

# Evaluating the Saudi EFL Teachers' Perceptions of Concept Mapping Instruction: A Pedagogical Perspective

Naji H. Alenezi\*

Department of Educational Sciences, College of Education, Majmaah University, Majmaah city, Kingdom of Saudi Arabia

Received: 27 Jul. 2023, Revised: 2 Nov. 2023, Accepted: 5 Nov. 2023.

Published online: 1 Dec. 2023.

**Abstract:** The current study evaluated the Saudi EFL teachers' perceptions of using concept mapping as an instruction method for teaching English to Saudi Middle school students. In this regard, the current study investigated the Saudi EFL teachers of employing the concept mapping instruction in terms of various elements, namely its benefits, challenges, learning outcomes, students' comprehension of language content, and students' retention of language knowledge. Data was elicited through a 35-item questionnaire that was divided into six parts. The study employed a qualitative research design to gather insights into the Saudi EFL teachers' perceptions regarding various elements of the concept mapping implementation. The sample comprised 40 (n=40) Saudi EFL teachers from 12 Middle Schools across Al-Majmaah city selected through purposive sampling. The findings align with existing literature, highlighting the potential of concept mapping to enhance students' active engagement, critical thinking, knowledge retention, language abilities, and content comprehension, as well as the challenges faced by teachers during implementation. The pedagogical implications recommended incorporating the concept mapping into educational policies, curriculum design, and Saudi EFL teachers' training programs in order to enhance the quality and effectiveness of English language teaching in the Saudi EFL context.

**Keywords:** Perceptions, Concept Mapping, Saudi EFL Teachers, Saudi Middle School Students, Pedagogical Implications.

## 1 Introduction

Education vitally shapes a nation's future [1]. Thus, Saudi Arabia has been prioritizing educational reforms for the purpose of meeting the demands of the ever-evolving world [2]. The ministry of education tends to explore and integrate innovative instructional methodologies that cater to the Saudi EFL students' different needs. It has transformed from relying on the teacher-centered approach to the student-centered approach [3]. Whereas students passively receive information without active participation in the learning process in the former approach, they are actively engaged in the learning process in the latter [4]. The student-centered approach sustains the learners' skills of critical thinking, creativity, collaboration, and problem-solving skills. It enables students to become lifelong learners equipped for the challenges of the 21st century [5].

Concept mapping has emerged as a student-centered approach powerful instructional strategy, recognized for its potential to foster critical thinking and active learning, enhance cognitive processes and knowledge organization, and facilitate meaningful learning experiences [6]. Concept mapping is defined as graphic organizers employed to represent the relationship between concepts, information, or ideas in a particular subject area [7]. Concept mapping involves the creation of diagrams or maps, where concepts are represented as nodes or boxes, and the relationships between them are depicted using labeled arrows or lines [8]. These maps serve as visual representations where key concepts are identified, linked, and hierarchically arranged (from the broadest/most inclusive to the most specific idea), forming a network of interconnected ideas [9]. Through this visual representation, learners can visually analyze, synthesize, and explore complex relationships within a specific knowledge domain, facilitating a deeper comprehension and conceptual understanding. With the help of a concept map, it becomes possible to take a given concept, break it down into individual components and show how these components/parts are connected within the concept. Linking these concepts using arrows/lines helps Concept

\*Corresponding author e-mail: naj.alenezi@mu.edu.sa

mapping exhibit several key features contributing to its effectiveness as an instructional tool. Firstly, it promotes active engagement by encouraging learners to participate actively in constructing and organizing knowledge [10]. By actively selecting and organizing concepts, learners develop a sense of ownership and autonomy in their learning process. Secondly, concept mapping emphasizes identifying meaningful connections between concepts, fostering critical thinking and the development of higher-order cognitive skills. Learners engage in reflective thinking, examining relationships and synthesizing information to construct coherent knowledge structures [11]. Additionally, concept mapping facilitates metacognitive processes by promoting self-assessment and reflection [12]. Learners can monitor their understanding, identify knowledge gaps, and revise their concept maps accordingly. Lastly, concept mapping supports collaborative learning as it provides a platform for learners to share and discuss their maps with peers and fosters dialogue and collaborative knowledge construction [13].

Through the concepts of visual representation and their interrelationships, concept mapping facilitates the construction of meaningful connections among ideas, enhances comprehension and promotes deeper understanding [14]. Hence, there has been an embracement and implementation on the part of educators of the concept mapping over the last decades, with empirical evidence demonstrating its efficacy across diverse academic disciplines [15]. Nonetheless, while concept mapping has been widely researched, documented, and implemented in Western educational contexts, its application and effectiveness in teaching Saudi EFL students remain relatively unexplored [16].

Therefore, there was a need for a study that aimed to explore how the Saudi EFL teacher perceive concept mapping as an instructional approach for English language students in Saudi Arabia. By investigating such perception of concept mapping as a tool for promoting student-centered learning, the study present aimed to determining the effective and innovative teaching strategies that cater to EFL students' needs and learning preferences within the Saudi educational context. Moreover, there was a need to examine the Saudi EFL teachers' perceptions of the benefits, challenges, and impact of concept mapping on students' learning outcomes. This examination sustained the ongoing efforts which aim at expanding the framework for student-centered instruction in Saudi Arabia. Additionally, the current study aimed to contribute to the existing body of knowledge on student-centered instruction, extending its boundaries to encompass experiences from the Saudi Arabian context.

By bridging this research gap, the present study also aspired to guide educators, curriculum developers, and policymakers in adopting student-centered pedagogical approaches that fully harness the potential of concept mapping. Through the concept mapping incorporation, educators can create inclusive and engaging learning environments that prepare students for a future characterized by adaptability, creativity, and lifelong learning.

### **Operational Definitions**

The present study defined concept mapping as a technique of teaching instruction. In other words, the perception of concept mapping was evaluated as an instruction technique used for teaching English in the Saudi Middle schools.

### **Statement of the Problem**

The present study examined the valuation of employing the concept mapping the Saudi EFL context. It explored how the Saudi EFL teachers perceive the use of concept mapping in the middle schools. The utility of using concept mapping was based on the criteria of benefits, challenges, learning outcomes, understanding language content among students and their retention of language knowledge.

### **Research Questions**

1. What were the perceived benefits of concept mapping among the Saudi EFL teachers?
2. What were the challenges which the Saudi EFL teachers encounter while implementing the concept mapping in the Saudi EFL context?
3. What was the Saudi EFL teachers' perception of their students' expected learning outcomes due to the implementation of concept mapping instruction?
4. How did the Saudi EFL teachers evaluate their students' comprehension of language content taught by using the concept mapping instruction?
5. How did the Saudi EFL teachers perceive their students' ability to retain knowledge because of implementing the concept mapping instruction?

### **Significance of the study**

The present study was significant to teachers, teacher educators, and curriculum designers for various reasons as it:

1. Significantly contributed to the literature of curriculum and instruction in general.

2. Investigated the merits of concept mapping instruction as an eligible teaching method in the Saudi EFL context.
3. Supported the goals of the Ministry of Education's policy to elevate the English proficiency levels among Saudi EFL learners.
4. Sustained the Saudi vision of 2030 that emphasizes the importance of learning English in the Saudi EFL context.
5. Helps improve the process of teaching English in the Saudi Middle schools.
6. Provided insights into the EFL curriculum planning in the Saudi context.

## 2 Literature Review

### Theoretical Framework

In drawing upon the principles of constructivism, Seymour Papert (1980) introduced the concept of constructionism which emphasized that new ideas are best generated when learners actively construct external artifacts that can be reflected upon and shared with others. In this regard, the constructionist learning environment encompasses several key elements. These main elements include the teachers' facilitative role, learners who investigate, create, and solve problems, collaboration among learners, engagement in authentic tasks, and opportunities for feedback and revision [17].

The current study was inspired based on the constructivism theory acknowledging that learners construct knowledge by actively creating external artifacts that facilitate reflection and sharing with peers. To support this process, Papert advocated the adoption of tools and media that enable knowledge construction. Papert believed that the knowledge construction is greatly enhanced when the construction of tangible artifacts in the physical world complements it [18].

To this end, concept mapping approach helps to construct knowledge within students' minds. While students already possess prior knowledge and ideas, collaboratively building conceptual maps with peers or teachers allows them to actively contribute their perspectives and ideas, enriching the collective knowledge and enhancing comprehension. This is particularly valuable as it promotes a learner-centered approach where students actively construct knowledge rather than passively receive information. In this concern, the personal construction of artifacts differs significantly from assimilating material created by others. Therefore, the constructivism theory is highly relevant to this study since it explains how students, in collaboration with their teachers, employ conceptual mapping to develop their conceptual comprehension of the English language. Being visual organizers, concept maps play a vital role in organizing information meaningfully. Thus, the concept mapping approach helps students identify, add, and establish connections between components, thereby comprehending how they are related to the overarching idea or concept. Consequently, students learn by actively participating in the organization of new information [19].

### Conceptual Mapping and Language Teaching

Language learning is a complex process which involves the development of various skills including listening, speaking, reading, and writing skills, with grammar being a fundamental aspect of the development [7]. Grammar learning is significant and has its influential role in the other language skills, particularly in enabling students to use appropriate language structures and styles. Grammar plays a crucial role in language learning. Grammar provides the foundational framework for comprehending and producing language. It influences learners' ability to adjust their language in different contexts and avoid errors. The significance of grammar instruction dwells on its practical application that enables language learners to conduct effective and appropriate communication. However, grammatical rules are not an end in themselves but rather a means to attain effective communication in various situations. Reading and conversation also contribute to language learning by exposing students to rich languages and allowing them to practice their language skills [1-22].

In this regard, concept mapping holds significant educational significance in English language instruction for students. It reinforces active engagement and deep processing of information. Through concept mapping, students can actively organize and connect linguistic concepts as they create concept maps [14-25]. Concept mapping can also facilitate a profound understanding of English language structures, vocabulary, and usage. Furthermore, concept mapping nurtures critical thinking skills by encouraging students to analyze relationships, identify patterns, and make connections between different language components. This cognitive engagement enhances students' ability to think critically, reflect, and apply knowledge in various linguistic contexts [13-31].

In addition, concept mapping facilitates knowledge retention due to its visual framework which aids in organizing and recalling information. Through concept mapping approach, students can easily review and retrieve knowledge by visually representing information in a structured, systematic manner. A concept mapping strategy can be deeply rooted

in meaningful verbal learning methods. It can also present a promising approach to teaching grammar. By visual representation of the hierarchical relationships between grammatical concepts, concept mapping helps learners to comprehend and organize complex grammatical structures. It helps learners connect new knowledge with their existing understanding, facilitating meaningful learning experiences [2-28].

The strategic arrangement of grammatical concepts logically and sequentially supports students to grasp the interdependence and integration of these concepts. Moreover, the cognitive nature of concept mapping aligns with the cognitive processes necessary for learning grammar. According to Foley, et. al., concept mapping allows learners to reconstruct and develop their conceptual comprehension of grammar; a task that might be challenging to the majority of EFL/ESL learners due to its multiple rules [13]. The concept mapping strategy can also assist learners in constructing a conceptual framework, making grammar learning more meaningful while facilitating the acquisition of grammatical concepts. Therefore, organizing the cognitive content of educational material analytically by using concept mapping is considered as an integral approach that promotes the learning process [14-16].

The current literature provides substantial evidence of the positive effects of concept mapping on various aspects of language learning. Researchers have explored its benefits in reading, writing, listening, and speaking skills, as well as its impact on critical thinking [22-25], reducing speaking anxiety [16], increasing confidence [7], and self-control [6]. These studies highlighted the potential of concept mapping to enhance language learning performance and promote awareness of critical thinking among EFL learners.

Research conducted in the Middle East region indicated teachers' positive perspectives of using concept mapping approach as an instructional tool for teaching the English language. A study conducted in the United Arab Emirates [10] asserted the positive experiences of teachers in training who incorporated concept mapping into their English language instruction. Although the overall performance outcomes were reported to be poor at the initial stages of concept mapping implementation, the teachers expressed satisfaction with the method, recognizing its potential to influence English language learning positively. This finding was consistent with a study conducted in Turkey [15], where teachers held positive views on concept mapping, emphasizing its effectiveness in increasing retention during learning. However, some teachers in the Turkish study initially found the use of concept mapping approach challengeable, in spite of acknowledging its practicality and usefulness. The majority of teachers in both studies agreed that concept mapping facilitated retention and recall of information, enabled students to build upon prior knowledge and understand new concepts effectively.

Similarly, a Jordan-based study [8] found that the concept mapping approach enhanced students' performance, and teachers expressed positive attitudes toward this instructional approach. Another study conducted in Saudi Arabia [12] supported these findings, suggesting that learners with lower English-speaking skills might benefit from concept mapping. In this study, students who used concept mapping demonstrated better language abilities, particularly in speaking English, than those who did not. Moreover, students who were taught by using the concept mapping approach scored higher grades compared to their peers in the control group. This aligns with the notion that concept mapping facilitates information retention, allowing students to understand better and utilize the language.

### **Effectiveness of Conceptual Mapping**

Concept mapping as an instructional approach has been extensively studied and has shown promising results in various fields of education. Ruiz-Primo and Shavelson (1996) explored the application of concept mapping approach in learning science and found consistent correlations between the quality of concept mapping and students' achievement. They also observed that instruction on a specific topic improved the quality of concept mapping approach, which could differentiate experts from novices in a particular domain. These findings asserted the potential of using concept mapping in enhancing learning outcomes [9].

The benefits of concept mapping, stating that it enhances reading comprehension by stimulating creativity, activating prior knowledge, and preparing learners for tasks. Its advantages include providing concise content summaries and promoting interaction and interest in a clear contribution to improved language production [36-38]. This finding is supported by [41], who reported that students taught using concept mapping outperformed those taught using conventional approaches in English reading comprehension. The researchers attributed this success to concept mapping ability to activate prior knowledge and serve as a cognitive tool. Thus, concept mapping can facilitate the connection between old and new information and promote better comprehension. The concept mapping approach was deemed an effective cognitive tool for expanding, organizing, and presenting information, thus enhancing students' learning experiences [6-41].

Moreover, the potential benefits of concept mapping extend beyond instructional gains, encompassing higher-order cognitive abilities, including self-regulation and self-efficacy. The observation revealed that there was a significant influence of concept mapping on achievement, self-regulation, and self-efficacy in ESL students [19]. Similarly, the

positive impact of concept mapping as a learning strategy for self-regulation in writing classes was also examined [19]. While these studies shed light on the motivational and regulatory aspects of concept mapping, there remains a research gap regarding its role in developing critical thinking skills in ESL/EFL settings. Although the concept mapping approach has been described as a metacognitive tool that promotes reflective thinking through visual representation of concept relationships, empirical studies focusing on critical thinking in second language learning contexts are limited.

Moreover, the impact of concept mapping as a pre-writing strategy on Palestinian EFL students' argumentative essay-writing skills was investigated [3]. The results indicated that the experimental group, which used concept mapping, achieved significantly higher post-test scores than the control group. This finding underscored the benefits of employing concept mapping as a focused instructional strategy at specific stages of the writing process. Similarly, concept mapping helped students perform better in Arabic grammar proficiency compared to those who did not use this approach [1-22].

In addition, concept mapping positively influenced English speaking performance, critical thinking awareness, and decreased speaking anxiety among EFL learners. The study highlighted the statistically correlated relationships between concept mapping, learning performance, and critical thinking [7-18]. The power of concept mapping in enhancing cognitive performance, allowing students to reiterate ideas, identify misconceptions, and add new concepts and links. Educators can also use the concept mapping approach to assess students' understanding and identify areas for further support [8-32].

While concept mapping was deemed promising in improving learning outcomes, the importance of building strategies in determining the quality and effectiveness of concept maps was highlighted. The study indicated that the C-A-P approach, which involves starting with cards, arranging them, and then writing connecting phrases, yielded superior results. However, it is important to note that different strategies may suit different learning environments and individual student preferences, emphasizing the need for teachers to be flexible in their approach [35].

Moreover, although the concept mapping approach is acknowledged for its numerous benefits as an instructional tool, different studies highlighted challenges that could impede its implementation. For instance, conceptual mistakes were highlighted as a leading challenge, arguing that conceptual mistakes tend to increase with the topic's complexity. The researchers discovered that the concept mapping approach might exhibit more mistakes as the subject matter becomes more complex, producing subnets with lower actual complexity. Nonetheless, the quality and effectiveness of concept maps vary depending on the approach or strategy employed in their construction [33]. There was also a clarification of different types of concept maps, such as open-ended versus very constrained maps, may yield different outcomes, underscoring the importance of selecting appropriate mapping techniques to enhance the accuracy and comprehensiveness of the visual representation [37].

Besides conceptual challenges, software-related issues could hinder the adoption of concept maps. Some students developed negative attitudes towards the concept mapping approach because of the difficulties in using the associated software. Specifically, the selection of concepts and links proved to be a challenging task, leading to reluctance among students. Furthermore, technological problems and the limited proficiency of both EFL students and teachers in effectively using the concept mapping software can hinder its implementation and impede its potential impact [19].

These insights highlighted the significance of addressing challenges associated with the use of concept mapping approach in order to maximize its effectiveness as an instructional tool for the Saudi EFL students. By considering the complexity of topics, selecting appropriate mapping strategies, and providing necessary technical support, educators can mitigate conceptual and technological barriers and optimize the benefits of concept mapping-based instruction. In addition, research and professional development initiatives should focus on empowering teachers and students with the skills and knowledge needed to overcome these challenges and fully utilize the potential of concept mapping in enhancing learning outcomes [20].

As more institutions continued to invest in strategies that help improve English comprehension globally or locally, this study aimed to determine the Saudi EFL teachers' perceptions of using the concept mapping approach for conceptual comprehension of the English language among the Saudi Middle School students. The results can potentially inform educational policy and practice in Saudi Arabia and other countries in the region, as well as contribute to the broader discourse on student-centered instruction and effective teaching practices [30].

### 3 Methodologies

The present study adopted the qualitative approach to analytically evaluate the Saudi EFL teachers' responses to the questionnaire items of perceptions [20-39-34]. The qualitative analysis describes the participants' responses to each part of the perceptions questionnaire. In this regard, descriptive statistics, including the percentage, mean scores, and standard deviation were employed. Tables were used to present the collected data.

## Participants and setting

The purposive sampling procedure was adopted to select 40 full-time English language teachers to take part in the study during the 2022 academic year. The selected teachers were affiliated to 12 Middle schools in Majmaah city, Saudi Arabia with an estimated 115 population of English teachers across the city. Seven academic centers were located within the city, while five were in the suburbs. A total of 18 female and 22 male teachers completed the questionnaires. According to the participants' feedback provided through the consent forms, this sample fairly represented the homogenous groups with respect to their teaching experience and their expertise in using concept mapping.

All the selected teachers had experience in teaching English to EFL students with a minimum of three years of classroom teaching. They all regularly used conceptual maps to teach English. There was variance in their teaching experience in using the concept mapping approach. Eight participants had 3-5 years, 14 participants had 6-10 years, seven had 11-15 years, nine had 16-20 years, and two participants had over 20 years of experience.

## Procedure

The researcher contacted the director of the education department in Al-majmaah across the institutions to be engaged in the study in order to solicit their cooperation, interest, and consent. The Likert-scale questionnaire was developed on the basis of a comprehensive review of existing literature pertinent to concept mapping for English language learning. Initially, a pool of Likert-scale items was generated to address various aspects of concept mapping and its impact on learning outcomes. The development of the questionnaire items was based on various studies such as [11-16-21-38-33-41]. The items were subjected to a rigorous process of experts' review to ensure their clarity, relevance, and validity. The research incorporated the feedback provided by experts in the field of education with a preference for English language to refine the questionnaire.

Prior to the questionnaire administration to the target participants, a pilot study was carried out in an attempt to assess its validity and reliability. A small sample of 12 English language teachers was purposively selected for the pilot study. Participants were asked to respond to the questionnaire items and provide feedback on the items' clarity, as well as any difficulties they could have encountered during the process. The pilot study elicited data that were analyzed using appropriate statistical techniques to assess the questionnaire's internal consistency and reliability where the reliability coefficient was 89. The questionnaire items were revised and modified based on the results of the pilot study to ensure its validity.

The researcher administered the questionnaires by hand to each teacher in their offices and assisted those with any questions. The researcher also supervised the teachers as they completed the questionnaires anonymously, which typically required an average of 20-30 minutes. Any identifying information was removed before beginning the data analysis to warrant confidentiality. Pseudonyms were used and no information that could identify a teacher was reported.

## Data Collection Instrumentation

Data was elicited through a structured 34-item questionnaire. The developed questionnaire is divided into 6 parts (Appendix A). Part I comprises five items on the participants' perception of the concept mapping implementation benefits. Part II includes 8 items on the challenges that have encountered the participants in implementing the concept mapping. Part III covers 6 items of the participants' perception of the learning outcomes of using concept mapping. Part IV includes 4 items on the participants' perception of their students' comprehension due to the concept mapping implementation. Part V comprises 6 items on the participants' perception of their students' knowledge retention ability because of using the concept mapping instruction. Part VI includes 4 items related to the participants' perception of the necessity to incorporate concept mapping into EFL teaching and learning in the Saudi context. Lastly, in part VII, the participants were required to rate their perception of the concept mapping as an effective teaching method.

Each questionnaire part comprises structured questions that required the teachers to rate and record their perspectives pertaining to different aspects of using conceptual maps to teach English Language in a Likert Scale ranging from Strongly Disagree to Strongly Agree (where Strongly Disagree (SD) = 1, Disagree (D) = 2, Neutral (N) = 3, Agree (A) = 4, Strongly Agree (SA) = 5).

## 4 Results

The responses to the structured questionnaire were evaluated to answer each research question. Additionally, the questions were grouped with respect to the research question they addressed: questions reflecting teachers' perspectives of using concept maps and questions reflecting outcomes of teaching using concept maps.

### *A. Perception of concept mapping benefits among Saudi English Language Teachers*

Table 1 indicates that Saudi EFL teachers perceive multiple benefits for using the concept mapping. The majority of Saudi EFL teachers (73%, Mean=3.8, SD=1.05) agreed or strongly agreed that concept mapping facilitates meaningful connections between concepts, promotes critical thinking skills (65%, mean=3.65, SD=0.94), and encourages active students' engagement (55%, mean=3.45, SD=1.07). Teachers also believe that concept mapping enhances students' comprehension of complex concepts (55%) and helps students organize and recall information more effectively (60%, mean=3.47, SD=1.09).

**Table 1:** Perception of concept mapping benefits.

Perceived Benefits of Concept Maps	SD	D	N	A	SA	Mean	SD
1. Concept maps enhance students' understanding of complex concepts.	5%	15%	25%	40%	15%	3.45	1.07
2. Concept maps promote critical thinking skills among students.	3%	10%	23%	50%	15%	3.65	0.94
3. Concept maps facilitate meaningful connections between concepts.	5%	8%	15%	48%	25%	3.8	1.05
4. Concept maps help students organize and recall information more effectively.	5%	18%	18%	45%	15%	3.47	1.09
5. Concept maps encourage active student engagement in the learning process.	0%	13%	33%	53%	3%	3.45	0.74

**B. Challenges encountered by Saudi EFL teachers due to using concept mapping in the Saudi EFL context.**

Table 2 shows that Saudi EFL teachers encountered various challenges when using concept mapping. Sixty percent of the Saudi EFL teachers expressed their agreement that there are limited availability of resources and materials for implementing the concept mapping within their institutions (mean=3.6, SD=1.07), insufficient training and professional development opportunities (70%, mean=3.85, SD=0.85), difficulties in incorporating concept mapping into the current curriculum (75%, mean=3.92, SD=0.98), and challenges in establishing effective concept mapping (75%, mean=3.95, SD=0.86). The participants also reported challenges pertinent to students' reluctance or lack of familiarity with using concept mapping (65%, mean=3.67, SD=1.00), students found it challengeable to construct their concept mapping (63%, mean=3.67), language and cultural barriers (73%, mean=3.9, SD=1.04), and the perception that constructing concept mapping consumes too much time (70%, mean=3.85, SD=0.85).

**Table 2:** Perception of the Saudi EFL teachers' challenges due to using the concept mapping

Challenges Faced by Teachers	SD	D	N	A	SA	Mean	SD
1. Limited availability of resources and materials for creating concept maps.	5%	10%	25%	40%	20%	3.6	1.07
2. Insufficient training and professional development opportunities for teachers on concept mapping	0%	8%	23%	48%	23%	3.85	0.85
3. There are difficulties in integrating concept maps into the existing curriculum English Language curriculum	3%	8%	15%	45%	30%	3.92	0.98
4. Students' resistance or lack of familiarity with concept mapping as a learning strategy.	3%	13%	20%	45%	20%	3.67	1.00
5. Teachers face difficulties in creating effective concept maps for English language instruction	0%	8%	18%	48%	28%	3.95	0.86
6. Students find it challenging to construct their concept maps during English language lessons	3%	13%	23%	40%	23%	3.67	1.03

7. <i>Language and cultural barriers affecting the implementation of concept mapping in an Arabic-speaking context.</i>	3%	10%	15%	40%	33%	3.9	1.04
8. <i>Constructing concept maps takes too much time</i>	5%	10%	28%	43%	15%	3.52	1.02

### C. Perception of Saudi EFL students' learning outcomes when taught by using concept mapping-based instruction.

Table 3 indicates that Saudi EFL teachers attribute multiple positive learning outcomes to the implementation of concept mapping instructional approach. Remarkably, most Saudi EFL teachers (78% of the participants) agreed or strongly agreed that concept map-based instruction contributes to their students' content comprehension improvement (Mean=3.9, SD=0.89), while 70% indicated that the approach reinforces their critical thinking skills (Mean=3.75, SD=0.91). In addition, 70% of the Saudi EFL teachers indicated that concept mapping helps increase students' ability to retain knowledge, with 70% of the participants also highlighted the concept mapping contribution to improve the learners' ability to make connections between language components. Notably, 80% of the Saudi EFL teachers indicated that concept mapping enhances students' confidence and motivation (mean=4.02, SD=0.79), while 75% claimed that the strategy improved students' performance in English language assessments (mean=3.9, SD=0.96).

**Table 3:** Perception of Saudi EFL students' learning outcomes

<i>Perceived Learning Outcomes of English Language Students</i>	SD	D	N	A	SA	Mean	SD
1. <i>Improved content understanding among students.</i>	3%	5%	15%	55%	23%	3.9	0.89
2. <i>Enhanced critical thinking skills of students.</i>	3%	10%	18%	53%	18%	3.72	0.95
3. <i>Increased knowledge retention among students.</i>	3%	8%	20%	53%	18%	3.75	0.91
4. <i>Improved ability to make connections between different language components.</i>	0%	8%	23%	50%	20%	3.82	0.83
5. <i>Greater confidence and motivation in using the English language.</i>	0%	5%	15%	53%	28%	4.02	0.79
6. <i>Concept map-based instruction improves students' performance in English language assessments.</i>	3%	8%	15%	48%	28%	3.9	0.96

### D. Impact of concept mapping-based Instruction on content understanding among English language students in Saudi Arabia.

Table 4 suggests that concept mapping-based instruction has a positive impact on content understanding among the Saudi EFL students. Sixty five percent of the Saudi EFL teachers agreed that concept mapping-based instruction helps students grasp of complex concepts effectively (mean=3.62, SD=1.04), while 70% indicated that the approach helped learners understand the underlying structure and organization of English language content. Moreover, 73% of the Saudi EFL teachers indicated that students' learning using concept mapping demonstrated a deeper understanding of concepts than traditional instruction methods (Mean= 3.82, SD=0.94). Lastly, 79% of the participants reported that concept mapping supports the application of English language concepts in real-life contexts, with a mean score of 3.97 (SD=0.77).

**Table 4:** Perception of impact of concept mapping-based instruction

<i>Impact of Concept Map-Based Instruction on Content Understanding</i>	SD	D	N	A	SA	Mean	SD
1. <i>Concept map-based instruction helps students grasp complex English language concepts more effectively.</i>	5%	10%	20%	48%	18%	3.62	1.04
2. <i>Concept map-based instruction helps students grasp the underlying structure and organization of English language content.</i>	3%	5%	23%	53%	18%	3.77	0.88



3. Students using concept maps demonstrate a deeper understanding of English language content than those using traditional instruction methods.	3%	8%	18%	50%	23%	3.82	0.94
4. Concept map-based instruction supports students in applying English language concepts in real-life contexts.	0%	5%	15%	56%	23%	3.97	0.77

**E. Impact of concept map-based Instruction on knowledge retention among Saudi EFL students.**

Table 5 indicates that concept mapping-based instruction positively impacts knowledge retention among the Saudi EFL students. Remarkably, 80% of the Saudi EFL teachers agreed or strongly agreed that concept mapping sustains students’ ability to recall and apply previously learned concepts (Mean=4.02, SD=0.79). Seventy five percent of the Saudi EFL teachers also indicated that concept mapping-based instruction improves long-term knowledge retention, while 65% reported the ability of concept maps to help students connect new information with existing knowledge (mean=3.77, SD=0.88). Table 5 also shows that concept mapping also effectively promotes knowledge transfer to new situations or tasks and use English language skills in real-life situations by 73% and 68%, respectively.

**Table 5:** Impact of concept mapping on knowledge retention among Saudi EFL students

Impact of Concept Map-Based Instruction on Knowledge Retention	SD	D	N	A	SA	Mean	SD
1. Concept map-based instruction improves long-term retention of English language knowledge.	3%	5%	18%	53%	23%	3.875	0.90
2. Students who use concept maps better recall English language content than those who don't.	0%	10%	25%	43%	23%	3.77	0.91
3. Concept maps help students connect new information with existing knowledge, enhancing knowledge retention	0%	10%	23%	48%	20%	3.77	0.88
4. Concept map-based instruction promotes knowledge transfer to new situations or tasks.	3%	8%	18%	48%	25%	3.85	0.96
5. Students can better recall and apply previously learned English language concepts through concept map-based instruction.	0%	5%	15%	53%	28%	4.02	0.79
6. Concept map-based instruction promotes using English language skills in real-life situations.	3%	10%	20%	50%	18%	3.7	0.95

**F. Incorporation of concept mapping in English Language Learning.**

Table 6 shows that most Saudi EFL teachers (80%) agreed that concept mapping should be a standard instructional tool in English language classrooms (mean=4.02, SD=0.79). Seventy-five percent of the teachers agreed or strongly agreed that Saudi EFL teachers should receive effective training on creating and executing concept mapping, indicating a need for training as a possible intervention to foster more buy-in and effective implementation of concept mapping. Moreover, 80% of the Saudi EFL teachers reported that concept mapping could be adapted to different language proficiency levels and language skills in English language teaching (Mean=4.0, SD=0.77). Seventy five percent of the participants also agreed or strongly agreed on the concept mapping’s ability to be implemented for both individual and collaborative learning contexts for English language learning (Mean=3.9, SD=0.83).

**Table 6:** Incorporation of concept mapping in English Language Learning

Integration of Concept Maps in English Language Teaching	SD	D	N	A	SA	Mean	SD
1. Concept maps should be a standard instructional tool in English language classrooms.	0%	5%	15%	53%	28%	4.02	0.79

2. English language teachers should receive training on how to create and use concept maps effectively.	0%	8%	18%	50%	25%	3.92	0.85
3. Concept maps can be adapted to different English language teaching proficiency levels and language skills.	0%	5%	15%	55%	25%	4.0	0.77
4. Concept maps can be used for English language instruction in individual and collaborative learning contexts.	0%	8%	18%	53%	23%	3.9	0.83

As for the rating of the participants' perception of overall effectiveness of concept mapping-based instruction in teaching English in the Saudi EFL context, 12 teachers (30%) indicated that the approach was highly effective, 50% indicated it was moderately effective, and six teachers reported it was somewhat effective (15%). In contrast, 5% reported that it was ineffective. Consequently, 73% of the teachers agreed or strongly agreed that they would recommend concept mapping to their colleagues, whereas 18% were uncertain, and 11% of the participants indicated they would not recommend the approach to their colleagues (Mean=3.75, SD=0.89).

## 5 Discussions

The study aimed to evaluate the Saudi EFL teachers' perception of using the concept mapping as an instructional approach for teaching English language to Saudi Middle School students. The study focused on the participants' perceived benefits, challenges, and learning outcomes. While concept mapping has been widely researched and implemented in Western educational contexts, its application and effectiveness in teaching Arab students, especially EFL students in Saudi Arabia, remains relatively unexplored. The study's findings align with the existing literature on concept mapping and its potential to enhance student-centered learning, critical thinking, and knowledge organization.

Findings of the first research question indicated that the Saudi EFL teachers recognized several benefits of concept mapping. These benefits include its ability to promote active engagement, critical thinking, and metacognitive processes among students, which are consistent with the findings of previous studies. The Saudi EFL teachers also recognized concept mapping as an effective strategy for enhancing students' comprehension and conceptual understanding of the English language and emphasized its role in organizing information meaningfully. The results also affirm reports in existing literature, which emphasized the benefits of concept mapping in fostering active learning, meaningful connections between concepts, and collaborative knowledge construction. These findings are compatible with studies [11-15-29].

As for the findings of the second questions related to the challenges which Saudi EFL teachers encountered when using concept mapping, they resembled those reported in previous research. Most of the Saudi EFL teachers indicated that they experienced difficulties incorporating concept mapping into the current English language curriculum and difficulties creating effective concept mapping for English instruction. The findings also revealed that a significant number of the Saudi EFL teachers indicated that the concept maps were time-consuming. Similar results had also been reported in the Indian-based study [18] in which the participants mentioned that concept mapping required a much time, effort, and teachers' willingness. Participants another study [17] also reported that concept mapping was time-consuming, especially in terms of scoring or observing students solve problems using concept mapping, compared to scoring multiple-choice quizzes or recording and gathering GPAs and test results.

Nonetheless, the researcher argued that once the concept mapping was understood and practiced, the amount of time consumed would be significantly and eventually reduced. For instance, scoring consumes about 5-10 minutes, dependent on the maps' complexity, average for experienced teachers who understood and often used concept mapping in teaching. Moreover, some Saudi EFL teachers initially found concept mapping challengeable to be used, but they acknowledged their practicality and usefulness, implying their willingness to overcome these difficulties. These challenges may stem from a lack of familiarity with the concept mapping approach or the need for additional professional development, training, and support for teachers to integrate concept mapping into their instructional practices effectively. In consistency with the challenges identified in past research, the current findings also indicated that Saudi EFL teachers encountered difficulties in implementing concept mapping because of the limited training, time constraints, and insufficient resources and support. Additionally, scholars argue that the long-term cost of not using concept mapping approach surpasses the short-term, claiming that concept mapping helps to recognize, nurture, and develop a range of learning capabilities. These capabilities include creativity, and both the individual and society would be at a loss if the long-term benefits were overlooked. These findings are in agreement with those reported in [28-19-21].

As for the findings of the third question concerning Saudi EFL students' learning outcomes when taught by using concept mapping-based instruction, they indicated that the participants positively viewed the influence of concept mapping on developing the Saudi Middle School students' language abilities, particularly in speaking English. Previous studies have also demonstrated the potential of concept mapping to enhance language learning performance, critical thinking, and awareness among EFL students. The findings indicated that the participants perceived concept mapping as a facilitating tool that sustains students' active participation in organizing new information, improving their understanding and language use, and supporting the acquisition of grammatical concepts. Thus, the findings clarified that concept mapping can enhance students' comprehension of English language structures and vocabulary and promote their ability to think critically and apply their knowledge in different linguistic contexts. The findings are consistent with those reported in [40] that concept mapping helped enhance ESL students' English reading comprehension compared to conventional approaches. The findings are also in agreement with those reported in [25-31-35].

As for the findings of the fourth question, the Saudi EFL teachers had a positive perception of using the concept mapping-based instruction to improve students' content understanding and knowledge retention. According to the Saudi EFL teachers, concept mapping approach serves as cognitive tools that help expand, organize, and present information, facilitate students' learning experiences and promote better comprehension and improve knowledge retention. The current findings also coincided with those of the Turkey-based study [15] concerning the ability of concept mapping approach to enhance the student's knowledge retention capacity. Such high levels of retention are essential in learning as EFL/ESL students have a higher chance of excelling where they can leverage prior knowledge and combine it with newly learnt concepts to help comprehend new topics better. Additionally, high retention capacity is vital for EFL/ESL students as it helps them apply concepts learned in the classroom to real-world situations. As a visual learning tool, concept mapping approach helps students build individual cognitive productivity and independence facilitated by the abstraction habit while warranting permanent and meaningful learning outcomes. The finding is consistent with those reported in [6]. That study [6] revealed that visual instructional tools drive positive learning outcomes by facilitating the expression of abstract concepts through concrete structures that enable learners to perceive the existence of different action systems and spaces while attracting their attention, keeping them motivated and engaged in learning new and underlying concepts as opposed to memorization. The visual representation of concepts and their interrelationships in concept maps allows learners to visually analyze, synthesize, and explore complex relationships within a specific knowledge domain.

Findings of the fifth questions showed the Saudi EFL teachers also indicated their overall satisfaction with concept map-based instruction, with the majority rating it as moderate to highly effective in English language learning. The participants also expressed their willingness to recommend concept mapping to colleagues grounded on their positive perception of concept mapping approach. The findings are similar to those reported in [10]. However, unlike the findings of that study [10], the Saudi EFL teachers in the current study reported overall students' high performance when using the concept mapping approach in learning English as a foreign language. Perhaps this could be explained by the fact that most of the participants in the current study reported being more acquainted with using the concept mapping approach, having used the approach for over five years compared to survey included in study [10] in which the participants had been in the early implementation of the approach.

The findings of the current study have several implications for educational policy and curriculum design in Saudi Arabia and potentially in other contexts. Concept mapping-based instruction can be incorporated into language teaching methodologies to enhance the quality and effectiveness of English language education.

First, educational policymakers should consider incorporating concept mapping as a recognized instructional strategy within the curriculum. By explicitly endorsing the concept mapping approach, policymakers can encourage Saudi EFL teachers to integrate this approach into their pedagogical practices. Moreover, the study highlighted the importance of providing the Saudi EFL teachers with adequate training and support to implement concept mapping effectively in their classrooms. Teachers identified lack of training as the initial difficulty in using the concept mapping approach. This indicates the need for professional development programs that equip Saudi EFL teachers with the necessary knowledge and skills to integrate this instructional strategy effectively. Educational institutions and policymakers should consider offering training workshops, resources, and ongoing support to Saudi EFL teachers to ensure the successful implementation of concept mapping in the English language curriculum.

Furthermore, the findings suggested that teacher training programs should emphasize the importance of concept mapping as a pedagogical tool. Pre-service and in-service teacher training programs can provide teachers with the necessary knowledge and skills to effectively utilize classroom concept mapping approach. This could involve workshops, courses, or professional learning communities focused on concept mapping techniques, strategies for implementation, and assessment methods.

Second, curriculum planners can integrate concept mapping activities and assessments into the English language

curriculum. By including concept mapping tasks, students can have opportunities to simultaneously practice and develop their cognitive and language skills. Curriculum planners can also provide guidelines and resources to support the EFL teachers' attempts to implement concept mapping-based instruction. These guidelines may include sample concept maps, instructional materials, and assessment rubrics.

In addition, the study highlighted the importance of creating a supportive and collaborative environment for teachers. The provision of ongoing support, mentoring, and opportunities for the Saudi EFL teachers to share their experiences and best practices can help address the challenges which they may encounter in implementing the concept mapping approach. Collaborative planning and professional learning communities can foster a culture of innovation and continuous improvement in language instruction.

The present study recommended that educational policymakers and curriculum planners should consider incorporating technology tools and platforms that facilitate concept mapping. With the advanced digital technologies, numerous software applications and online platforms have become easily accessible for creating and sharing concept maps. The incorporation of these tools into the curriculum can reinforce the Saudi Middle School students' engagement and provide them with opportunities for collaborative concept mapping.

## 6 Limitations

The research was conducted with a relatively small sample size and focused on a specific context (Saudi Arabia) and subject area (English language instruction). Therefore, generalizing the findings to other contexts should be done with caution. Additionally, the current study was limited in that the data collection was based on a structured questionnaire, which limited the range of information that could otherwise have been collected using other options, such as non-structured and semi-structured interviews and questionnaires. The study also focused on using concept maps to teach English language to Middle school learners in Saudi Arabia; hence the generalizability of the findings to other subjects or contexts could be limited and need further investigation.

## 7 Conclusions

The study contributes to the current EFL curriculum and instruction literature through examining the Saudi EFL teachers' perceptions of concept mapping as an instructional strategy in Saudi EFL classrooms. The findings highlighted the participants' perception of the concept mapping benefits for both Saudi EFL teachers and students. These benefits include the enhancement of Saudi Middle School students' engagement, critical thinking, active learning, higher order of cognitive skills, content understanding, and knowledge retention. To fully harness the potential of concept mapping, it is crucial to provide the Saudi EFL teachers with adequate training and support, promote collaborative learning environments, and incorporate concept mapping into the Saudi EFL curricula. Consequently, educators can create more student-centered and effective learning experiences that facilitate the development of English language proficiency among Saudi EFL Middle School students.

## 8 Recommendations

Further research is essential to investigate the long-term effects of concept map-based instruction on English language learners' performance, critical thinking skills, and the transferability of knowledge to real-world contexts. Longitudinal and comparative studies can offer a more comprehensive understanding of concept mapping's sustained impact on students' language development and academic achievements. Additionally, there is a need to explore how implementing concept mapping influences the motivations and attitudes of Saudi EFL learners toward learning English and how it shapes their learning strategies and language skills. Therefore, empirical studies in these domains are warranted to enhance our understanding of the benefits of concept mapping in the Saudi EFL context.

### ***Conflicts of Interest Statement***

*The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.*

### ***Acknowledgment:***

The author would like to thank the Deanship of Scientific Research at Majmaah University for supporting this work

under project number No. R-2023–669.

## References

- [1] Al-Nasser, A. S. (2015). Problems of English Language Acquisition in Saudi Arabia: An Exploratory-cum-remedial Study. *Theory and Practice in Language Studies*, 5 (8), 1612-1619.
- [2] Alshahrani, M. (2016). A Brief Historical Perspective of English in Saudi Arabia. *Journal of Literature, Languages, and Linguistics*, [www.iiste.org](http://www.iiste.org) ISSN 2422-8435
- [3] Nelson, D., Salmeen, A. S., & Alyalak, S. (2019). Challenges Facing English Language Saudi Students When Studying Literature Courses in English Language Programs at the Undergraduate Level: Problems and Recommendations. *American Journal of Educational Research*, 7(12), 930-938.
- [4] Pailai, J., Wunnasri, W., Yoshida, K., Hayashi, Y., & Hirashima, T. (2017). The practical use of Kit-Build Concept Map on Formative Assessment. *Research and Practice in Technology Enhanced Learning*, 12(1), 20. [https:// doi. org/ 10. 1186/s41039-017-0060-x](https://doi.org/10.1186/s41039-017-0060-x)
- [5] Ly, N. T. (2022). EFL Teachers' Perception of Implementation of Mind-Mapping for Enhancing Learning Engagement. *International Journal of Science and Management Studies (IJSMS)*, 5 (4), 145-156, DOI: 10.51386/25815946/ijms-v5i4p117, <https://www.ijmsjournal.org>
- [6] Elashhab, S. (2019). Conceptual Mapping Importance in EFL Learning of Arabic Speaking University Students. *International Journal of Language and Linguistics*, 6 (2), doi:10.30845/ijll.v6n2p14.
- [7] Pinandito, A., Prasetya, D. D., Hayashi, Y., & Hirashima, T. (2021). Design and Development of Semi-Automatic Concept Map Authoring Support Tool. *Research and Practice in Technology Enhanced Learning*, 16(1), 1–19. [https:// doi. org/ 10. 1186/s41039-021-00155-x](https://doi.org/10.1186/s41039-021-00155-x)
- [8] Prasetya, D. D., Pinandito, A., Hayashi, Y. & Hirashima, T. (2022). Analysis of Quality of knowledge Structure and Students' Perceptions in Extension Concept Mapping. *Research and Practice in Technology Enhance Learning*, 17 (14), 1-25. <https://doi.org/10.1186/s41039-022-00189-9>
- [9] Reiska, P., Soika, K., & Cañas, A. J. (2018). Using Concept Mapping to Measure Changes in Interdisciplinary Learning During High School. *Knowledge Management & E-Learning: An International Journal*, 10(1), 1–24. [https:// doi. org/ 10. 34105/j.kmel.2018.10.001](https://doi.org/10.34105/j.kmel.2018.10.001)
- [10] Prasetya, D. D., Hirashima, T., & Hayashi, Y. (2019). KB-mixed: A Reconstruction and Improvable Concept Map to Enhance Meaningful Learning and Knowledge Structure. In *Proceedings of The 26th International Conference on Computers in Education (ICCE 2019)*, December, 809–812.
- [11] Al Aqtash, S. & Musleh, O. (2020). The Effect of Concept Mapping on Arabic Grammar Proficiency: Al Ain University Students in the United Arab Emirates. *Universal Journal of Educational Research*, 8(9):4089-4096.
- [12] Andoko, B. S., Hayashi, Y., Hirashima, T., & Asri, A. N. (2020). Improving English Reading for EFL Readers with Reviewing Kit-build Concept Map. *Research and Practice in Technology Enhanced Learning*, 15(1), 1–19. [https:// doi. org/ 10. 1186/s41039-020-00126-8](https://doi.org/10.1186/s41039-020-00126-8)
- [13] Howell, C., Martin-Morales, K., & Park, S. (2023). Concept Mapping and Reading Comprehension. *Journal of Political Science Education*, 19(3), 408-431. <https://doi.org/10.1080/15512169.2023.2164861>
- [14] Yin, R. K. (2014). *Case study research: Design and Methods* (5th ed.). Sage Publications.
- [15] Kilic, D., Keles, O. & Saglam, N. (2012). Examination of Elementary Teachers' Views about Concept Maps. *Journal of Studies in Education*, 2(2) DOI:10.5296/jse.v2i2.1480.
- [16] Kobari S.R., Mahamid, F. & Shaheen, M. (2023). The Effect of Using Educational Mapping as a Game in Teaching English Language on University Students' Motivation. *Journal of Culture and Values in Education*, 6(2), 51-65. <https://doi.org/10.46303/jcve.2023.8>
- [17] Maker, C. J., & Zimmerman, R. H. (2020). Concept Maps as Assessments of Expertise: Understanding of the Complexity and Interrelationships of Concepts in Science. *Journal of Advanced Academics*, 31(3), 254–297. <https://doi.org/10.1177/1932202x20921770>
- [18] Pandey, S. K. (2020). The Status of Concept Mapping in Teaching-Learning Process: Exploring the Present Awareness, Use and Challenges. *Indian Journal of Science and Technology*, 13(37), 3944–3949. <https://doi.org/10.17485/ijst/v13i37.1535>
- [19] Duarte, D., Loureiro, A. C., & Tavares, C. Z. (2017). Challenges and Weaknesses in the Use of Concept Maps as a Learning Strategy in Undergraduate Health Programs. *Knowledge Management and E-Learning*, 9(3):380-391.
- [20] Allen, M. (2018). *The SAGE Encyclopedia of Communication Research Methods*. The SAGE Encyclopedia of Communication Research Methods, 4(1). <https://doi.org/10.4135/9781483381411>

- [21] Bahadır, E. (2017). Teaching Multiplication and Multiplication Tables by the Application of Finger Multiplication. *European Journal of Education Studies*, 3(4), 124–147. <https://doi.org/10.5281/zenodo.345417>
- [22] Barashid, M. (2020). Investigating the Critical Reading Skills for Saudi EFL Learners through Graphic Organizers Instructional Program. *Frontiers in Education Technology*, 3 (4), [www.scholink.org/ojs/index.php/fet](http://www.scholink.org/ojs/index.php/fet)
- [23] Bawaneh, A. K. & Ghazali, M. (2010). The Effectiveness of Conflict Maps and the V-Shape Teaching Method in Science Conceptual Change among Eighth-Grade Students in Jordan. *International Education Studies*.
- [24] Bes Piá, A., Blasco-Tamarit, E., & Muñoz-Portero, M. J. (2011). Different Applications of Concept Maps in Higher Education. *Journal of Industrial Engineering and Management*, 4(1). <https://doi.org/10.3926/jiem.2011.v4n1.p81-102>
- [25] Bos, J. (2020). Confidentiality. *Research Ethics for Students in the Social Sciences*, 149–173. [https://doi.org/10.1007/978-3-030-48415-6\\_7](https://doi.org/10.1007/978-3-030-48415-6_7)
- [26] Foley, D., Charron, F., & Plante, J. S. (2018). Potential of the Cogex Software Platform to replace logbooks in capstone design projects. *Advances in Engineering Education*, 6(3), 3.
- [27] Haddaway, N. R., Bethel, A., Dicks, L. V., Koricheva, J., Macura, B., Petrokofsky, G., Pullin, A. S., Savilaakso, S., & Stewart, G. B. (2020). Eight Problems with Literature Reviews and How to Fix Them. *Nature Ecology & Evolution*, 4(12), 1582–1589. <https://doi.org/10.1038/s41559-020-01295-x>
- [28] Machado, C. T. & Carvalho, A. A. (2020). Concept Mapping: Benefits and Challenges in Higher Education. *The Journal of Continuing Higher Education*.
- [29] Majid, M. A. A., Othman, M., Mohamad, S. F., Lim, S. A. H., & Yusof, A. (2017). Piloting for Interviews in Qualitative Research: Operationalization and Lessons Learnt. *International Journal of Academic Research in Business and Social Sciences*, 7(4), 1073–1080. <https://doi.org/10.6007/ijarbss/v7-i4/2916>
- [30] Muste, D. (2016). The Role of Communication Skills in Teaching Process. *The European Proceedings of Social and Behavioural Sciences*. EpSBS.
- [31] Novak, J. D., & Cañas, A. J. (2006). The Origins of the Concept Mapping Tool and the Continuing Evolution of the Tool. *Information visualization*, 5(3), 175-184. <https://doi.org/10.1057/palgrave.ivs.9500126>.
- [32] Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case Study Method: A Step-by-Step Guide for Business Researchers. *International Journal of Qualitative Methods*, 18(18), 1–13. Sagepub. <https://doi.org/10.1177/1609406919862424>
- [33] Rowlands, J. (2021). Interviewee Transcript Review as a Tool to Improve Data Quality and Participant Confidence in Sensitive Research. *International Journal of Qualitative Methods*, 20, 160940692110661. <https://doi.org/10.1177/16094069211066170>
- [34] Severin, A., & Chataway, J. (2020). Purposes of peer review: A Qualitative Study of Stakeholder Expectations and Perceptions. *Learned Publishing*. <https://doi.org/10.1002/leap.1336>
- [35] Snyder, H. (2019). Literature Review as a Research Methodology: An Overview and Guidelines. *Journal of Business Research*, 104(1), 333–339. Science Direct. <https://www.sciencedirect.com/science/article/pii/S0148296319304564>
- [36] Srivastava, A., Srivastava, N., & Chandrasekharan, S. (2020). Quality of Concept Maps is Affected by Map-Building Strategies. *Biochemistry and Molecular Biology Education* 49(4). DOI:10.1002/bmb.21412.
- [37] Tuan, L. T. & Thuan, T. B. (2011). The Linkages between Concept Maps and Language Learning. *Studies in Literature and Language*.
- [38] University of Southern California. (2014). Research Guides: Organizing Your Social Sciences Research Paper: 5. The Literature Review. [Usc.edu. https://libguides.usc.edu/writingguide/literaturereview](https://libguides.usc.edu/writingguide/literaturereview)
- [39] Vodovozov, V., & Raud, Z. (2015). Concept Maps for Teaching, Learning, and Assessment in Electronics. *Education Research International*, 2015, 1–9. <https://doi.org/10.1155/2015/849678>
- [40] Yu, H., Abdullah, A., & Saat, R. M. (2014). Overcoming Time and Ethical Constraints in the Qualitative Data Collection Process: A case of Information Literacy Research. *Journal of Librarianship and Information Science*, 46(3), 243–257. <https://doi.org/10.1177/0961000614526610>
- [41] Zahle, J. (2020). Objective Data Sets in Qualitative Research. *Synthese*. <https://doi.org/10.1007/s11229-020-02630-2>

## Appendix

Section 1: Demographic Information						
Gender:	Male					

	Female					
<b>Teaching experience including using concept maps (in years):</b>						
3 to 5 years						
6 to 10 years						
11 to 15 years						
16 to 20 years						
20+ years						
<b>Questions</b>		<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
<b>Section 2: Perceived Benefits of Concept maps</b>						
1. Concept maps enhance students' understanding of complex concepts.						
2. Concept maps promote critical thinking skills among students.						
3. Concept maps facilitate meaningful connections between concepts.						
4. Concept maps help students organize and recall information more effectively.						
5. Concept maps encourage active student engagement in the learning process.						
<b>Section 3: Challenges Faced by Teachers</b>						
1. Limited availability of resources and materials for creating concept maps.						
2. Insufficient training and professional development opportunities for teachers on concept mapping						
3. There are difficulties in integrating concept maps into the existing curriculum English Language curriculum						
4. Students' resistance or lack of familiarity with concept mapping as a learning strategy.						
5. Teachers face difficulties in creating effective concept maps for English language instruction						
6. Students find it challenging to construct their own concept maps during English language lessons						
7. Language and cultural barriers affecting the implementation of concept mapping in an Arabic-speaking context.						
8. Constructing concept maps takes too much time						
<b>Section 4: Perceived Learning Outcomes of English Language Students</b>						
1. Improved content understanding among students.						
2. Enhanced critical thinking skills of students.						
3. Increased knowledge retention among students.						

4. Improved ability to make connections between different language components.					
5. Greater confidence and motivation in using the English language.					
6. Concept map-based instruction improves students' performance in English language assessments.					
<b>Section 5: Impact of Concept Map-Based Instruction on Content Understanding</b>					
1. Concept map-based instruction helps students grasp complex English language concepts more effectively.					
2. Concept map-based instruction helps students grasp the underlying structure and organization of English language content.					
3. Students using concept maps demonstrate a deeper understanding of English language content compared to traditional instruction methods.					
4. Concept map-based instruction supports students in applying English language concepts in real-life contexts.					
<b>Section 6: Impact of Concept Map-Based Instruction on Knowledge Retention</b>					
1. Concept map-based instruction improves long-term retention of English language knowledge.					
2. Students who use concept maps have better recall of English language content compared to those who don't.					
3. Concept maps help students connect new information with existing knowledge, enhancing knowledge retention					
4. Concept map-based instruction promotes the transfer of knowledge to new situations or tasks.					
5. Students are better able to recall and apply previously learned English language concepts through concept map-based instruction.					
6. Concept map-based instruction promotes the use of English language skills in real-life situations.					
<b>Section 7: Integration of Concept Maps in English Language Teaching</b>					
1. Concept maps should be used as a regular instructional tool in English language classrooms.					
2. English language teachers should receive training on how to create and use concept maps effectively.					
3. Concept maps can be adapted to different proficiency levels and language skills in English language teaching.					
4. Concept maps can be used in both individual and collaborative learning contexts for English language instruction.					
<b>Section 7: Overall Assessment</b>					
I would recommend concept maps to my colleagues					



<b>Please provide your overall assessment of the effectiveness of concept map-based instruction for teaching English language in Saudi Arabia</b>					
1. Highly effective					
2. Moderately effective					
3. Somewhat effective					
4. Not effective					