorn, 2007). This implies data was collected from 117 third graders, who represented the entire population of third graders. In quantitative designs of a descriptive nature, the variables under investigation are typically not controlled or manipulated, rather they are mainly observed and measured, as they emerge within a naturalistic setting (McCombes, 2020). Due to the features of this type of research design, it is usually the best option when there is insufficient knowledge about the topic being researched, as the results attained then assist in determining the corresponding decisions.

Population and Sample

The population of this study consisted of all male and female third graders studying EFM textbooks, who had previously covered the JP two-year programme in Omani Basic Government Schools for the academic year 2019-2020. Four third grade classes from two cycle one basic schools in Al-Dhahira Governorate participated in this study, which included a total of 117 male and female third graders from Al-Masarat and Al-Baraem cycle one schools. Both schools are located in the centre of Ibri Wilayat and include grades one to four. There were 62 male and female third graders in the two classes from Al-Masarat school, and 55 male and female third graders in the two classes from Al-Baraem school. There were 54 female (46.2%) and 63 male (53.8%) participants in the study, ranging in age from seven years and 10 months to eight years and seven months, with a mean age of 8.01 years and a standard deviation of .45 years. No students were excluded from the study, based on language or special education status.

Research Instruments

Description of UC and LC letter recognition test

The UC and LC Letter Recognition Test was adapted from the Phonological Awareness Interventions for the Regular Classroom Teacher 2nd Edition (Santos, 2012), and was used to measure JP's impact on students' performance when identifying UC and LC. The test comprised two sheets: The student's version (Appendix A), and the examiner's recording sheet (Appendix B). The student's copy of the test included 26 UC and 26 LC letters presented randomly, which the students had two minutes to study and then say the name of each letter, not the sound.

The student's copy was designed so that it could be clearly read by third graders, also taking into consideration Alfred Font, used in both the EFM Omani syllabus and the JP student's phonics handbook. It should be noted that the original font used in JP was Sasoon Font. However, it was modified to Alfred Font in the MOE students' phonics handbook, because cycle one students became accustomed to the latter font. Regarding the recording sheet, this was used by the examiner to record the students' responses and later for the data analysis. This test was administered individually to assess the student's ability to identify UC and LC letters.

Validity of the test

The validity of the test was established by 11 jury members: an instructor from the College of Education; an instructor from the College of Arts at Sultan Qaboos University; three English supervisors from Al-Dhahira Governorate, an English supervisor from Al-Batina Governorate, and another English supervisor from Al-Dakhilya Governorate; two senior English teachers from Al-Dakhilya and Al-Batina Governorates; an experienced cycle one English teacher from Al-Dhahira Governorate; and a trainer for MOE English courses, with a PHD degree, from the Ibri Training Centre. The jury members agreed on the suitability of the font used and they confirmed the test items covered letters taught as part of JP programme. There were minor suggestions made regarding the layout of the test, which were accounted for in the final version.

Reliability of the test

The reliability of the test was determined using a test-retest reliability pilot assessment with a random sample of 20 third graders attending Al-Masart school. The students were selected randomly from among third graders within the same school; but were not from either of the two classes that participated in the main study. The pilot sample was tested for the first time on 30th and 31st of October 2019, and then re-tested 10 days later on 11th and 12th of November 2019. The Pearson correlation coefficient between the test and retest scores was computed and was found to be highly reliable (52 items; r = .926).

To establish the inter-rater reliability of the test, an English cycle one senior teacher was recruited, based on her JP teaching experience as well as general competence. Next, this rater was trained and familiarised with how to use the test, and asked to identify any ambiguities. After this, a random sample of 10 third graders attending Al-Baraem school was selected to participate in piloting to determine the inter-rater reliability for the test. After this, the researcher, along with this rater, contributed to administering and scoring the test by collecting data from the pilot sample. Each rater had a separate recording sheet for each student, upon which they could record and score each student's responses during the test's administration and scoring process. Note that these procedures adhered exactly to the procedures for the test's administration and scoring, as presented in section 3.4.2 After collecting data from the 10 participants, the scores calculated for each rater's recording sheets were computed in SPSS, after which the inter-rater reliability for the test was also calculated using SPSS and found to be high (r = .993).

Research Stages

After obtaining Institutional Review Board approval from the MOE regarding the implementation of the study, the data collection commenced and lasted for 10 weeks. The first two weeks of the study's implementation were devoted to checking the reliability of the research instruments. In the third and fourth weeks, the participating schools were selected, and statistical analyses of the sample's equivalence were conducted. The test administration and scoring phase took approximately a week.

Participating schools and sample's selection phase

After checking the reliability of the test, the participating schools were chosen, and equivalence of the study sample evaluated where this phase took two weeks. The participant selection method was conducted purposively based on the total number of students in each school, the number of years studying JP, and the students' demographic characteristics. Therefore, the first step was to contact the planning department at the General Directorate of Education in Al-Dhahira Governorate to gather information about the total number of students attending each school, as well as the order of cycle one schools regarding the number of students. Based on the data provided by the planning department, Al-Masarat and Al-Baraem schools were equivalent in terms of total student numbers (i.e. there were 638 students at each school). Regarding the number of years studying JP, the third graders had studied the two-year JP programme at both schools over the same period of time; i.e. in grades one and two. With regard to demographics; both schools are located in the centre of Ibri Willayat and the distance between the two schools is approximately half a kilometre. Most of the students attending both schools came from similar backgrounds in terms of socioeconomic status and parents' level of education.

The next step, after selecting the participating schools, was to choose two classes from each school to participate in the current study. In order to ensure the equivalence of the selected sample, four grade three classes were selected based on their grade two end-of-year scores. Following class selection, an independent sample t-test was performed to determine the equivalence between the two selected classes at each school with regard to the students' English language skills. Table 1 provides a summary of the Means and Standard Deviations for the grade two end-of-year scores for the two selected classes at each school

According to Table 1, there were no statistically significant differences between the two classes from a single school regarding their grade two end-of-year results. After establishing the equivalence of the two classes in each school, a one-way analysis of variance was conducted to examine the differences in English language skills across the four classes. Table 2 presents the means and standard deviations for the four classes according to their grade two end-of-year scores.

According to Table 2, there were no statistically significant differences between the four classes; F (3, 110) = .226, p=. 878. This means all four classes were equal regarding their English skills, thereby establishing equivalence.

Table 1. Means and standard deviations of grade two end-of-year scores by class

School	Class	n	M	SD
A	Class 1	31	86.93	12.73
	Class 2	31	85.22	14.99
B	Class 3	27	85.34	10.99
	Class 4	28	87.46	11.46

*p<0.001

Table 2. Means and Standard Deviations for the Four Classes Based on Their Grade two end-of-Year Scores

Class	n	M	SD
Class 1	31	86.93	12.73
Class 2	31	85.22	14.99
Class 3	27	85.34	10.99
Class 4	28	87.46	11.46

*p < 0.001

The test's administration and scoring phase

After establishing equivalence between the four classes participating in the current study, the researcher began the test's administration and scoring phase. The administration of the test and the related scoring phase lasted for a week, during which the administration and scoring lasted three days for each participating school. The test was administered by the researcher where it included two sets of materials; a recording sheet on which the examiner recorded each student's responses and a test paper including all the UC and LC letters. Prior to the test's administration, the researcher prepared the necessary materials, including a clipboard, a stopwatch, and a scoring pencil.

When the student was invited to enter the testing hall, s/he was asked to sit face-to-face with the examiner at a small table, so as to be able to see the student's face and hear clearly what the student was saying. Additionally, the examiner held the clipboard in such a way that the student could not see what was being written down. This test was administered individually, and took around 5 minutes maximum for each student. The first stage was to provide clear instructions in Arabic to each student about the test, and the researcher then illustrated through examples that the student should provide the letter name, after studying the letters for two minutes, but not the sound. When the students responded, they were offered neutral responses in the form of compliments of their efforts, rather than giving indications about whether they were right or wrong. At the same time, the researcher recorded the students' responses on the recording sheet.

Data Analysis

Finally, the statistical software programme, SPSS was used to analyse the data obtained from the test. In order to answer the research question, a one-sample t-test was used to compare the third graders' performance in the skills targeted in the research question, with the minimum required level for these skills. Moreover, descriptive statistics were also obtained to specifically analyse and evaluate the effectiveness of JP in terms of how the programme has contributed to the Omani third graders' UC and LC recognition.

FINDINGS AND DISCUSSION

The Impact of Synthetic Phonics Teaching on Omani Third Graders' Upper and Lowercase Recognition Skills

This study asked, "to what extent does the synthetic approach to phonics, JP, impact Omani third graders' UC and LC recognition skills when compared to the programme's objectives?" This question aimed to assess and evaluate third graders' UC and LC recognition by administering the UC and LC Letter Recognition Test, whereby data was collected regarding the number of UC and LC letters students could recognise accurately. The data was analysed using a one-sample t-test to compare the performance of third graders in the study sample with the minimum level required for passing in all language skills, as established by the Omani MOE.

Therefore, this question was answered in reference to the assessment specifications established by the MOE in the Student Assessment Handbook (1- 4) (Directorate General of Educational Evaluation, 2016), which indicated the minimum required level for passing to be 50% in all language skills. Hence, 50% was used in this question as the minimum required level set by MOE to evaluate students' performance in UC and LC recognition. The next step involved calculating students' mean scores in these skills, and then comparing the obtained scores with the minimum required level, using a one-sample t-test to present the general estimated effect of this programme on third graders for the targeted literacy skills. Additionally, descriptive statistics were used to analyse the specific impact of the programme on these skills independently.

Findings of the One-sample *t*-test

Regarding the one- sample t-test, since the total mark for the test was 52, the test value of the one-sample t-test was set at 26. This implies the required pass mark of the test, when compared to the minimum required level set by the MOE is 26 or above.

Table 3 presents the results for the one-sample t-test for the test. Table 3 shows that although the mean score for students' performance on this test was 27.29, which was more than the minimum required level of 26 (i.e. 50% of the test's total mark) this difference was not statistically significant. Thus, the third graders in this study on average achieved the JP programme's objective in terms of UC and LC letter recognition.

Findings of the Descriptive Statistics

Descriptive statistics were used to analyse the specific impact of JP on UC and LC recognition. The students scored between 0 and 50, with a mean score of 27.29 and a standard deviation of 13.12. This indicates that not all the students had successfully achieved the minimum required level in this literacy skill; as 43.6% of students were below the minimum required level, having scored between 0-25, and the remaining 56.4% of students were at or above the minimum required level having scored 26 and above.

This weakness in recognising letter names could be attributed to the delay in introducing Omani young learners to the alphabet, letter names and UC letters which is first done in grade two. According to the EFM scheme of work, the alphabet and UC letters are introduced in grade two. Similarly, the alphabet and UC letters are only introduced after

Table 3. One-sample t-test results for the differences between the UC and LC letter recognition mean scores for Omani third graders and the 50% level set by the MOE

Tested skill	*N*	*df*	*M*[a]	*SD*	*t*	**p-value*
Total correct UC and LC	117	116	27.29	13.12	1.064	0.290

[a] Minimum required mark = 26
*$p < 0.001$

sound set five in JP (i.e. after students start to learn diphthongs in grade two), because it is assumed that once the students have mastered the basic consonant and vowel sounds, it is necessary to know the names of the letters constituting the sounds for spelling words containing these letter sounds. Therefore, grade two semester one phonics lessons provide students with additional opportunities to practise and learn the alphabet and UC letters. However, it is questionable if such a practice is sufficient, as there are only two weekly phonics lessons that include 10 minutes maximum for introducing and practising the alphabet. These results support what Piasta and Wagner's (2010) asserted regarding the need to allocate time according to the relative difficulty these letters present, in order for letter names teaching and learning to be highly effective.

The Frequency of Correctly Identified UC and LC Letters by third Graders

Figure 1 details the frequency of correctly identified UC letters in the test as noted by third graders in the sample (see Appendix C for the computed frequency scores and percentages of UC letters).

According to Figure 1, the UC letters most often correctly identified by third graders were ***O*** (98.3%), ***X*** (80.3%), ***S*** (74.4%), ***P*** (71.8%), ***B*** and ***F*** with the same percentage of 70.9%. The six UC letters correctly identified least often were ***J*** (6%), ***Y*** (17.1%), ***G*** (30.2%), ***W*** (35%), ***Q*** (38.5%) and ***U*** (39.3%).

Figure 2 presents the frequency of correctly identified LC letters in the test (see Appendix C for the computed frequency scores and percentages of LC recognition).

According to Figure 2, the LC letters most often correctly identified by third graders were ***o*** (98.3%), ***x*** (82.1%), ***e*** (74.4%), ***n*** (72.6%), ***r*** (70.1%) and ***m*** (68.4%). The six least often correctly identified LC letters were ***j*** (7.7%), ***q*** (9.4%), ***y*** (12.8%), ***g*** (23.1%), ***a*** (30.8%) and ***w*** (31.6%).

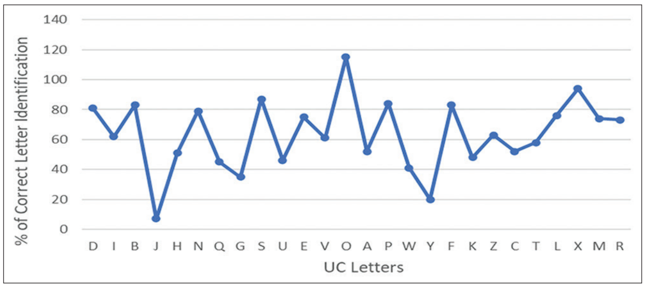

Figure 1. Frequency of UC letters correctly identified by third graders in the test

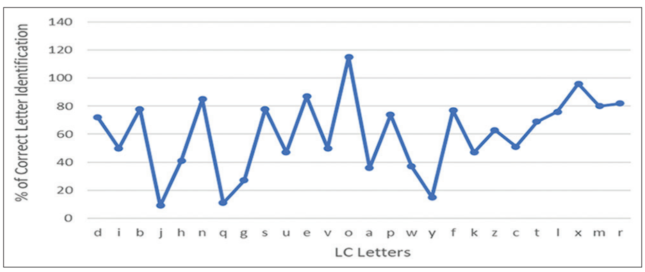

Figure 2. Frequency of LC letters correctly identified by third graders in the first part of the alphabetic principles test

Discussion and Analysis of the Findings

These results can be discussed in relation to letter-confusability factor, as previous studies have highlighted the impact of visual similarity on children's ability to identify letters correctly. The visual distinctiveness of the UC letters ***O***, ***X***, ***S***, ***B***,***P*** and ***F*** causes them to be well recognised by third graders, which conforms with previous research findings indicating the likelihood of visually distinctive letters being readily identifiable (Ehri & Roberts, 2006; Evans et al., 2006). The same applies to LC letters ***o***, ***x***, ***e***, ***n***, ***r*** and ***m***, which are shaped distinctively relative to other LC letters. Nevertheless, the LC letters ***s***, ***b*** and ***p*** were not amongst the most correctly identified letters, since they appear similar to other small letters. This corresponds to the conclusions reached by Block and Nell (2015), who observed that the error rates of visually similar letters tend to be high. With regard to phonological similarity, it emerged during the test's administration that most learners recognised (***e***, ***o***, ***r***) as phonologically distinct, but confused ***j*** with ***g***, ***q*** with ***k***, and ***s*** with ***c***. However, the fact that the latter letters are phonologically similar, sharing a phoneme in their letter names, explains this confusion. This also supports Huang et al.'s (2014) conclusion, which found that a letter can be categorised as phonologically confusable when its name shares a phoneme with another letter located in the exact same position. In this case, ***j-g*** and ***q-k*** share phonemes in the first position while ***s-c*** share a phoneme in different positions.

Moreover, these findings can be interpreted in relation to the UC–LC similarity factor, which explains why third graders were able to identify the letter names for ***Oo***, ***Xx***, ***Ss***, ***Pp***, ***Ff*** and ***Mm***, as they were visually similar to their LC counterparts, as was also concluded by Treiman and Kessler (2003). There was no evidence in the study's findings to support the letter-order hypothesis; that is, no extra variance occurred that could be attributed to the letter's position in the alphabet. Although this finding is consistent with the findings reported by Evans et al., (2006) and Treiman and Kessler (2003), it does not correspond to that of Justice et al. (2006), who succeeded empirically in supporting the letter-order hypothesis. Moreover, a further explanation for learners' ability to identify letters ***e***, ***r***, ***o***, ***n***, ***s***, ***p***, ***m*** could be the frequent occurrence of these letters in print. This is compatible with the results shared by Turnbull et al. (2010), who stated that a LC letter tended to be 1.05 times more recognisable when its frequency was high, such as the most recurrent LC letter ***e*** is inclined to be 3.8 times more likely to be identified when compared to the least frequent letter ***q.***

Differences in Students' Scores Between UC and LC letter Recognition Skills

Regarding UC letter recognition, students scored between 0 and 25, with a mean of 14.05 and a standard deviation of 6.826. One quarter (25%) of students scored eight or less, whereas half (50%) scored 15 or less, and three quarters

Table 4. Means and Standard Deviations of Third Graders' Scores in UC and LC Recognition

Tested skill	*N*	*M*	*SD*
UC recognition	26	14.05	6.83
LC recognition	26	13.24	6.50

(75%) scored 20 or above. With respect to LC letter recognition, students scored between 0 and 25 with a mean of 13.24 and a standard deviation of 6.495. While one quarter (25%) of the students scored seven or less, half the students (50%) scored 14 or less and 75% scored 18 or above.

Since the test entails both UC and LC recognition, a paired samples t-test was conducted to investigate differences in students' scores between UC letter recognition and LC letter recognition. Table 4 shows the mean and standard deviation for third graders' scores in UC letter recognition as well as LC recognition.

As shown in Table 4, there was a statistically significant difference between third graders' scores in UC letters recognition (M= 14.05, SD= 6.83) and LC recognition (M= 13.24, SD= 6.50), t (116) = 3.781, p> .0005 (two tailed). The mean difference was 0.81 with a 95% confidence interval ranging from .387 to 1.237. The eta squared statistic (0.11) indicated a relatively large effect following Cohen's (1988) guidelines. This means that students' ability to recognise UC letters was statistically significant compared to their ability to recognise LC. This finding is consistent with previous research suggesting LC letters are extremely easy to confuse (Block, & Nell, 2015) relative to UC letters, which tend to be graphically distinctive (Ehri & Roberts, 2006).

Based on the previous findings, it can be concluded that although the third graders in this sample on average achieved the JP programme's objective in terms of UC and LC r recognition, many students (43.6%) failed to achieve the objective of recognising letter names, which is essential to enhancing their reading and spelling skills, especially in the case of words containing those letter sounds. Besides, there was a statistically significant difference between third graders' scores in UC and LC recognition in favour of UC letters. It was further observed during the test's administration that many students not only confused some of the letter names with other visually or phonemically similar letter names, but they also tended to confuse letter names with letter sounds. In other words, they were unable to discriminate between letter names and letter sounds, and therefore, they used letter sounds to name letters. For example, they named the letter ***S*** using the /***s***/ sound, and ***F*** with /***f***/ sound and so on.

CONCLUSION

The main aim of the study was to evaluate the effectiveness of a synthetic approach to phonics, specifically Jolly Phonics (JP), to determine its contribution to Omani third graders' acquisition of UC and LC recognition. Thus, it is expected to serve as a guideline to assist Omani EFL teachers when determining which activities to focus and build upon, and which activities need to be changed, as it will increase their consciousness of the significance of letter knowledge as a significant constituent of successful reading and spelling skills. Additionally, it will supply researchers, programme developers, and educators with supplementary data to enable them to modify or adopt certain literacy practices within the programme, by identifying gaps in the students' letter knowledge skills, which in turn will help them maximise their chances of success by proposing possible ways to address them.

To achieve this, students' performance in these skills was compared with the programme's intended objectives, as set by the Ministry of Education (MOE). The study employed a quantitative descriptive research design, in which data was collected using the UC and LC Letter Recognition Test. The findings revealed that Although the third graders in this study's sample have on average achieved the JP programme's objective in terms of UC and LC recognition, not all students have achieved the minimum required level in this literacy skill; whereby 43.6% of the students were below the minimum required level and the remaining 56.4% of students were at or above the minimum required level. Moreover, there was a statistically significant difference between third graders' scores in UC and LC recognition in favour of UC letters.

The findings in this study provide evidence that supports research highlighted with respect to factors contributing to weaknesses in letter-name knowledge which the curriculum designers and policy makers at the MOE should take into consideration to maximise students' learning chances and enhance their alphabetic knowledge by considering these factors. Additionally, the curriculum designers and policy makers at the MOE need to prepare a screening criterion and simultaneously adapt an RTI model to identify at-risk students and help prevent them from falling below grade-level expectations. Moreover, the MOE need to reconsider the length and intensity of the JP programme's implementation to provide students with more practice on highly confused letter names, by considering factors contributing to this challenge, bearing in mind the research findings with this regard. Other recommendations are directed to English teachers include revising the alphabet regularly to help students recognise them easily and automatically. Teachers need to allocate additional time to teaching highly confused letter names. Besides, they need to evaluate and assess their students' alphabetic knowledge occasionally, so that they can identify at-risk readers, and act accordingly.

This study has some limitations, which might adversely influence the generalisability of its findings. First, it is a small-scale study, limited to four grade three classes only. Second, it took place in a specific context, i.e. two cycle one schools in Al-Dhahira Governorate. Third, some variables which could have affected students' performance were not controlled for in the research design, including parental involvement, preschool education and frequency of programme delivery.

Further research can be conducted to investigate the impact of JP on developing other literacy skills, such as reading comprehension, letter formation skills and vocabulary. Besides, this study provided an evidence that some Omani third graders lack letter-name knowledge which is critical to decoding processes. Hence, future studies can explore the impact of students' weakness in letter-name knowldege investigated in the current study on reading achievement. Moreover, future studies could adapt a quasi-experimental design, to compare the effect of amount of instruction time on students' letter-name knowledge.

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APPENDIX

Appendix A. Student's copy of UC and LC letter recognition test

Study the following letters for two minutes. Say the name of each letter. Do not say letter sounds.

ادرس الحروف التالية لمدة دقيقتين. انطق أسمائها. لا تنطق أصواتها.

1	D	2	I	3	B	4	J	5	H	6	N
7	Q	8	G	9	S	10	U	11	E	12	V
13	O	14	A	15	P	16	W	17	Y	18	F
19	K	20	Z	21	C	22	T	23	L	24	X
25	M	26	R								

1	d	2	i	3	b	4	j	5	h	6	n
7	q	8	g	9	s	10	u	11	e	12	v
13	o	14	a	15	p	16	w	17	y	18	f
19	k	20	z	21	c	22	t	23	l	24	x
25	m	26	r								

Appendix B. Examiner's recording sheets for the UC and LC letters recognition test

Student: **ID:** **Date:**
Gender: M/F **Time:**
From _______________ **to** ____________________

1. UC and LC letter recognition

Ask the student to look at the UC and LC letters in his/her sheet, study them for two minutes and say the names of the letters. Mark correct answers with √, incorrect answers or NR with X.

1	D	2	I	3	B	4	J	5	H	6	N
7	Q	8	G	9	S	10	U	11	E	12	V
13	O	14	A	15	P	16	W	17	Y	18	F
19	K	20	Z	21	C	22	T	23	L	24	X
25	M	26	R	Total correct UC letters: ____________ (out of 26)							

1	d	2	i	3	b	4	j	5	h	6	n
7	q	8	g	9	s	10	u	11	e	12	v
13	o	14	a	15	p	16	w	17	y	18	f
19	k	20	z	21	c	22	t	23	l	24	x
25	m	26	r	Total correct lowercase letters: ___________ (out of 26)							

Total correct letters out of 52(both UC and LC letters)

Appendix C. Computed frequency scores and percentages of UC and LC letters correctly identified by third graders in the study's sample in the first part of the alphabetic principle test

LC*	Frequency	Percentage of children	UC*	Frequency	Percentage of children
d	72	61.5%	D	81	69.2%
i	50	42.7%	I	62	53%
b	78	66.7%	B	83	70.9%
j	9	7.7%	J	7	6%
h	41	35%	H	51	43.6%
n	85	72.6%	N	79	67.5%
q	11	9.4%	Q	45	38.5%
g	27	23.1%	G	35	29.9%
s	78	66.7%	S	87	74.4%
u	47	40.2%	U	46	39.3%
e	87	74.4%	E	75	64.1%
v	50	42.7%	V	61	52.1%
o	115	98.3%	O	115	98.3%
a	36	30.8%	A	52	44.4%
p	74	63.2%	P	84	71.8%
w	37	31.6%	W	41	35%
y	15	12.8%	Y	20	17.1%
f	77	65.8%	F	83	70.9%
k	47	40.2%	K	48	41%
z	63	53.8%	Z	63	53.8%
c	51	43.6%	C	52	44.4%
t	69	59%	T	58	49.6%
l	76	65%	L	76	65%
x	96	82.1%	X	94	80.3%
m	80	68.4%	M	74	63.2%
r	82	70.1%	R	73	62.4%

*letters appear in the same order as in the test