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Exploration of Students Challenges and Solutions: A Qualitative Description of The Learning Process In Creating Tree Diagrams for Prospective English Language Teachers

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Abstract
The use of tree diagrams serves as a valuable tool for students to grasp the structure of a sentence and conduct analyses based on both its surface and deep structures. Proficiency in creating syntactic tree diagrams can be employed as an indicator of a student's ability to scrutinize sentences and their structures comprehensively. While conducting this research, We found a lot of articles about tree diagrams in syntax. However, we haven't seen many articles that discuss students' challenges and solutions when learning tree diagrams, particularly for teachers. This research used descriptive and qualitative methods. We conducted interviews, both directly or through messages, with a few participants from the same department at a University. In this research, researchers took 6 student participants. Categorization challenges emerge as a central concern, with participants highlighting the difficulty in identifying and categorizing words within a sentence. This underscores the necessity for learners to develop a robust grasp of parts of speech and their respective functions in constructing meaningful tree diagrams
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INTRODUCTION

O'Grady (1996:181) states in his book Contemporary Linguistics that "Syntax is the system of rules and categories that underlies sentence formation in human language." This indicates that semantics is the study of natural systems and classifications that represent numerical values in human languages. This is explained by Huddleston (1985:1), who states that syntax is the study of how words come together to produce sentences. This means that syntax is the study of how words combine to form sentences. To understand how a phrase, a clause, or a number can be derived from a sentence, use a tree diagram. According to Kridalaksana (2001:41), a tree diagram is a visual representation of a single subject's relationship to other subjects in a hierarchical manner. According to Language Files (Cipollone et al., seventh edition), a tree diagram is a branching structure where each component is represented by a "branch". However, many students find it difficult to understand the tree diagram in this syntactic lesson. Students struggle to make tree diagrams because of the significant differences between the diagrams and the recommendations of descriptive linguistics and pedagogical grammar. The English linguistics textbooks used in Chinese colleges nowadays, such as Hu (2001), Dai & He (2002), and Liu & Wen (2006), lack thorough explanations of tree diagram drawing techniques in the "Syntax" chapters. Students are also unable to come up with adequate answers for these representations in further readings that instructors suggest they do, like Radford (1988), Ouhalla (1999), and Poole (1999).

While conducting this research, We found a lot of articles about tree diagrams in syntax. However, we haven't seen many articles that discuss students' challenges and solutions when learning tree diagrams, particularly for teachers. In this research, we have identified several challenges faced by our participants. These include the following: the challenge of contextual usage; uncertainty in categorizing words; difficulty in identifying word groups; the challenge of understanding tree structure; and the challenge of comprehending new syntax terms.

LITERATURE REVIEW

Traditionally, syntax has been defined as the examination of how sentences and their components combine. Therefore, it is considered an integral part of grammar, focusing on the study of the amalgamation of sentence properties. Chomsky, as referenced by Purnomoadjie and Mulyadi (2019, p. 57), describes syntax as the exploration of the principles and processes guiding the construction of sentences in specific languages. Within the realm of syntax, individuals acquire knowledge about how sentences can be structured within a given language. This structuring involves adherence to rules and principles, ensuring that people can comprehend each other's statements. In addition, according to Carnie (2013), syntax can be defined as the examination of the linguistic level situated between individual words and the overall meaning conveyed in utterances, specifically sentences. This linguistic level serves as a bridge between the sounds a person produces (grouped into words) and their communicative intent. Both of these theories emphasize that syntax concerns the construction of sentences, involving various elements referred to as phrases.

The use of tree diagrams serves as a valuable tool for students to grasp the structure of a sentence and conduct analyses based on both its surface and deep structures. Proficiency in creating syntactic tree diagrams can be employed as an indicator of a student's ability to scrutinize sentences and their structures comprehensively. The capability to represent each component of a sentence through a tree diagram signifies a solid understanding of elements, extending from individual words to various phrases. Notably, researchers such as Derrick and Archambault (2009) have delved into this area, specifically focusing on TreeForm—an analytical tool elucidating grammar through syntax trees. Their study explored the utility of TreeForm in constructing syntax trees, incorporating features like movement lines, coreference, and feature association. Here are the benefits of a tree diagram:

1. Visual Representation and Hierarchy (Chomsky): Chomsky's generative grammar emphasizes the visual representation of linguistic structures. Tree diagrams serve as a visual tool to illustrate the hierarchical organization of sentences, aiding in the understanding of syntactic relationships.
2. Comprehensive Syntactic Analysis (Carnie, Haegeman): Andrew Carnie and Liliane Haegeman, both linguists specializing in syntax, have stressed the importance of tree diagrams for comprehensive syntactic analysis. These diagrams allow for a detailed examination of how words and phrases combine within a sentence.
3. Formal Linguistic Representation (Gazdar) Gerald Gazdar's work on Generalized Phrase Structure Grammar (GPSG) underscores the formal representation of linguistic structures. Tree diagrams, as employed in GPSG, offer a systematic and formalized way to represent syntactic relationships.
4. Conceptual Structure and Syntax-Semantics Interface (Jackendoff): Ray Jackendoff's contributions highlight the connection between syntactic structures and conceptual representations. Tree diagrams play a role in representing the syntax-semantics interface, aiding in the exploration of how linguistic structures convey meaning.
5. Syntactic Trees for Natural Language Processing (Steedman): Mark Steedman, a computational linguist, has contributed to lexical-functional grammar, emphasizing the use of syntactic trees. Tree diagrams are integral to natural language processing, where computational models benefit from structured syntactic representations.
6. Cross-Linguistic Comparisons and Theory Integration (Bresnan): Joan Bresnan's work encompasses various aspects of syntax, emphasizing the utility of tree diagrams for cross-linguistic comparisons. The use of tree structures facilitates integration with different linguistic theories, contributing to a broader understanding of syntax.

The challenges are:

1. Complexity in Representation (Chomsky, Haegeman): Noam Chomsky's emphasis on generative grammar and Liliane Haegeman's work in syntax recognize that creating accurate tree diagrams becomes challenging, especially for complex sentence structures. The intricate relationships among words and phrases may lead to complex tree structures, making accurate representation difficult.
2. Ambiguity in Sentence Interpretation (Multiple Experts): Various experts in syntax acknowledge that sentence ambiguity poses a challenge when constructing tree diagrams. A single sentence may have multiple valid interpretations, leading to potential confusion in determining the correct syntactic structure.

3. Time-Consuming Nature (Carnie): Andrew Carnie's focus on the practical aspects of syntax suggests that constructing detailed tree diagrams for longer or intricate sentences can be time-consuming. This is particularly relevant for language learners and those less proficient in syntax.
4. Diverse Theoretical Approaches (Multiple Experts): The field of syntax encompasses various theoretical approaches, as suggested by experts like Gazdar and Bresnan. Different linguistic theories may employ distinct conventions for tree diagrams, leading to potential confusion or misinterpretation of sentence structures.
5. Limited Semantic Representation (Jackendoff): Ray Jackendoff's work on the syntax-semantics interface highlights that tree diagrams primarily represent syntactic structures and may not capture all aspects of sentence meaning. The limited scope of tree diagrams in conveying semantic relationships poses a challenge.
6. Adaptation to Computational Models (Steedman): Mark Steedman's contributions to lexical-functional grammar in computational linguistics suggest that adapting tree diagrams for computational models can be challenging. Ensuring compatibility with computational processing requires careful consideration of syntax and structure.
7. Understanding and Applying Movement Lines (Derrick & Archambault): The research by Derrick & Archambault on TreeForm indicates that understanding and applying movement lines in tree diagrams can be challenging. Movement lines represent syntactic transformations, and mastering their use requires a deep understanding of syntax.

METHODOLOGY

Research design

This research used descriptive and qualitative methods, which are research approaches that emphasize in-depth analysis and interpretation of data, frequently in the context of social, cultural, or human behaviour. Examining an object, condition, event, or style of thinking about a group of individuals in their current state is the focus of a descriptive technique. This type of research seeks to shed light on particular social challenges. The descriptive technique involves fact-finding with the right interpretation, according to Whitney (1960). Analyzing activities and societal challenges relevant to specific communities and circumstances is the goal of descriptive research. According to Creswell (2012), qualitative research is a means of examining and understanding the significance that individuals or groups ascribe to a social human situation. The steps in the research process include developing questions and procedures, gathering data in the participant's surroundings, conducting inductive data analysis that moves from detailed information to general themes, and interpreting the significance of the data.

Research Site and Participants

This study was conducted by interview. We conducted interviews, both directly or through messages, with a few participants from the same department at a University. In this research, researchers took 6 student participants whose average age was 18 to 21, in the same academic year were recruited to be interviewed. This technique is thought appropriate for discovering the main problem in learning the tree diagram in Syntax. Besides, we also ask them about their solution to facing that problem. Every participant provides informed consent, highlighting their choice to participate in the research. Furthermore, both during direct and online interviews, participants' privacy is ensured by guaranteeing their personal information and secrecy.

Data collection and analysis

We interviewed the participants in this research in two ways. the first way is directly participants and the second way is through written messages. We asked participant questions about the problems that they deal with the Syntax, specifically in creating the Tree Diagram in their current university life. The question we ask for the interview is: *"In your opinion, what is the main problem in creating a Tree Diagram and what is your solution to facing that challenge?"* These are the questions we ask participants both male and female in this research.

FINDING & DISCUSSION

In this section, researchers will reveal the results of this research based on a mini-interview that we've already done. Based on the answers of the participants, the points we can take are:

1. Contextual Usage Challenge: *"In my opinion, the challenge in learning tree diagrams lies in placing the appropriate context in the diagram. In my view, the solution to this challenge is to understand the context in which the tree diagram is used and to apply the most suitable method for that purpose." (Participant 1)*
   Participant 1 identifies a challenge in placing the appropriate context in tree diagrams. The solution suggested is to understand the context in which the tree diagram is used and apply the most suitable method for that purpose. This underscores the importance of considering the specific linguistic context when constructing tree diagrams.
2. Difficulty in Identifying Word Groups: *"It's difficult to identify word groups in a tree diagram. The solution is to memorize and delve deeper into the lesson. Memorizing formulas is also a challenge in creating tree diagrams." (Participant 2)*
   Participant 2 mentions challenges in identifying word groups in tree diagrams and proposes solutions such as memorization, deepening understanding, and memorizing formulas. This highlights the cognitive load associated with recognizing and categorizing words within a syntactic structure.
3. Understanding Tree Structure: *"Difficulty in Understanding Tree Structure. Solution: Start by understanding the basic concept of tree structure. Observe how nodes and branches are connected to each other. Practice by creating simple trees to strengthen understanding." (Participant 3)*
   Participant 3 acknowledges difficulties in comprehending tree structures and suggests starting with fundamental concepts, observing node and edge connections, and practising with simple trees. This emphasizes the necessity of building a strong foundational understanding of tree structures.
4. Complex Tree Structures Challenge: *"Difficulty with Complex Trees. Solution: Break down the complex tree into smaller, more manageable parts. Focus on one branch or level at a time. After understanding the smaller parts, combine them again to see the overall picture." (Participant 4)*
   Participant 4 articulates challenges with complex tree structures and recommends breaking them down into more manageable parts. The solution involves focusing on one branch or level at a time and gradually combining smaller sections. This approach aligns with the concept of breaking down complexity to enhance comprehension.
5. Uncertainty in Categorizing Words: *"The challenge is to determine which category a word belongs to (whether it's a verb, auxiliary, adjective, etc.). Without knowing this, it would be difficult to create tree diagrams. The solution is to study diligently and read extensively" (Participant 5)"*
   Participant 5 mentions the challenge of determining the category of words (e.g., verb, auxiliary, adjective) and suggests diligent learning and extensive reading as solutions. This highlights the importance of a robust understanding of parts of speech for effective tree diagram construction.
6. Understanding New Syntax Terms *"The challenge is that we need to understand the categorization of specific words and the formula for their arrangement. Additionally, there are new terms in syntax, such as verb groups, and there is a term for when the object is one or two (forgot, hehe). The solution is to first understand the structure or grammar in English, alongside learning new terms and specific materials in syntax lessons." (Participant 6)*
   Participant 6 points out the challenge of understanding new syntax terms and proposes solutions like understanding word grouping and sentence structure formulas. Additionally, the participant emphasizes the need to learn the specific terms and grammar of English. This aligns with the idea that a solid grasp of syntax terminology is crucial for successful tree diagram creation.

The insights provided by participants reveal common themes and implications in the challenges faced when learning tree diagrams in syntax. A recurring theme is the critical importance of establishing a foundational understanding of syntax concepts, encompassing both basic tree structures and fundamental grammar rules. This foundational knowledge serves as the bedrock for effective tree diagram construction.

Another prominent theme revolves around the challenge of dealing with complex tree structures. Participants suggest a pragmatic approach to breaking down these intricacies into smaller, more manageable components. This aligns with recognized pedagogical strategies that endorse incremental learning, encouraging students to grasp simpler concepts before tackling more complex syntactic structures.

Categorization challenges emerge as a central concern, with participants highlighting the difficulty in identifying and categorizing words within a sentence. This underscores the necessity for learners to develop a robust grasp of parts of speech and their respective functions in constructing meaningful tree diagrams.

Furthermore, the importance of context sensitivity is underscored throughout the responses. Participants stressed the need to consider contextual usage and the specific linguistic context in which tree diagrams are applied. This suggests that effective tree diagram construction is not only reliant on syntactic rules but also on an awareness of the broader linguistic environment.

CONCLUSION

This research aimed to analyse the problem that students faced in creating a Tree Diagram by interviewing several students with a question. Through the answers about their problem and the solution that they faced in creating a Tree Diagram, researchers discovered the main problems that hindered them in creating a Tree Diagram. Through students' participation in this research, they faced several different types of problems they faced, that are: Contextual Usage Challenges, Difficulty in Identifying Word Groups, Understanding Tree Structure, Complex Tree Structures Challenges, Uncertainty in Categorizing Words, and Understanding New Syntax Terms. Participants emphasize the difficulties in recognizing and classifying words inside a sentence, citing categorization challenges as a primary concern. To create meaningful tree diagrams, students must have a firm understanding of the various parts of speech and their purposes.

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