Effects of Concept Mapping on Reading Comprehension in Adult Language Learners

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Research shows that reading and comprehension skills are critical for gaining knowledge about the world and society. However, many language learning programs prioritize oral proficiency over written language instruction. (Oliver & Young, 2016; Anderson & Roit, 1996) As a result, there is limited research on how to improve vocabulary, critical thinking, and summarization skills for adult English language learners. (Khodadady & Ghanizadeh, 2011) One tested method for improving reading comprehension is concept mapping, which helps learners activate prior knowledge, locate main ideas, and recognize text structure. Concept mapping involves organizing concepts from a text into circles or boxes, which are then connected via lines labeled to show the relationship between concepts. (Phan, 2017) Several studies have shown positive results in reading comprehension through the use of concept mapping.(Oliver & Young 2016) Therefore, this study will investigate the effectiveness of using concept mapping as a pre and post-reading strategy for adult language learners.

Problem

Many believe that oral fluency is a necessary precursor for reading skills to develop in adult language learners. (Anderson & Riot, 1996) As such, language learning programs prioritize oral development over reading instruction. As part of the emphasis on the development of Basic Interpersonal Communication Skills (BICS), language learning programs often focus on concrete, imageable words and concepts. However, this approach can leave a significant gap in understanding for language learners when it comes to abstract concepts. (Oliver & Young, 2016) Another consequence of prioritizing oral proficiency over reading skill development is that language and ideas are taught in isolation. Adult language learners must be able to organize and connect information in

order to monitor their comprehension while reading and develop critical thinking skills.

(Chandran & Shah, 2019) Strong critical thinking skills lead to clear and logical

connections between initial knowledge, learned relevant facts and supported

conclusions. (Khodadady & Ghanizadeh, 2011)

Purprose

Further research into effective methods of reading instruction for adult language

learners in non academic settings is necessary. Some studies have found that top-down

instruction for adult language learners is the most effective method. (Burt et. al, 2005,

Chang et. al, 2002, Oliver & Young, 2016, Phan, 2017) Concept mapping is unique in

the realm of top-down reading strategies because it can be used to activate prior

knowledge before reading, to monitor comprehension during reading and to assess

comprehension after reading. A concept map represents linear text in a visual map that

shows relationships between ideas and vocabulary. (Chang et. al, 2002) This study

aims to investigate the influence of concept-mapping as a pre and post-reading strategy

on reading comprehension for adult language learners in a non academic setting.

Research

Language proficiency, particularly in the area of reading, is a crucial skill for adult

language learners to acquire, as it has been linked to economic stability and critical

thinking abilities (Burt et al., 2005; Phan, 2017). When learners possess this skill set,

they can evaluate new information by organizing and assessing it in relation to their

prior knowledge and experiences, as well as its connection to other new information.

Adult language learners constitute the largest segment of adult education enrollment,

accounting for 45.6% of all enrollees (Eyring, 2014). Nevertheless, they are more likely

to have low or no literacy skills in any language (Burt et al., 2005). Therefore, exploring

effective methods of reading instruction for this population is critical.

Some scholars believe that oral fluency is a necessary precursor for reading skill

development in adult language learners, which is why language learning programs

prioritize oral development over reading instruction (Anderson & Riot, 1996). As part of

the emphasis on the development of Basic Interpersonal Communication Skills (BICS),

language learning programs frequently concentrate on concrete, imageable words and

concepts. However, this approach can result in a significant gap in understanding for

language learners when it comes to abstract concepts (Oliver & Young, 2016).

Additionally, prioritizing oral proficiency over reading skill development means that

language and ideas are taught in isolation. Adult language learners must be able to

organize and connect information to monitor their comprehension while reading and

develop critical thinking abilities (Chandran & Shah, 2019). Strong critical thinking skills

lead to clear and logical connections between initial knowledge, learned relevant facts,

and supported conclusions (Khodadady & Ghanizadeh, 2011).

Further research into effective methods of reading instruction for adult language

learners is needed. Some studies have found that top-down instruction for adult

language learners is the most effective approach, and among top-down reading

strategies, concept mapping is unique because it can be used to activate prior

knowledge before reading, monitor comprehension during reading, and assess

comprehension after reading (Burt et al., 2005; Chang et al., 2002; Oliver & Young,

2016; Phan, 2017). A concept map is a visual representation of linear text that displays

relationships between ideas and vocabulary (Chang et al., 2002). This study aims to investigate the influence of concept mapping as a pre- and post-reading strategy on the reading comprehension of adult language learners.

It remains to be determined whether concept mapping has any impact on the reading comprehension of adult language learners when used as a pre- and post-reading strategy. The present study will examine 15 adult English language learners to determine the efficacy of these strategies using pre- and post-test measures of students' reading comprehension. If there is a positive correlation between concept mapping as a pre- and post-reading strategy and reading comprehension scores for adult language learners, then the post-test scores of the experimental group that utilized concept mapping should be higher than those of the control group who did not receive concept mapping instruction.

There has been significant study and discussion of reading strategies for native speakers, however the difficulties facing adult English language learners requires a closer look. (Burt, Payton and Van Duzer, 2005) Adult language learners are typically very dedicated to the task of reaching language proficiency. (Eyring, 2014) However, based on the commonly held belief that reading proficiency can not develop fully until oral proficiency has been met, many language learning programs prioritize oral proficiency to the detriment of reading instruction. This leads to a surface proficiency and gaps in vocabulary, critical thinking skills, and comprehension. (Anderson & Riot, 1996).

Developing reading comprehension skills in adult language learners is of the utmost importance. Khodadady and Ghanizadeh (2011) state that these skills are indispensable for learners and are required for full and constructive participation in academic, individual and social life. Khodadady and Ghanizadeh (2011) examined critical thinking skills which have been linked to reading comprehension by their study. Their research found that the improvement of higher-order thinking abilities results in the development of higher-order learning skills, leading to the acquisition of greater levels of language proficiency. Their findings point to the benefits of constructivist strategies. Constructivist theory suggests that meaning is constructed through organization, selecting and connecting.

Concept mapping is a top-down, constructivist reading comprehension strategy that aims to link concepts, both known and learned, to one another to develop a stronger understanding of the text overall. (Khodadady and Ghanizadeh, 2011) Concepts and their relationships are represented visually. Ideas are placed in circles or boxes and connected via a line that is labeled to show the relationship between ideas. (Phan, 2017) The top-down processing necessary for concept mapping builds on the prior knowledge and experience of adult learners. Unlike their native language peers, adult language learners come into the classroom with knowledge in their native language that can be leveraged to aid in reading comprehension. (Burt, Peyton & Van Duzer, 2005)

A study conducted by Oliver & Young (2016) explored this idea of top-down versus bottom-up instruction in post secondary language learners. Their findings were inconclusive, as the control group performed better in comprehension tasks. However they note that the experimental group consisted of language learners with logographic native languages (Chinese) which could account for their increased difficulty with word recognition and thus comprehension.

Concept mapping is a unique reading strategy because of its versatility. It can be used to activate prior knowledge before reading, monitor comprehension while reading, and assess comprehension after reading. (Phan 2017) Many studies have looked at the use of concept mapping as an alternative assessment of reading comprehension after learners complete a reading (Phan, 2017; Anderson & Riot, 1996; Chang et al., 2002; Kalanzadeh, Malekl & Raz, 2014)

Perhaps the most in-depth study of the effectiveness of concept mapping for language learners was conducted in Taiwan by Chang et al. (2002). In this study they used three strategies for teaching concept mapping; map correction, scaffold fading, and map generation. The map correction strategy asked learners to correct mistakes in a pre-generated concept map based on their understanding of a text. This method of teaching concept mapping skills was found to be the most effective by the researchers. Learners were engaged in the mapping process and the partially completed maps lowered learners' affective filters and lessened the cognitive load. Researchers found that concept mapping led to improved ability to summarize the main ideas of a text, as well as improved reading comprehension skills overall. This study was conducted with elementary age language learners in an academic setting.

Concept mapping and its top-down, constructivist approach has been found effective in language learner reading instruction. There is still room for additional research into non post secondary populations as well as differing applications during the reading process.

Participants

The participants in the current study consisted of fifteen intermediate language learners (eight female and seven male) studying in a Title II community language learning program in a suburban community. To ensure a similar English language proficiency, participants were tested using Best Plus and Best Literacy exams. Scores range from four-hundred and ninety to six-hundred and seventeen on the Best Plus exam and sixty-one to seventy-five on the Best Literacy exam. Forty percent of participants have some post secondary schooling and twenty-six percent did not complete high school. Participants are evenly distributed across the following age categories: 20-25, 26-35, 36-45, 46-55 and 56 and older with each category representing 20% of the total participants.Participants motivation for attending a language learning class range widely from the desire to communicate more effectively with friends and family, to job advancement skills and academic aspirations.

Setting

The Title II community language program is in a community where 36% of the population is foreign born. This is higher than the national average of 13%. 29% of the community population is Hispanic, 8% is Asian and 20% are Black. (U.S. Census, 2022) In this current study 80% of participants were Hispanic and 6% were Asian, the

remaining 13% are Black. The program is federally funded and meets twice weekly for three hours.

Instrumentation

As stated earlier, to determine the level of the learners' English proficiency, a Best Plus exam was utilized for participants who have completed high school as well as those who have not completed high school or obtained a high school diploma and a Best Literacy exam was utilized for those participants who have completed some college courses or have attended a post-secondary institution, regardless of whether they obtained a degree.

To measure the students' reading comprehension ability, a teacher generated test was administered following a reading task. The test consisted of eight multiple choice questions and two short responses.Questions on the exam asked participants to recall information in addition to asking them to identify the main ideas, draw inferences and conclusions. This test was administered twice, once before instruction in concept mapping and once after instruction in concept mapping. Analysis of the entire set of responses to the posttest (n=15) resulted in an acceptable overall level of reliability of the instrument (α=.05)

Procedure

This current study was conducted in the spring session of 2023 over a six-week period of time. Prior to the first week of the study participants had received a pretest to assess their reading comprehension abilities prior to any instructional interventions. Then participants received 24 hours of instruction using traditional reading comprehension strategies typical of the Title II English language learning program.

During the first week of the study, participants took a pre-test. The pre-test consisted of a reading passage at a Lexile level of 700L, which is appropriate for intermediate language learners. (*Common European*, 2020) Participants responded to 10 comprehension questions that asked them to recall facts from the reading, and draw inferences and conclusions. This pre-test was designed to measure participants' level of comprehension.

During the teaching experiment, from weeks two to five, participants received 24 hours of instruction that involved using concept mapping as both a pre-reading and post-reading comprehension strategy. The instruction was scaffolded, starting with map completion activities where participants completed skeletal concept maps. As the weeks progressed, the scaffolding was gradually reduced, and participants were asked to generate their own concept maps before and after reading. During this time, participants were asked to recall information from texts, draw inferences and conclusions about 3 sample texts. During this time 2 students missed 3 hours of class instruction.

In the final week of the study participants took a post-test consisting of 10 comprehension questions. Participants were asked to complete a concept web before reading and after reading and before responding to the questions. The scores from this post-test were used to measure the level to which students' reading comprehension improved with the use of concept mapping.

All data was analyzed using the Statistical Package for the Social Sciences (SPSS). Data was analyzed using a paired-t test to determine the mean of the difference for the scores when participants were instructed without the treatment and with the treatment.

An ANOVA test was used to analyze the differences between the groups as well. The Levene's Test was used to test the null hypothesis.

The final sample (n = 15) consisted primarily of Spanish speakers (80%). Forty percent of participants attended post secondary school. Participants were evenly distributed across the following age bands; 20-25, 26-35, 36-45, 46-55, 56 or older with each age band containing 20% of participants.

Results

As a test of the hypothesis that the use of concept mapping before reading and after reading will improve reading comprehension an independent t test was conducted. This test was found to be significant $t(28)=-2.19$, $p <.05$. The effect size of this analysis (d= 2.08) was found to exceed Cohen's (1988) convention for a large effect (d=.80) These results support the null hypothesis that when participants received instruction in concept mapping (M=5.66, SD=2.02) they showed improved reading comprehension over when participants received traditional reading instruction (M=4.00, SD=2.14) (Table 1.1)

Table 1.1. Individual *t*-Test Results

	Group	N	Mean	Std. Deviation	Std. Error Mean
Pre	1.00	15	3.5333	2.06559	.53333
	2.00	15	4.3333	1.98806	.51331
Post	1.00	15	4.0000	2.13809	.55205
	2.00	15	5.6667	2.02367	.52251

Group 1 represents participants with traditional instruction and Group 2 represents participants utilizing concept mapping

Conclusions

The results from this study found that concept mapping was an effective strategy for improving reading comprehension in adult language learners. Participants scored

higher overall on the post test after receiving instruction in concept mapping. This supports the findings of previous studies. (Salehi et al., 2013, Khodadady and Ghanizadeh, 2011, Burt, Peyton and Van Duzer, 2005)

This study supports the inclusion of explicit, top-down instruction of reading comprehension skills, specifically the use of visual organizers, such as concept maps to enhance reading instruction and support the organization and categorization of known and learned information.

Annotated Bibliography

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https://www.cal.org/adultesl/pdfs/briefs/how-should-adult-esl-reading-instruction-differ-fro

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Burt, Peyton, and Van Duzer (2005) explore the differences between adult English as a

Second Language (ESL) reading instruction and Adult Basic Education (ABE) reading

instruction. They discuss the challenges that adult ESL learners face, including different cultural

norms and experiences as well as the need for more complex materials. They argue that adult

ESL learners require more explicit instruction in vocabulary and grammar, as well as instruction

in reading strategies such as skimming and scanning. Additionally, the authors suggest that a

top-down approach to reading instruction, which focuses on the use of context and background

knowledge, may be particularly effective for adult ESL learners.

Chandran, Y., & Shah, P. M. (2019). Identifying learners' difficulties in ESL reading

comprehension. *Creative Education*, 10(13), 3193-3207. doi:10.4236/ce.2019.1013259

The study by Chandran and Shah (2019) investigated the reading comprehension

difficulties faced by English as a Second Language (ESL) learners. The study surveyed 153

ESL learners in a Malaysian university and identified vocabulary, inference, and comprehension

monitoring as the key difficulties faced by the learners. The study provides insights into the

specific challenges that English language learners face and the need for effective instructional

strategies to address them.One potential strategy for addressing the vocabulary difficulties

identified in the study is the use of graphic organizers, as they can help learners visualize the

relationships between words and facilitate vocabulary learning. The study also suggests that

concept mapping may be an effective strategy for improving comprehension monitoring.

Concept mapping can help students organize and connect information, which may improve their

ability to monitor their comprehension while reading.

Chang, Kuo-En, Sung,Yao-Ting, & Chen, Ine-Dai. (2002). The effect of concept mapping to

enhance text comprehension and summarization. *The Journal of Experimental*

Education, 71, 5-23. doi:10.1080/00220970209602054

Kuo et al's (2002) study aims to evaluate the effect of concept mapping on the

participants' ability to comprehend and summarize text. The authors conducted an experimental

study with 69 adult language learners who were assigned to a concept mapping group or a

control group. Each group used a different type of concept mapping strategy including; map

correction, scaffold fading, and map generation to examine the effects on text comprehension

and summarization skills. The authors suggest that concept mapping can be particularly

effective for adult language learners, as it provides a visual representation of information, which

can aid in comprehension. The study's findings suggest a benefit of improved critical thinking

skills, which can enhance reading comprehension. Concept mapping can enhance reading

comprehension by helping learners identify the main ideas and relationships between concepts.

The authors concluded that concept mapping is an effective strategy for adult language learners

to comprehend and summarize text.

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Eyring, J. L. (2014). Adult ESL education in the US. CATESOL Journal, 26(1), 120-149.

JOHNSON, K. A., & PARRISH, B. (2010). Aligning Instructional Practices to Meet the Academic

Needs of Adult ESL Students. *TESOL Quarterly*, *44*(3), 618–628.

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Kalanzadeh, G.-A., Maleki, Z., & Raz, A. (2014). Concept Maps and Reading Comprehension

among EFL Learners. *International Journal of Innovation and Research in Educational*

Sciences, 1(2), 2349–5219.

Kalanzadeh, Maleki, and Raz's (2014) study explores the effectiveness of concept maps on reading comprehension among English as a Foreign Language (EFL) learners. The study involved 40 EFL students who were randomly assigned to an experimental group and a control group. The experimental group received instruction on how to create concept maps, while the control group received traditional instruction. The results of the study indicate that the experimental group showed significant improvement in their reading comprehension skills compared to the control group. The study concludes that concept mapping can be an effective instructional strategy for enhancing reading comprehension among EFL learners. This study is relevant to the topic of reading comprehension and the use of concept mapping as an instructional strategy for EFL learners. The study's findings provide further evidence that concept mapping can be an effective tool for improving reading comprehension skills among EFL learners. The study also demonstrates the effectiveness of concept mapping, and discusses its potential in improving reading comprehension among EFL learners.

Khodadady, E., & Ghanizadeh, A. (2011). The impact of concept mapping on EFL learners' critical thinking ability. *English Language Teaching*, 4(4), 49-56.

Khodadady and Gheanizahed's (2011) study investigates the effect of concept mapping as a post-reading strategy on EFL learners. The study used a pre-test and post-test to measure the impact of concept mapping on critical thinking. The results showed that the use of concept mapping significantly improved the critical thinking ability of EFL learners. The authors discuss constructivist theory which establishes an organization such as the context according to text structure for selection relevant information to later be connected via inferences and elaboration. The study suggests that concept mapping can be used as an effective instructional tool to enhance critical thinking ability in EFL learners.

Knight, S. L., Padron, Y. N., & Waxman, H. C. (1985). The Cognitive Reading Strategies of ESL Students. *TESOL Quarterly*, *19*(4), 789–792. doi:10.2307/3586677

The study by Knight, Padron, and Waxman (1985) provides valuable insights into the cognitive reading strategies used by ESL students to comprehend text. The authors set out to determin the differences between ESL students and their native language peers in the type and frequency with which they used cognitive reading strategies. The authors used think-aloud protocols to gather data on the strategies employed by the participants when reading. Native speakers cited concentration as the most frequently used strategy. Interestingly, none of the native speakers mentioned students' perception of teachers' expectations as a strategy. On the other hand, ESL students most frequently cited their perception of teachers' expectations as a strategy, and did not mention imaging, noting details, or predicting outcomes during the study. Additionally, the native speakers used twice as many different strategies as their ESL peers. The authors suggest that teaching cognitive reading strategies can help ESL students develop more effective reading skills. By understanding and applying these strategies, ESL students can become more proficient readers and better equipped to process text. Through this explicit instruction, educators can empower ESL students to become more autonomous learners who can successfully comprehend and process English-language text.

Oliver, R., & Young, S. (2016). Improving reading fluency and comprehension in adult ESL

learners using bottom-up and top-down vocabulary training. *Studies in Second*

Language Learning and Teaching, 6(1), 111-133. doi:10.14746/ssllt.2016.6.1.6

Oliver and Young's (2016) study explores the use of bottom-up and top-down vocabulary instruction to improve reading fluency and comprehension in adult English language learners. The study was conducted with a group of 60 adult learners divided into three groups of 20 each. One group received bottom-up vocabulary instruction, another received top-down vocabulary instruction and the third was a control group. The control group did significantly better in reading fluency and comprehension than the group that received bottom-up instruction. There were no significant differences between the control group and the group receiving top-down instruction with regard to comprehension. However the top-down group did show higher fluency rates than

either the bottom-up or control group. The study provides evidence for the effectiveness of using both top-down and bottom-up instruction when teaching vocabulary to adult language learners. It suggests that using top-down instructional strategies such as graphic organizers for vocabulary instruction could potentially enhance fluency which has been shown to improve reading comprehension. Overall, the article provides valuable insight into teaching reading comprehension to adult language learners.

Phan, T. T. (2017). The effects of concept mapping on EFL students' reading comprehension.

      European Journal of English Language Teaching, 2(2). doi:10.5281/zenodo.581801

      Phan's (2017) study investigated the effects of concept mapping on the reading comprehension skills of adult English as a foreign language (EFL) learners. The study used concept mapping as a visual learning tool to improve reading fluency, comprehension, and retention. The study included pre-reading and post-reading activities to assess the impact of concept mapping on reading comprehension. The results showed that concept mapping improved the reading comprehension skills of EFL students by facilitating the identification of main ideas, relationships between ideas, and the organization of information.The findings point to the effectiveness of concept mapping as a teaching strategy to enhance the reading comprehension skills of adult language learners.

Salehi, A. D., Jahandar, S., & Khodabandehlou, M. (2013). The Impact of Concept Mapping on

      EFL Student's Reading Comprehension. *Indian Journal of Fundamental and Applied Life*

      Sciences, 3(3), 241-250. Retrieved from

      https://www.cibtech.org/J-LIFE-SCIENCES/PUBLICATIONS/2013/Vol_3_No_3/JLS-32-3

      7...the...comprehension.pdf

      Salehi, Jahandar, and Khodabandehlou's (2013) study explores the impact of concept mapping on the reading comprehension of English as a Foreign Language (EFL) students. The study included 62 participants, who were divided into two groups. The experimental group received instruction on how to create concept maps, while the control group received traditional

instruction. The results of the study indicate that the experimental group demonstrated

significant improvement in their reading comprehension skills compared to the control group.

The authors found that concept mapping is an effective instructional strategy for enhancing

reading comprehension skills among EFL learners.The authors discuss the effectiveness of

concept mapping as a cognitive tool for organizing and representing knowledge.

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