Teaching Reading to EFL Freshman Students with Mind Mapping Software

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Abstract

Freshman students learning English as foreign language have problems in comprehending English texts such as inability to identify main ideas, paragraph topics, supporting details and the organizational structure of a text. They have difficulty writing a summary or making an outline of the main ideas and important supporting details in a single, or multiple paragraphs. Numerous studies in the literature have shown the positive effects of using mind maps in teaching and learning a variety of subjects. Since many EFL instructors are unfamiliar with mind maps and mind-mapping software, this study proposes the integration of mind maps in reading instruction and the utilization of mind-mapping software to help the students relate a central idea or topic in a text to related subtopics or details, help them understand the organizational structure of a text, identify the text structure type (classification, chronology, enumeration, compare contrast and others) and locate signaling devices. Making reading mind maps using the mind-mapping software begins with a word or image that symbolizes the topic of the reading text in the middle of the screen. While reading the text paragraph by paragraph, main branches are added for each paragraph topic. Sub-branches are added for each important detail related to a particular topic (main branch). Colors are used for the main and minor branches. Constructing reading mind maps can be used as a reading or a post-reading activity. Reading test results showed that the mind-mapping software was effective in enhancing reading comprehension among EFL freshman students. The students also had positive attitudes towards mind mapping and reading English texts. Students found the mind mapping software to be fun and helpful in comprehending and organizing ideas in a text. The study recommends the integration of mind-mapping software in other language skills courses offered by the college.

Introduction

A mind map is a type of graphic organizer that allows central ideas to be written and linked to related smaller or secondary ideas on a "map." A central idea is placed in the middle of the page or screen with related ideas connected to it with branches and sub-branches. Mind maps are illustrative tools that help students and teachers in organizing thought, directing learning, and making connections among ideas and information. They help students have a clear visual representation of how ideas in a written text are connected. They encourage students to think and explore concepts using visual-spatial relationships flowing from a central theme or topic to peripheral branches representing related sub-themes or subtopics.They bring clarity and ease by using words, images, logic, colors, and spatial awareness, so that the students are literally processing information and thinking with their whole brain. Pictures and structured diagrams are more comprehensible than just words and they show complex topics in a clear way (Arulselvi, 2017; Mendelson, 2016; Budd, 2004; Davies, 2011).Mind maps link concepts or facts in a reading text to facilitate top-down interaction between the students and the written text and to enhance students' recall of propositions in it (Tajeddin& Tabatabaei, 2016).They can be used to introduce an

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overall topic, show interrelationships between concepts and content, and increase students' involvement in the reading process. They enhance learning and improve memory.

A review of the literature has shown a plethora of research studies that have integrated mind maps in teaching students of all ages and grade levels (elementary, secondary, undergraduate, and graduate levels) and all subject areas such as educational psychology, social studies, computer science, science, research methodology and teacher education and first (L1) and second language (L) teaching and learning. InL1 and L2teaching and learning, in particular, prior studies in the literature have investigated the effects of using mind maps on students' acquisition and practice of a variety of language skills such as vocabulary (Al-Jarf, 2015); Greek and Latin roots (Al-Jarf, 2011A); spelling (Al-Jarf, 2011B); medical terminology (Al-Jarf, 2010); and writing (Al-Jarf, 2009). In addition, Tajeddin & Tabatabaei (2016)found that Iranian L2 high school students who were taught using concept mapping, as a learning strategy, outperformed students in the control group in reading comprehension and recall of propositions. In another study, EFL college students at the Islamic Azad University of Kharg who received explicit concept mapping instruction performed better on the reading comprehension test and could understand the reading passages better (Khaghaninejad&Arefinejad, 2015). Similarly, Liu, Chen & Chang (2010) found that use of a computer-assisted concept mapping learning strategy had a greater reading benefit in low-level students. Concept maps enhanced students' use of other English reading strategies such as listing, reviewing, and enforcing.

In Indonesia, Andoko, Hayashi, Hirashima & Asri (2020) used the Kit-build concept map as a graphical strategy to facilitate EFL sophomore college students in reviewing. Findings demonstrated that students who used the Kit-build concept map exhibited better performance in English reading than students exposed to the traditional summarization method without the Kit-build concept map.

Furthermore, few studies utilized mind maps that focus on a specific reading text type. In Eftekhari & Sotoudehnama's (2018) study, EFL Iranian undergraduate students who constructed argument maps and reading using the computer outperformed students who used pen and paper in reading comprehension, recall, and retention of argumentative texts. In another study in Peru, Harmonic Mind Maps influenced the comprehension of narrative texts by Peruvian university students (Novoa Castillo, Cancino Verde, Flores Sotelo & Nieto Gamboa, 2018).

As for the mode of practice, Riahi & Pourdana (2017) found that EFL pre-intermediate Iranian learners' who received individual concept mapping and those who received collaborative concept mapping strategies showed higher gains in reading comprehension than students in the Control group who received

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conventional reading instruction with Power point presentations. No significant differences were found between the reading comprehension of the individual concept mapping and the collaborative concept mapping strategies groups. Similar findings were obtained in Sabbah's (2015) study in which self-generated computerized mind maps enhanced ESL Community College students' reading comprehension in Qatar. The students had positive attitudes towards generating computerized mind maps for reading comprehension and reported educational and mental benefits, usability, and enjoyment in that order.

Despite the importance of mind maps and their positive effect on reading comprehension in EFL/ESL, many instructors are not familiar with mind maps and with mind-mapping software. In a study by Safar, Jafer & Alqadiri (2014),74.2% of pre-service science teachers at the College of Education at Kuwait University reported that they were unfamiliar with mind maps, and 96.8% were unfamiliar with concept/mind mapping software. Similar results were obtained in an exploratory study with 45 female instructors at the College of Languages and Translation (COLT), King Saud University, Riyadh, Saudi Arabia. Only 2 instructors (4%) reported that they are familiar with mind maps and mind-mapping software. In addition, reading instructors at COLT always complain of students' reading comprehension difficulties such as inability to infer paragraph topics, connect main ideas and supporting details and understanding the organizational structure of a reading text especially in the first semester of the translation program when students take English language courses.

Since EFL students, in general, and Saudi freshman students, in particular, have difficulties in reading and comprehending English texts, the present study proposes the integration of mind-mapping software in reading instruction and showing EFL instructors how mind-mapping software can be integrated in reading comprehension instruction as a tool for helping students connect main ideas/topics, with details/subtopics in a text either while reading the text or after reading it. Specifically, the present study aims to show EFL instructors how to use Free Mind, a free mind-mapping software to draw reading mind maps to help students understand the organizational structure of the reading text by relating topics and subtopics, main ideas and supporting details, identifying the type of structure (classification, chronology, enumeration, comparison and contrast and others)and locating signaling devices, i.e., words that signal the organizational structure of a paragraph of whole text.

Context

Students majoring in translation at COLT take English language courses (4 Listening, 4 speaking, 4 Reading, 4 Writing, 3 Grammar and 2 Vocabulary Building courses)in the first 4 semesters of the translation program (20 hours per semester).

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In addition, results of a reading pretest that the author usually gives to freshman students enrolled in the Reading I course, at the beginning of the semester, showed that students have several reading comprehension weaknesses such as: Difficulty in identifying the topic and/or main idea of each paragraph in a text; connecting topics and subtopics; connecting main ideas and supporting details; identifying the organizational structure of a text, making an outline of the main topics, and important details in a single paragraph, several paragraphs or the whole text; summarizing the main ideas and important details in a single paragraph, several paragraphs and in the whole text; and locating words that signal the structure of a text.

For students majoring in translation, reading is an important skill that they need to acquire at an advanced level, as understanding of a written text is a pre-requisite for transferring its meaning form the source to the target language in a variety of translation courses in different disciplines such as natural science, medicine, Islamic studies, military field, education, sociology, literature, law, computer science and IT, education, media, oil industry, and agriculture that the students take in semesters 5 to 10 of the translation program.

Curriculum, Tasks and Materials

The textbook used in the freshman Reading I course at COLT is *Interactions I: Reading* (*Kirnand Hartman, 2013)*.This is a process-skill book for elementary-level students in EFL. The textbook consists of 10 chapters, each of which consisting of 4parts. The skills included in each part are as follows:

a) **Part I:** Before You Read; Read; After You Read (Recognizing Reading Structure, Understanding the Main Idea; Answering Paragraph Questions with Details; Discussing the Reading).
b) **Part II:** Before You Read; Skimming, Underlining the Main Ideas; Matching Paragraphs with Given Topics; Learning to Summarize; Discussing the Reading; Talk It Over.
c) **Part III:** Vocabulary and Language Learning Skills: Finding Definitions of Vocabulary Items; Recognizing Words with The Same or Similar Meaning; Real-Life Reading; More Real-Life Reading.
d) **Part IV:**Personal Stories and Humor; Read Stories Quickly; Summarizing Main Ideas; Telling Their Opinions; Tell or Write Your Own Story; Reading Funny Cartoon, Telling the Point of Each Carton and Why It Is Funny.

Skills Emphasized

The following reading comprehension skills are emphasized in the Reading I course:

- Identifying the topic sentence of a paragraph.
- Writing the topic for one or more paragraphs.
- Identifying the supporting details.

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- Understanding the text structure of a single paragraph or whole text.

- Identifying words that signal different types of text structures.

- Making an outline for a single paragraph, few paragraphs, or the whole text.

- Writing a summary for a single paragraph, few paragraphs, or the whole text.

- Inferring the meaning of new and unfamiliar words in the text from context using syntactic and semantic clues available in the text.

- Connecting pronouns with their antecedents, summarizing a single paragraph, few paragraphs, or the whole text.

- Figuring out the part of speech of certain words from context.

- Locating and understanding compounds and idioms.

- Recognizing, and producing word derivatives.

Instructional Strategy with Free-mind

Free Mind is a free mind-mapping software that can be used to show the relationships between a central idea, concept, category, or topic and related ideas, concepts, subcategories, or subtopics to help the students understand the organizational structure of a reading text by relating topics and subtopics, main ideas and supporting details, identifying the type of structure (classification, chronology, enumeration, compare contrast and others) and locating signaling devices. Like other mind-mapping software, Free Mind uses lines, nodes, colors, arrows, branches to show connections between the ideas generated on the mind map. It begins with a word or image that symbolizes the topic of the reading text in the middle of the screen. While reading the text paragraph by paragraph, main branches are added for each paragraph topic. Sub-branches are added for each important detail in the paragraph related to a particular topic (branch). Colors are used for the main and minor branches. Constructing reading mind maps can be used as a reading or post-reading activity.

Instructional Stages with Free-Mind

Instruction with Free Mind consists of 6 stages: (i) Orientation, (ii) presentation and modeling, (iii) guided practice, (iv) independent practice, (v) extension activities, and (vi) assessment. Each stage is described below.

Orientation

To help the students categorize, visualize, and recall relationships between main ideas and supporting details in a reading text, the students are introduced to Free Mind and the purposes of using the Free Mind software in the first week of classes at the beginning of the semester. The students are given the link to

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Free Mind and are asked to download it free of charge. The components of the Free Mind homepage are introduced and explained.

Presentation and Modelling

The instructor can train the students to use the Free Mind software using an LCD projector or a smart board. Every week Free Mind is used to create mind maps for the main ideas/topics and supporting details or subtopics in the text that the students have to read. Examples of mind maps created using Free Mind and how they are created are given in Figures 1 to 5 in the Appendix. Figure 1 shows the main homepage of Free Mind with the tools and command on the upper horizontal bar and left-hand side bar. A reading mind map begins with placing a title, or text topic in the middle of the screen. This will constitute the central node. A branch radiating from the central node is drawn for each main idea or paragraph topic. Smaller branches radiating from each main branch are drawn for the examples, the subtopics, or details. For example, Figure 2 shows a mind map for the main topics and supporting details in a reading text from the Interaction I textbooks titled *"History of the Changing Family".* To construct this map, the instructor places the main theme/title of the text *"History of the Changing Family"* in the box in the middle of the screen. Then 7 main branches and nodes that represent the 7-time epochs mentioned in the reading text showing the development and characteristics of the family from the oldest to the most recent: *Pre- Historic Family, 19^{th}Century Family, Early 20th Century, After World War II, End of the 20th Century, Kind of Families Today,* and *Family of the Future* are drawn. Pictures can be added to the mind map where applicable. For each main branch, i.e., time epoch, the characteristics of the family withdrawn from the details mentioned in the reading text are listed as small branches. This way, the students can see, compare, and contrast those characteristics all together briefly, clearly, and easily.

Figure3 shows a mind map for the topics and supporting details in a text titled *"Natural Disasters".* To construct this map, the instructor places the main topic of a reading text from the Interaction I textbook titled *"Natural Disasters"* in the middle of the screen. The instructor creates 5 main branches and nodes for the *Main ideas, Types of Disasters, what Happened, Where,* and *Causes* on the right-hand side of the mind map. Then she creates sub-branches for the details related to each. On the left-hand side of the mind map, the instructor creates 4 main branches for classifying new vocabulary items in the reading text into Nouns, Verbs, Adjectives, and Adverbs. Then sub-branches are created for word examples under each grammatical category. Thus, the students can visualize the main topics of the reading text in one branch, the details related to each of the 4 topics on the 4 main branches; in addition to the keywords extracted from the reading text grouped according to their grammatical category. The students can see all new words together and associate the ideas with the new vocabulary items related to them.

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Figure 4shows a mind map for the main ideas and supporting details in 5 paragraphs of a text taken from the Interactions I textbook titled *"The Secrets of a Very Long Life"*. Here, the main theme (title) of the text *"The Secrets of a Very Long Life"* is placed on top of the screen. Five main branches radiating out of the main theme with 5 nodes that show the paragraph numbers in the text: Paragraph A, B, C, D, E are created. Under each paragraph (A, B, C, D, E), the main topic of each paragraph is listed in the first level of the horizontal boxes: *Introduction, Hunza, Caucasians, Vilcabamba*, and *Conclusion (one for each paragraph).* Under nodes B, C and D, the region where each tribe lives is listed; and under each region, the reasons for longevity in that region are listed as points.

Figure 5 shows a mind map with 7 main branches representing 7 types of organizational structures: Enumeration, comparison, classification, chronology, whole-part, exemplifications, and contrast. Examples of words that signal each organizational structure are listed on the small branches radiating from each node or main branch.

Colors can be used throughout the mind map. Relationships are shown on the mind map. The mind map is kept plain and clear by using a hierarchical order that embraces branches. The central branches are made thicker and flowing, becoming thinner as they radiate out from the centre and thinnest towards the ends.

Guided Practice

At this stage, the students practice connecting topics in a reading text with details related to each topic using the *Free Mind* software in class. Since each chapter in the textbook contains 3 reading selections, the students draw mind maps for the main ideas and supporting details in a reading text in the chapter other than the one illustrated by the instructor. With the help of the instructor, the students draw main branches, nodes, and sub-branches. They can work on the mind map while reading or after reading the text.

When the students develop their own mind maps, they draw empty lines, identify topics, subtopics and details related to them. They change colors, use boxes or clouds, and add photos to reenergize their mind. Sometimes the students are able to see relationships and connections immediately and can add sub- branches to a topic. At other time they cannot, so they can just connect the subtopics and details to the central topic. Organization always comes later; the first requirement is to get few topics and subtopics out of text and onto the screen.

While students are working on their mind maps, the instructor serves as a facilitator. She provides help in using Free Mind, answers students' questions and helps with the mind maps, topics and examples representing each topic while working on the mind map in and out of class.

Independent Practice

The students continue to use Free Mind at home and continue to add topics, subtopics, and details. They are handed out questions that require them to group, classify or connect details in a reading text on their own in class or at home before they are asked to make an outline or write a summary. Mind maps can be created during, and after reading a text.

Extension Activities

Here, the students can draw mind maps for reading texts of their choice (outside the textbook). They can draw mind maps for an expository text of any organizational structure such as classification, cause effect, compare/contrast and others. They can also create mind maps for key words, prefixes and suffixes or anaphoric relationships they come across in the reading text. They can keep their reading comprehension mind maps in a folder or e-portfolio or post them in an online course. They can exchange mind maps and work on mind maps individually, in pairs or small groups.

Assessment

On reading tests, the students can be asked to construct mind maps that show the structure of a paragraph, several paragraphs, or whole text of any organizational structure. They can draw their mind maps by hand. They can be given mind maps that are partially filled and asked to complete the missing parts.

Reflections

The author used mind maps in reading instruction for freshman students at COLT over several semester. She usually gives a reading post-test at the end of the semester. The reading post-test scores showed that the mind-mapping software was effective in enhancing freshman students' reading comprehension of English expository texts compared to students who did not receive reading comprehension instruction with mind maps. The students could identify the topics, and main idea of each paragraph, relate important details in each paragraph to the paragraph topic with high accuracy. They produced better outlines and better text summaries than the control group. They could locate the signaling devices and identify the type of text structure more accurately.

Furthermore, integrating mind maps in reading instruction for freshman students had a positive impact on students' attitudes towards reading in English. Responses to a questionnaire-survey showed positive attitudes towards mind mapping and the reading course. Students found the mind mapping software fun and helpful in comprehending and organizing the ideas in a text. They considered mind mapping a new way of showing interrelationships between main topics and supporting details. They could use the mind

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mapping software as many times as they need. They could modify the mind map or deleted it very easily. They could write down a central idea, think about related ideas which radiate out from the centre, and personalize their mind map with lines, colors, arrows and branches to show connections between ideas. They found mind mapping important for constructing visual and meaningful relationships between ideas in a written text.

Conclusion

The present study shows EFL instructors how the Free Mind software can be used in connecting main ideas and supporting details in a reading text. Through a graphic representation of main ideas and supporting details, mind maps build upon what the students know to help them see relationships and develop an overall picture of ideas in a text.

It is noteworthy to say that the aim of the reading comprehension mind-mapping activity using the Free Mind software is not to teach the students how to apply the details of the Free Mind software. Focus should be on placing the text topic in the center, adding branches for the paragraph topics and sub- branches for the details, how to add pictures and how to change the font color, size, and case. The ultimate goal of mind mapping is to introduce the students to a technique that they can use regularly to organize what they have read, relate the content of the text to what they already know, and widen their store of knowledge through reading. Mind mapping increases cognitive processing and develops a cognitive structure of ideas in a text. Also, developing post-reading mind maps helps motivate EFLstudents, since these maps are a graphic illustration of how much a student has understood from the text. Most importantly, mind maps are highly motivating for EFL students because they allow them to interact with their instructors and classmates regarding the content of the reading texts. Finally, this study recommends that mind maps be integrated in any language skill or translation course that the students take at COLT.

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Appendix
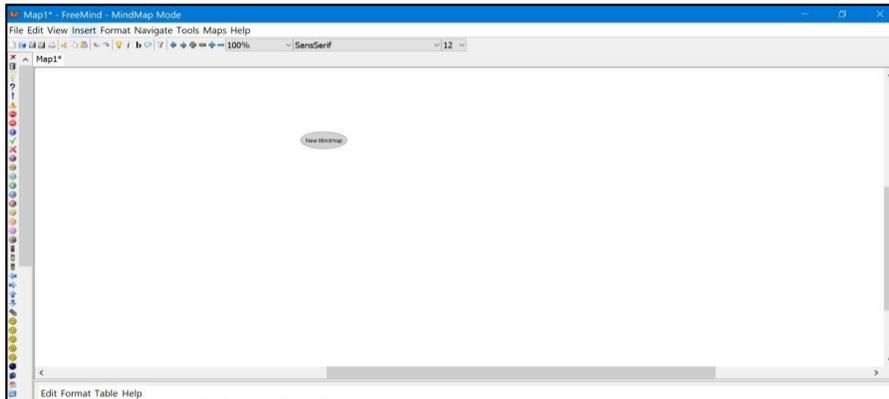**Examples of Reading Comprehension Mind Maps**
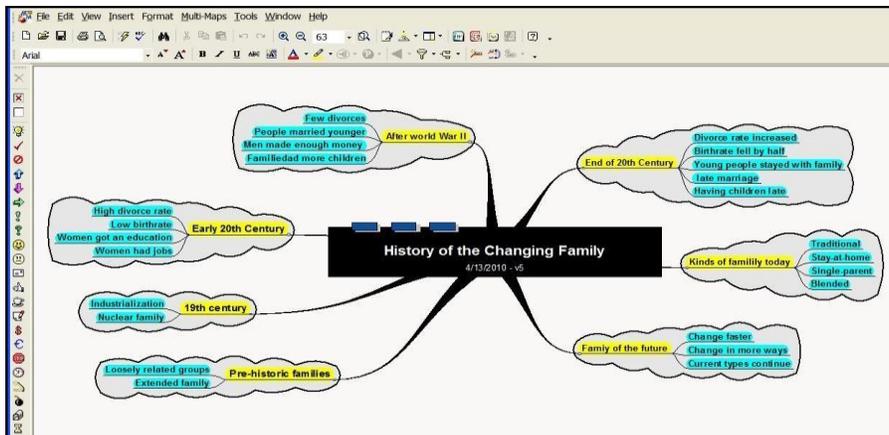

Figure 1: Homepage of FreeMind

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Figure 2: Mind map showing the main ideas and supporting details in a text titled
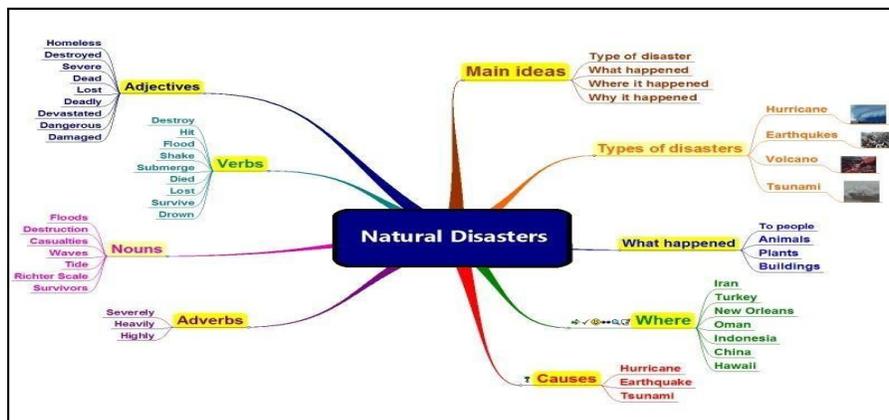"History of the Changing Family

Figure 3: Mind map showing the main ideas and supporting details, new adverbs,
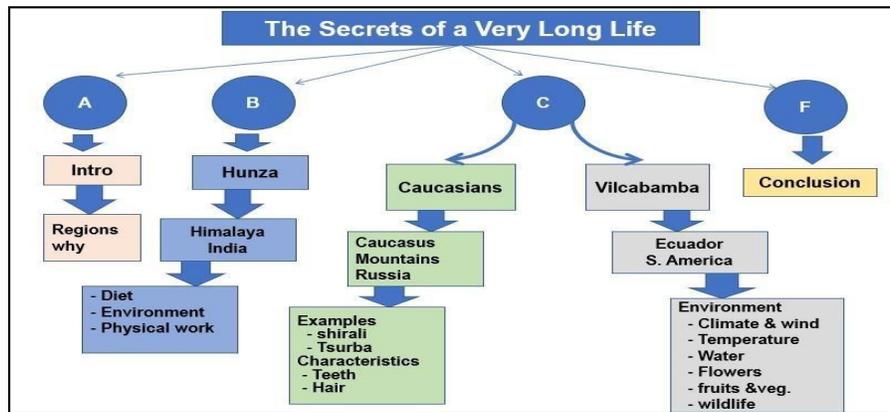nouns, verbsand adjectives in a reading text titled "Natural Disasters"

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Figure 4: Mind map showing the main ideas and supporting details in a text titled "The Secrets of a Very Long Life"
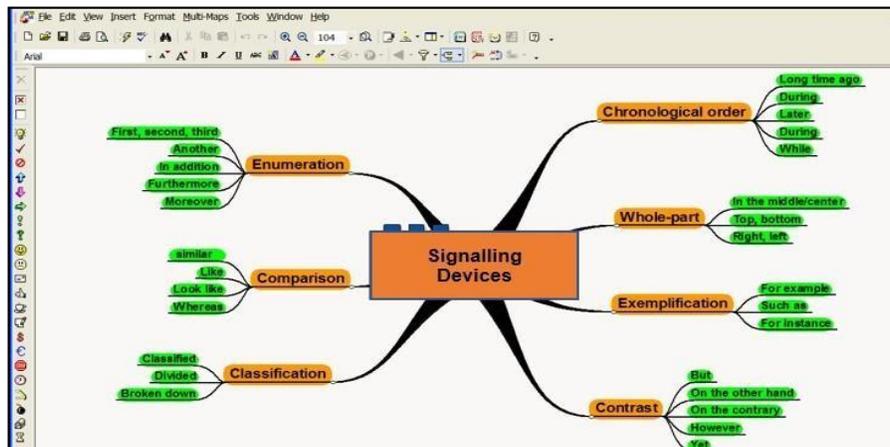

Image 5: Mind map showing examples of words that signal enumeration, comparison, classification, chronology, whole-part, exemplifications and contrast organizational structures

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