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RESEARCH ARTICLE

Integrating Phonological Awareness into the EFL Classroom: A Quasi-Experimental Study

Fahad Alzahrani[1*], Yahya Abdu A Mobarki[2]

[1] Taif University
[2] Department of Foreign Languages, College of Arts and Humanities, Jazan University

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***Corresponding Author:**

dr.ifahad7@gmail.com

ABSTRACT

Phonological awareness is highly correlated with both a person's ability to listen and to communicate effectively. Reading instruction also relies heavily on it, especially when using an alphabetic script. Improving phonological awareness is crucial as it is a prerequisite to the mastery of a new language. This study investigates the impact of integrating phonological awareness training into the curriculum of adult English as a Foreign Language (EFL) students. The research highlights a gap in structured phonological awareness training, offering insights into effective pedagogical strategies tailored to EFL learners. A total of 70 EFL students were divided into two groups: an experimental group and a control group. Results from a phonological awareness exam were analyzed using an independent samples t-test. The experimental group received six hours of phonological awareness training (50 minutes per session over six sessions), while the control group participated in regular vocabulary sessions without any phonological awareness instruction. Analysis of the phonological awareness exam results revealed that the experimental group significantly outperformed the control group ($p = .017$). These findings underscore the substantial benefits of phonological awareness training for adult EFL students. The study contributes to the growing body of literature emphasizing the importance of phonological awareness in language acquisition. It suggests that even brief, integrated training sessions can yield significant improvements in adult learners' phonological skills. Future research should explore the long-term effects of such interventions and their applicability across diverse linguistic backgrounds.

INTRODUCTION

Learners of English as a foreign language (EFL) must first master the sounds of spoken words before moving on to decoding printed characters. Phonological awareness is developed as a byproduct of learning to decode spoken language. Attention to and recognition of individual speech sounds is a measure of phonological awareness (Wang et al., 2019). It plays an important part in EFL education. Children's early reading proficiency has been linked to their phonological awareness, making it a potential accurate predictor of language acquisition (Wang et al., 2020).

Learners of English as a Foreign Language (EFL) must first master the phonetic sounds of spoken words before progressing to decoding printed characters. Phonological awareness, which is developed through learning to decode spoken language, involves the ability to focus on and recognize individual speech sounds (Wang et al., 2019). This awareness is crucial in EFL education. Research

has shown that children's early reading proficiency is closely linked to their phonological awareness, making it a reliable predictor of future language acquisition success (Wang et al., 2020).

Research on phonological awareness in first language (L1) or second language (L2) acquisition in children is more abundant than studies focused on adult L2 learners. Given the wide range of ages at which individuals acquire a language and the differences between L1 and L2 learning, this discrepancy is surprising. Some children do acquire phonological awareness in L2, unlike the majority of adults (Poczyska & Bookheimer, 2021). Phonology in L1 is learned passively and subtly, while L2 phonology requires focused effort. This is because the implicit learning mechanisms crucial during L1 acquisition are either absent or inefficient during L2 acquisition (Mayberry & Kluender, 2018; Shao et al., 2019). Adult L2 learners must consciously observe the form of L2 phonology to create appropriate L2 phonetic categories, supporting the argument that noticing is necessary for second language acquisition (SLA) (Kidd et al., 2018).

As acquiring phonological awareness in L2 during adulthood necessitates conscious attention, it is crucial for learners to start with this knowledge. Few studies have investigated how phonological awareness influences adult language learners. Metalinguistic knowledge, including phonological, morphological, and orthographic awareness, is a weakness that affects both inexperienced and seasoned teachers (Dickinson et al., 2019; Russak, 2020; Jordan et al., 2018). The importance of phonological awareness and phonological awareness training for adult L2 learners' acquisition, and the importance of specific teaching of phonological awareness in enhancing their literacy, have also been highlighted by other studies (Zhang & Roberts, 2019; Ibrahim, 2018).

LITERATURE REVIEW

Phonological awareness is critical to learning an L2, although debate persists over whether or not students should get formal instruction in the skill. According to Kalia et al. (2018), phonological awareness develops naturally in L1 and L2 learners. However, phonological awareness intervention programs are supported since some research has shown that they improve phonological memory, phonological sensitivity, and meta-phonological skills (Li et al., 2019). (Piasta et al., 2021). Schiff & Saiegh-Haddad (2018) found that phonological awareness teaching, especially when it is clear and direct, has a considerable impact on the phonological awareness development of the intended students (Wilcox et al., 2020). Adult learners' phonological awareness may also benefit from training (Bratsch-Hines et al., 2019; Whitaker & Valtierra, 2018; McNeill, 2018), according to the few research that have been conducted on the topic.

Research on the efficacy of phonological-based teaching in an EFL setting at the elementary school level is extensive (Cho et al., 2021; See & Gorard, 2020; Roepke, & Brosseau-Lapré, 2023; Wang et al., 2020). In order to tailor phonologically-based education to the needs of EFL students, the research used a variety of approaches. The data analysis revealed that the phonologically based training significantly improved students' phonological awareness, as well as their word reading, non-word reading, and text comprehension (See & Gorard, 2020; Wang et al., 2020). However, it was found that the teaching had no discernible impact on students' phonological awareness (Cho et al., 2021; Wang et al., 2020).

Evidence suggests that training can enhance phonological awareness abilities, with the method of instruction playing a significant role in this progress. Systematic (explicit) phonological awareness training has been extensively studied, unlike non-systematic (implicit) training, which has received less attention from researchers. When comprehensive direct phonological awareness instruction cannot be carried out in a reasonable time frame, an embedded approach may serve as an effective alternative. Research indicates that embedded instruction is a valuable method that can significantly improve learning outcomes (Verbruggen et al., 2021). A recent literature review examined the application of embedded education in classrooms for children with moderate to severe intellectual

impairments (Frerejean et al., 2019). The findings confirm that embedded education is an effective technique for supporting the academic development of individuals with mild, moderate, and severe intellectual impairments.

These days, phonological awareness lessons are included in embedded education. Since dedicated phonological awareness instruction may be impractical depending on the context, teachers often include it into their regular lesson plans. The effects of metalinguistic training on preservice teachers' phonemic awareness, morphological awareness, and orthographic awareness were studied in two separate research (McNeill, 2018); (Schwarz & Hamman-Ortiz, 2020). The findings show that teaching phonological awareness in context helps adults improve their metalinguistic competence. Preservice teachers' metalinguistic knowledge for spelling teaching was studied inside a 10-hour (McNeill, 2018) and 7-hour (Schwarz & Hamman-Ortiz, 2020) lecture. In sum, the findings demonstrated that instruction in phonological awareness that was contained inside a larger course successfully expanded the metalinguistic competence of adult students. Students' phonemic, morphological, and orthographic awareness were all shown to improve as a result of the course work. However, the impact of the embedded phonological awareness training on the growth of phonological awareness itself is not investigated in this research. Because phonological awareness plays such a crucial role in language acquisition, studying how this training affects the development of phonological awareness is crucial.

Phonological awareness training is integrated into daily activities and vocabulary lessons as part of the embedded education. The resources and teaching-learning activities originally meant for the vocabulary instruction were modified so that they fit more naturally into the phonological awareness training. This kind of teaching would improve students' ability to apply and retain what they've learned. Since this study found a correlation between vocabulary and phonological awareness, it recommended that vocabulary teaching be interwoven with phonological awareness training for adult literacy programs (Liu et al., 2018).

Considering the significance of phonological awareness instruction, the following research question is posed for study: Do EFL students improve their phonological awareness considerably if they participate in integrated phonological awareness training inside vocabulary instruction?

METHODOLOGY

Research Design

This research was to examine how teaching phonological awareness as part of other linguistics courses affected the students' phonological awareness. Since randomizing the study participants who were previously sorted into classes was not an option, a quasi-experimental research approach was used. The evaluation of the intervention thus could take place without damaging the integrity of participants' academic schedules or those of institutional policy.

The Study Participants

The participants were 70 first-semester English majors from two continuous sections at a regional university. The Vocabulary course was part of the degree study plan required for the first semester; therefore, all of the students were enrolled in it. Both the study's experimental and control groups had 35 students, all of whom were between the ages of 18 and 23. The rationale behind targeting first-year students is that they would still have different levels of exposure to the English language and to the factors that this research is interested in learning more about. Students' levels of English were not high, which might slow their growth and harm their results. No placement test was performed for admission and major selection. Learners' progress in phonological awareness should be shown across these contexts and variants.

Instrument

The proficiency of phonological awareness amongst EFL students was the focus of the research. The phonological awareness exam was employed to quantify the independent variable. The researcher in this study employed a phonological awareness assessment, derived from Brady and Gilligan (2019), that was designed specifically for non-native English-speaking adults. The exam was designed to evaluate students' phonemic awareness and onset-rime awareness, as two broad categories of phonological awareness. There were a total of forty questions spread over eight sections of the exam. Specifically, the ability to isolate, recognize, classify, blend, segment, delete (at the phoneme level), identify, and manipulate onset and rime was incorporated (at onset-rime level). Accurate answers from the participants were given a score of 1 and the wrong ones received a score of 0.

The validating procedure was carried out once the test plan was established and the test was built. Two specialists validated the test by comparing it to its design and determining whether or not the tasks on the test were consistent with the dimensions, variables, and sub-variables described therein. After the procedure was developed, it was tested on 40 students to determine its validity and reliability. The test items were valid, as shown by the validity analysis. Test item reliability was also strong (Cronbach's Alpha values >.93, N = 40), as shown by reliability analysis results. The phonological awareness assessment was therefore prepared for use in research.

Procedure

Efforts were taken to limit the impact of confounding factors before therapies were put into place. These adjustments were performed to rule out the possibility that individual variations between the experimental and control groups may have contributed to the observed post-test discrepancies. In order to limit the effects of time and maturity on the research, a precise timeline and targeted therapy themes were chosen. To reduce test anxiety, the test items were ordered differently on the pre and post tests and gave the tests 50 days apart.

In the initial step of data collection, a pretest was given to determine baseline phonological awareness levels in the treatment and control groups to check that the groups were starting from the same place, an independent samples t-test was run on the pre-test scores. The significance level of the test, two-tailed, was .523, indicating that the starting points for the two groups were comparable. To limit the impact of the experimenter effect and diffusion threats, an organized lesson plan was developed, and instructors were given extensive training on how to effectively convey the subject. An effort was made to eliminate the possibility of experimenter bias or accidental conduct. In order to prevent the spread of information, the study participants were not made aware of the differences in treatment between the two groups.

Both the treatment and control groups met six times for their treatments. Phonological awareness training was included into vocabulary lessons covering six subjects for the treatment group. The opposite was true for the comparison group, who were exposed to the language via extensive practice and use in a natural context.

The phonological awareness training used in the research was administered over the course of six sessions with each session lasting 90 minutes. Each training session lasted around 45 minutes. As a result, the experimental group students received 4.5 hours of instruction in phonological awareness (270 minutes total; 6 sessions of 45 minutes each). Each weekly meeting lasted 90 minutes, with 45 minutes devoted to a vocabulary lesson. During the first meeting, students were exposed to new vocabulary terms, given the opportunity to practice pronouncing these terms, and given the opportunity to explain or describe these terms using their own words, the second round of the phonological awareness training occurred 45 minutes later.

Materials that focused on developing students' phonemic and onset-rime awareness were analyzed for this study. There was an emphasis on phoneme modification and the study of onset-rime correlations (isolating, recognizing, classifying, blending, segmenting, and deleting phonemes).

Phoneme recognition, phoneme isolation, phoneme classification, phoneme deletion, phoneme blending, phoneme segmentation, and onset-rime were all covered throughout the course of the training. Six training themes were modified and included into the teaching of six vocabulary topics as part of this study's integration of phonological awareness training and vocabulary education. There are six distinct themes that are covered in vocabulary classes: (1) time and routine; (2) characters; (3) education; (4) feelings and emotions; (5) news and reporting; and (6) transportation. Having different professors teach the experimental and control groups was suggested to avoid any bias, to ensure that the first session's materials and learning activities were equivalent across the experimental and control groups, a small trial run on the two lecturers' teaching methods was conducted before the treatment.

After both the treatment group and the control group had completed their respective interventions, a posttest was administered. The posttest had a similar structure to the pretest, and it also included a similar number of questions, however, they were given in a different sequence. The data analysis process had two phases. Firstly, data were checked to see if they fit the normality and homogeneity assumptions of a parametric test so that we could go on to the meat of the research. Phase two included verifying our presumptions, with evidence from Shapiro-Wilk and Levene's tests indicating that the data are normally distributed and that the variance is homogeneous, we used an independent samples t-test in SPSS to examine our hypothesis.

Ethical Considerations

Given that human participants were involved in this study, all ethical guidelines and principles were rigorously followed throughout the research process. Explicit permission was obtained from all participants for data collection and use. Participation in the study was entirely voluntary, with no coercion involved. Participants were informed that they could withdraw from the study at any time without facing any negative consequences.

RESULTS

It was hypothesized that students who received embedded phonological awareness training would outperform those who participated in a control group's typical vocabulary education course, and this was evaluated by comparing the average performance of the two groups. As a first step, descriptive statistics were used to compare and contrast the phonological awareness levels of the two groups. The lowest and maximum scores, as well as the mean and standard deviation, were all part of the condition. Descriptive analysis is shown next.

Table 1. Statistics for the Entire Sample

	N	Range	Minimum	Maximum	Mean	Std. deviation
	statistic	statistic	score	score	statistic	statistic
Embedded PA training	26	33	20	52	43.19	6.721
Regular class	37	39	9	49	37.77	8.187
Valid n (list wise)	24					

In Table 1, the experimental group which received training on phonological awareness had a mean score of 43.19, while the control group that received regular vocabulary instruction had a mean score of 37.77, indicating that the training had a significant impact on the experimental group. By a margin of 5.42 standard deviations, the experimental group outperformed the control group. The highest and lowest scores for both sets of respondents were 19 and 10, with maximum and minimum values of 52 and 49, respectively. In the control group, the range was 40 and the standard deviation was 8.187 whereas in the experimental group, the range was 32 and the standard deviation was 6.721. The range of phonological awareness scores was larger in the control group, according to the results.

The primary outcome of the independent samples t-test analysis was to determine whether or not there was a statistically significant difference in the students' phonological awareness abilities across the various training techniques. Is there a significant variation in phonological awareness abilities across the various training methods? (with both active and inactive participants). The t-value for the independent variable was 2.444, and the p-value for statistical significance was.017, as shown by the results. T (61) = 2.444, which is more than the 1.999 value from the t-table. As a plus,.017.05 is smaller than alpha. The results showed that adult EFL students' phonological awareness improved more with embedded training than with a standard vocabulary session. Adult EFL students fared better on phonological awareness tests if they attended a vocabulary class rather than one that also included phonological awareness (see Table 2).

Table 2. Analysis of Variance with Respect to Independent Sample

T-test for equality of means								
		t	**df**	**Sig. (2-tailed)**	**Mean difference**	**Std. error difference**	**98% confidence interval of the difference**	
							Lower	**Upper**
PA skills	Equal variances assumed	-2.444	61	.017	-5.422	2.218	-9.858	-.986
	Equal variances not Assumed	-2.523	56.680	.014	-5.422	2.149	-9.726	-1.118

Then, the data was analyzed further to determine the statistical significance of the mean differences between the two groups on the phoneme and onset-rime levels of phonological awareness. Descriptive analysis indicated that the experimental group's average phoneme score was 3.99 higher than the control group's (33.92 compared to 29.92). The standard deviation data showed, however, that there was a similar range of results across the two groups (6.614 and 7.343). Please refer to Table 3.

Table 3. Subskills: A Statistical Description

	Training	**N**	**Mean**	**Std. deviation**	**Std. error mean**
Phoneme level	Embedded PA training	25	33.92	6.614	1.323
	regular class	38	29.92	7.343	1.191
Onset-rime level	Embedded PA training	25	8.16	1.675	.335
	regular class	38	6.74	2.468	.400

Descriptive analysis at the onset-rime level also revealed that the experimental group averaged 8.16, compared to 6.74 for the control group (a difference of 1.42). (see Table 3).

Table 4. Measurement of Individual Proficient in Subskills

T-test for equality of means								
		T	**df**	**Sig. (2-tailed)**	**Mean difference**	**Std. error difference**	**95% confidence interval of the difference**	
							Lower	**Upper**
Phoneme level	Equal variances assumed	2.198	61	.032	3.999	1.819	.361	7.637
	Equal variances not assumed	2.247	55.171	.029	3.999	1.780	.432	7.566
Onset-rime level	Equal variances assumed	2.523	61	.014	1.423	.564	.295	2.551

	Equal variances not assumed	2.726	60.913	.008	1.423	.522	.379	2.467

In Table 4, it can be seen that there are statistically significant differences in phoneme and onset-rime awareness across the groups, as determined by an independent samples t-test. In the end, the t-values at the phoneme and onset-rime levels were 2.198 and 2.523, with corresponding sig. (2-tailed) values of.032 and.014, respectively. Neither t-value is less than the t-table value for df = 61, hence the null hypothesis must be rejected. The two-tailed p-values for significance (sig.) were equally unremarkable. There was a statistically significant difference between the two groups on measures of phoneme and onset-rime awareness, the data showed. Finally, there are significant differences between the experimental group and the control group in terms of phoneme and onset-rime awareness.

DISCUSSION

This research set out to examine what happens when adult EFL students engage in phonological awareness teaching alongside other forms of language acquisition. The curriculum dedicated 270 minutes (six sessions' worth) to word study (45 minutes in each session). After receiving the usual amount of exposure to the language in a vocabulary session, students in the control group were given a phonological awareness exam to evaluate their comprehension.

Using an independent samples t-test, it was found that the means of the treatment and control groups were drastically different (t-value = 2.444, Sig. (2-tailed) =.017). The experimental group, which got the embedded phonological awareness training, outperformed the control group, which attended the usual vocabulary session, by a margin of.42 points (42.08 to 36.66). A standardized vocabulary course did not improve test scores as much as the combined phonological awareness training did for pupils. This actively demonstrates that the adult EFL students' phonological awareness improved greatly as a result of the embedded phonological awareness instruction.

As a result of the instruction, students showed considerable improvement in their understanding of phonemes and onset-rime correlations. There was a statistically significant (mean difference = 3.99) distinction between the groups at the phoneme level. Scores in the experimental group averaged 33.92, whereas those in the control group averaged 29.92, a difference that is statistically significant at the.032 level. At the onset-rime level, the experimental group learned significantly more words (8.16 vs. 6.74), with a mean difference of 1.42%. (p .008). Both p-values indicated that there was a statistically significant difference between the means. The results showed that phonological awareness instruction significantly influenced students' ability to recognize phonemes and onsets and rimes.

The results of this study contradict the research of Kalia et al. (2018) which suggests that learners' phonological awareness grows without instruction, and give support for the importance of training on the growth of phonological awareness capacity. For similar discussions, see (Piasta et al., 2021) (See and Gorard, 2020) (McNeill, 2018) (Tibi and Kirby, 2018) (Whitaker and Valtierra, 2018) (McNeill, 2018) (Schiff and Saiegh-Haddad, 2018) (Wang et al., 2020). As of 2020 (Wang et al). (Wang et al.). Both measures of phonological awareness competence were considerably better in the experimental group than in the control group, which had received regular vocabulary training and considerable exposure to the target language. The statistical comparisons showed a huge disparity in median values between the two groups. Significant improvements in phonological awareness were seen following teaching for adults learning English as a second language. This conclusion is at odds with those of (Cho et al., 2021) and (Wang et al., 2020), which found that the instruction had no discernible influence on the students' phonological awareness

The findings of this study contribute to the expanding body of data demonstrating that targeted phonological awareness teaching improves students' phonological awareness skills (Piasta et al.,

2021). The effectiveness of 12 weeks of explicit training (four times a week for 25 minutes each) was examined in this research (Piasta et al., 2021). The implementation of a 16-hour professional development course focused on phonological training was also investigated. The present study followed the lead of previous studies by using an explicit instructional strategy focused on phonological awareness training. Despite being less in depth than the previous two probes, it still took some time. In this study, students received 40 minutes of phonological training once a week for a total of six weeks. Despite the shorter implementation period of the present research compared to the other two, the results showing a significant influence of the training were consistent with their respective findings (Piasta et al., 2021).

Furthermore, this study's findings demonstrate the value of explicit education even when integrated into contextualized vocabulary lessons. This supports the argument that embedded education is an effective strategy for promoting expanded skill sets (Verbruggen et al., 2021). Analysis of the data from this research reveals that adult EFL learners profited from the incorporated phonological awareness instruction. Consistent with the findings of McNeill and Schwarz, as well as Hamman-Ortiz (2020). Results from 8-hour (Schwarz & Hamman-Ortiz, 2020) and 11-hour (McNeill, 2018) metalinguistics training for aspiring teachers were compared; the latter included instruction in phonemic awareness. Throughout the sessions, teaching in basic reading and writing skills was included. Learners showed significant gains in their phonemic, morphological, and orthographic awareness in those studies. In addition, it was shown that pupils' phonological, morphological, and orthographic awareness all increased as a direct consequence of the program. Similarly, a more extensive analysis comparing the means of the experimental and control groups similarly indicated that the experimental cohort outperformed those who participated in the usual vocabulary class with intensive exposure to the language.

Several conclusions may be made based on the information presented here. First, the embedded training greatly enhanced the adult EFL students' phonological awareness skills. After participating in the classes, the pupils showed considerable improvement in their phonological abilities. Furthermore, the results demonstrated that phonological awareness training significantly enhanced the linguistic abilities of the study's participants. In addition, the desired outcome was achieved even though the explicit instruction was integrated into a more conventional vocabulary-learning environment. This is likely due to the fact that the goals of phonological awareness teaching and the vocabulary unit are consistent. This study combined the processes of teaching phonological awareness with expanding students' vocabularies. In conclusion, it seems that instruction in phonological awareness with vocabulary education may help speed phonological awareness development in adult EFL learners.

CONCLUSION

Adults learning English as a foreign language may benefit greatly from having phonological awareness instruction woven into their vocabulary classes. It is also shown that the effect is substantial at both the phoneme and onset-rime levels of the skill, suggesting that the training does, in fact, help the learners to have a better phonological awareness at the phoneme and onset-rime levels than those who enroll in a regular vocabulary class with intensive exposure to the language. Furthermore, the results demonstrated that enhancing adult learners' phonological awareness may help them become more proficient in the target language. And the training is still beneficial when mixed with regular vocabulary lessons.

RECOMMENDATIONS

The current research makes various suggestions based on the existing results, particularly with regard to the teaching and learning of EFL. First of all, students may improve their phonological abilities via the use of explicit phonological awareness training. Since incorporating the training into daily lesson plans does not compromise its efficacy, time constraints are no longer an issue. Secondly, for classrooms that do not emphasize reading aloud, including phonological awareness training into vocabulary teaching might be an alternate solution. The training's overall goals and vocabulary teaching goals were consistent, as seen throughout the training's execution. In this way, the training and the lessons complemented one another.

LIMITATIONS & DIRECTIONS FOR FUTURE RESEARCH

This study is limited by its short-term intervention and reliance on pre- and post-test measures, which may not fully capture the sustainability of phonological awareness gains over time. Future research should include longitudinal follow-ups to assess whether these improvements are retained and translated into long-term language proficiency. Additionally, the study's focus on a relatively homogeneous group of adult EFL learners limits the generalizability of the findings. Exploring the impact of phonological training across diverse learner profiles, such as varying proficiency levels, age groups, and linguistic backgrounds, would provide a more comprehensive understanding of its efficacy.

DECLARATIONS:

Consent to Participate: Informed consent was obtained from all individual participants included in the study.

Ethics Approval: Not applicable.

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests: The authors declare that they have no competing interests.

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REFERENCES

Brady, E., & Gilligan, R. (2019). Exploring diversity in the educational pathways of care-experienced adults: Findings from a life course study of education and care. *Children and Youth Services Review*, *104*, 104379. https://doi.org/10.1016/j.childyouth.2019.06.014

Bratsch-Hines, M. E., Burchinal, M., Peisner-Feinberg, E., & Franco, X. (2019). Frequency of instructional practices in rural prekindergarten classrooms and associations with child language and literacy skills. *Early Childhood Research Quarterly*, *47*, 74-88. https://doi.org/10.1016/j.ecresq.2018.10.001

Cho, Y., Kim, D., & Jeong, S. (2021). Evidence-based reading interventions for English language learners: A multilevel meta-analysis. *Heliyon*, *7*(9), e07985. https://doi.org/10.1016/j.heliyon.2021.e07985

Dickinson, D. K., Nesbitt, K. T., Collins, M. F., Hadley, E. B., Newman, K., Rivera, B. L., ... & Hirsh-Pasek, K. (2019). Teaching for breadth and depth of vocabulary knowledge: Learning from explicit and implicit instruction and the storybook texts. *Early Childhood Research Quarterly*, *47*, 341-356. https://doi.org/10.1016/j.ecresq.2018.07.012

Frerejean, J., Velthorst, G. J., van Strien, J. L., Kirschner, P. A., & Brand-Gruwel, S. (2019). Embedded instruction to learn information problem solving: Effects of a whole task approach. *Computers in Human Behavior*, *90*, 117-130. https://doi.org/10.1016/j.chb.2018.08.043

Ibrahim, M. (2018). Explicit versus implicit modes of EFL reading literacy instruction: Using phonological awareness with adult Arab learners. *English Language Teaching, 11*(9), 144-155. https://doi.org/h74m

Jordan, R. L., Bratsch-Hines, M., & Vernon-Feagans, L. (2018). Kindergarten and first grade teachers' content and pedagogical content knowledge of reading and associations with teacher characteristics at rural low-wealth schools. *Teaching and Teacher Education*, *74*, 190-204. https://doi.org/10.1016/j.tate.2018.05.002

Kalia, V., Lane, P. D., & Wilbourn, M. P. (2018). Cognitive control and phonological awareness in the acquisition of second language vocabulary within the Spanish-English dual immersion context. *Cognitive Development*, *48*, 176-189. https://doi.org/10.1016/j.cogdev.2018.08.010

Kidd, E., Donnelly, S., & Christiansen, M. H. (2018). Individual differences in language acquisition and processing. *Trends in cognitive sciences*, *22*(2), 154-169. https://doi.org/10.1016/j.tics.2017.11.006

Li, M. Y., Braze, D., Kukona, A., Johns, C. L., Tabor, W., Van Dyke, J. A., ... & Magnuson, J. S. (2019). Individual differences in subphonemic sensitivity and phonological skills. *Journal of memory and language*, *107*, 195-215. https://doi.org/10.1016/j.jml.2019.03.008

Liu, C., Georgiou, G. K., & Manolitsis, G. (2018). Modeling the relationships of parents' expectations, family's SES, and home literacy environment with emergent literacy skills and word reading in Chinese. *Early Childhood Research Quarterly*, *43*, 1-10. https://doi.org/10.1016/j.ecresq.2017.11.001

Mayberry, R. I., & Kluender, R. (2018). Rethinking the critical period for language: New insights into an old question from American Sign Language. *Bilingualism: Language and Cognition*, *21*(5), 886-905. https://doi.org/10.1017/S1366728917000724

McNeill, B. (2018). Improving preservice teachers' phonemic awareness, morphological awareness and orthographic knowledge. *Australian Journal of Teachers Education, 43*(1), 28-41. https://doi.org/h74n

O'Brien, B. A., Ng, S. C., & Arshad, N. A. (2020). The structure of home literacy environment and its relation to emergent English literacy skills in the multilingual context of Singapore. *Early Childhood Research Quarterly*, *53*, 441-452. https://doi.org/10.1016/j.ecresq.2020.05.014

Piasta, S. B., Logan, J. A., Thomas, L. J., Zettler-Greeley, C. M., Bailet, L. L., & Lewis, K. (2021). Implementation of a small-group emergent literacy intervention by preschool teachers and community aides. *Early Childhood Research Quarterly*, *54*, 31-43. https://doi.org/10.1016/j.ecresq.2020.08.002

Połczyńska, M. M., & Bookheimer, S. Y. (2021). General principles governing the amount of neuroanatomical overlap between languages in bilinguals. *Neuroscience & Biobehavioral Reviews*, *130*, 1-14. https://doi.org/10.1016/j.neubiorev.2021.08.005

Russak, S. (2020). The contribution of cognitive and linguistic skills in L1 and EFL to English spelling among native speakers of Arabic and Hebrew. *Cognitive Development*, *55*, 100924. https://doi.org/10.1016/j.cogdev.2020.100924

Schiff, R., & Saiegh-Haddad, E. (2018). Development and relationships between phonological awareness, morphological awareness and word reading in spoken and standard Arabic. *Frontiers in psychology*, *9*, 356. https://doi.org/10.3389/fpsyg.2018.00356

Schwarz, V. S., & Hamman-Ortiz, L. (2020). Systemic functional linguistics, teacher education, and writing outcomes for US elementary English learners: A review of the literature. *Journal of Second Language Writing*, *49*, 100727. https://doi.org/10.1016/j.jslw.2020.100727

See, B. H., & Gorard, S. (2020). Effective classroom instructions for primary literacy: A critical review of the causal evidence. *International Journal of Educational Research*, *102*, 101577. https://doi.org/10.1016/j.ijer.2020.101577

Shao, K., Pekrun, R., & Nicholson, L. J. (2019). Emotions in classroom language learning: What can we learn from achievement emotion research?. *System*, *86*, 102121. https://doi.org/10.1016/j.system.2019.102121

Tibi, S., & Kirby, J. R. (2018). Investigating phonological awareness and naming speed as predictors of reading in Arabic. *Scientific Studies of Reading*, *22*(1), 70-84. https://doi.org/10.1080/10888438.2017.1340948

Roepke, E., & Brosseau-Lapré, F. (2023). Speech Error Variability and Phonological Awareness in Preschoolers. *American Journal of Speech-Language Pathology*, *32*(1), 246-263. https://doi.org/10.1044/2022_AJSLP-22-00031

Verbruggen, S., Depaepe, F., & Torbeyns, J. (2021). Effectiveness of educational technology in early mathematics education: A systematic literature review. *International Journal of Child-Computer Interaction*, *27*, 100220. https://doi.org/10.1016/j.ijcci.2020.100220

Wang, J., Pines, J., Joanisse, M., & Booth, J. R. (2021). Reciprocal relations between reading skill and the neural basis of phonological awareness in 7-to 9-year-old children. *NeuroImage*, *236*, 118083. https://doi.org/10.1016/j.neuroimage.2021.118083

Whitaker, M. C., & Valtierra, K. M. (2018). Enhancing preservice teachers' motivation to teach diverse learners. *Teaching and Teacher Education*, *73*, 171-182. https://doi.org/10.1016/j.tate.2018.04.004

Wilcox, M. J., Gray, S., & Reiser, M. (2020). Preschoolers with developmental speech and/or language impairment: Efficacy of the Teaching Early Literacy and Language (TELL) curriculum. *Early Childhood Research Quarterly*, *51*, 124-143. https://doi.org/10.1016/j.ecresq.2019.10.005

Zhang, H., & Roberts, L. (2019). The role of phonological awareness and phonetic radical awareness in acquiring Chinese literacy skills in learners of Chinese as a second language. *System*, *81*, 163-178. https://doi.org/10.1016/j.system.2019.02.007