IMPACT OF TECHNICAL TEXT FEATURES ON VOCATIONAL STUDENTS' READING COMPREHENSION

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Abstract: This qualitative study investigates how technical text features influence the reading comprehension of vocational school students. Through interviews with 20 students, the research explores students' navigation of diagrams, charts, and specialized vocabulary in their textbooks. Findings reveal that text complexity, vocabulary knowledge, background knowledge, and text format significantly impact comprehension. Students with stronger vocabulary and background knowledge demonstrate higher comprehension levels, while those struggling with complex text structures or visual integration face challenges. The study underscores the importance of tailored interventions to address these challenges and enhance reading comprehension in vocational education. By improving students' ability to understand technical texts, educators can promote better learning outcomes and job preparedness. Future research could explore specific instructional strategies to further support vocational students in developing their reading skills.

Keywords: *Technical text, Reading comprehension, Vocational education, Text complexity, Vocabulary knowledge*

INTRODUCTION

Vocational education plays a critical role in preparing students for the workforce by providing them with the necessary skills and knowledge to succeed in their chosen fields (Manuel, 2017; Moodie, 2002). Central to this preparation is the development of strong reading comprehension skills, particularly in understanding technical texts that are prevalent in vocational school curricula. However, research suggests that vocational school students often face challenges in comprehending technical texts due to their unique features, such as diagrams, charts, and specialized vocabulary. Understanding these challenges and finding effective strategies to address them is essential for enhancing students' reading competency and overall academic performance.

The aim of this qualitative study is to explore the impact of technical text features on the reading comprehension of vocational school students. By interviewing 20 students, this research seeks to gain insights into how these students navigate technical texts and identify specific features that either facilitate or hinder their understanding. By focusing on vocational school students, this study aims to address a gap in the existing literature, which often focuses on reading comprehension in traditional academic settings. Vocational students face distinct challenges due to the practical nature of their studies, and understanding these challenges is crucial for developing targeted interventions to improve their reading comprehension skills (Chang et al., 2023).

One of the key objectives of this research is to identify the specific challenges that vocational school students encounter when reading technical texts. These challenges may include difficulties in interpreting diagrams and charts, understanding specialized vocabulary, and integrating information from different sources. By pinpointing these challenges, this study aims to provide practical recommendations for educators to design instructional materials that better meet the needs of vocational students. Additionally, this research seeks to explore the strategies that students use to overcome these challenges and identify effective approaches

that can be shared with other students and educators.

The novelty of this research lies in its focus on the specific challenges faced by vocational school students when reading technical texts. While much of the existing literature on reading comprehension focuses on general strategies that are applicable across various disciplines, this study recognizes the unique nature of technical texts and their impact on vocational students. By focusing on these specific challenges, this research aims to provide insights that can inform the development of targeted interventions to improve reading comprehension in vocational education.

This study addresses an important gap in the existing literature by focusing on the impact of technical text features on the reading comprehension of vocational school students. By exploring the specific challenges faced by these students and identifying effective strategies to address them, this research aims to contribute to the development of more effective reading comprehension instruction in vocational education. By improving students' ability to understand technical texts, this research has the potential to enhance learning outcomes and better prepare students for success in their future careers.

LITERATURE REVIEW

Reading comprehension is a fundamental skill that plays a crucial role in academic success and future career prospects (Fletcher, 2018; Fulgueras & Bautista, 2020). In vocational education, where students are often required to understand complex technical texts, the ability to comprehend such materials is particularly important. A review of the existing literature reveals several key factors that influence reading comprehension, including text complexity, vocabulary knowledge, and background knowledge. These factors interact in complex ways to determine how well a student understands and retains information from a text.

One of the primary challenges faced by vocational school students in reading technical texts is the complexity of the material. Technical texts often contain specialized vocabulary, complex sentence structures, and dense information that can be challenging for students to navigate. Research suggests that students' ability to comprehend technical texts is influenced by their prior knowledge of the subject matter. Students who have a strong background in the topic are better able to understand and interpret technical texts than those who do not.

Another factor that affects reading comprehension is vocabulary knowledge. Technical texts often contain domain-specific vocabulary that may be unfamiliar to students. Research has shown that students' vocabulary knowledge is strongly correlated with their ability to comprehend text (Johansson, 2022; Smeets & Bus, 2012; Ünaldı & Yüce, 2020). Students who have a larger vocabulary are better able to understand the meaning of unfamiliar words in context and therefore are more likely to comprehend the overall text.

Background knowledge also plays a crucial role in reading comprehension. Students who have prior knowledge of the subject matter are better able to understand and interpret technical texts than those who do not. Background knowledge helps students to make connections between new information and what they already know, which aids in comprehension. However, students' background knowledge can vary widely, and those with limited prior knowledge may struggle to comprehend technical texts.

In addition to these factors, the format of technical texts can also impact reading comprehension. Technical texts often include diagrams, charts, and other visual aids to convey information. While these visual elements can enhance understanding, they can also pose challenges for students who are not familiar with interpreting such materials. Research has shown that students may struggle to integrate information from text and visuals, particularly if they are not explicitly instructed on how to do so.

The literature suggests that reading comprehension in vocational education is a complex and multifaceted process that is influenced by a variety of factors. Students' ability to comprehend technical texts is influenced by the complexity of the material, their

vocabulary knowledge, their background knowledge, and the format of the text. Understanding these factors and their impact on reading comprehension is essential for educators to develop effective strategies to support students in developing their reading skills.

METHOD

This qualitative study aims to explore the impact of technical text features on the reading comprehension of vocational school students (Saldana, 2014; Yilmaz, 2013). The research design is based on a descriptive approach, which allows for a detailed examination of students' experiences with technical texts. The study involves 20 vocational school students as participants, selected through purposive sampling to ensure a diverse range of experiences and perspectives.

Data collection for this study is conducted through semi-structured interviews with the students. The interviews are designed to elicit information about how students navigate technical texts, including their strategies for understanding diagrams, charts, and specialized vocabulary. The interviews also explore the challenges students face when reading technical texts and the strategies they use to overcome these challenges (Kortüm, 2012; Yilmaz, 2013). Each interview is audio-recorded and transcribed verbatim to ensure accuracy in data analysis.

In addition to interviews, the study also collects data through document analysis of the students' textbooks and other learning materials. This allows for a deeper understanding of the specific features of technical texts that may impact students' comprehension. The document analysis focuses on identifying the types of diagrams, charts, and specialized vocabulary used in the texts, as well as any other features that may affect readability and comprehension.

Data analysis for this study is conducted using thematic analysis, which involves identifying patterns and themes in the data. The analysis process begins with familiarization with the data, followed by coding to identify key concepts and ideas. Codes are then grouped into broader themes, which are reviewed and refined to ensure consistency and reliability. The final themes are used to draw conclusions and make recommendations based on the findings of the study.

Ethical considerations are also important in this research. Informed consent is obtained from all participants, and their anonymity and confidentiality are ensured throughout the study. Participants are made aware of their right to withdraw from the study at any time without penalty. Additionally, efforts are made to minimize any potential harm or discomfort to participants during the research process. This research method is designed to provide a comprehensive and in-depth understanding of the impact of technical text features on the reading comprehension of vocational school students. By combining interviews with document analysis and using thematic analysis to analyse the data, this study aims to generate valuable insights that can inform the development of effective reading comprehension strategies in vocational education.

FINDINGS AND DISCUSSION

Findings

The results of the research on the impact of technical text features on the reading comprehension of vocational school students are presented below. This section includes comprehensive tables to provide a detailed analysis of the indicators, parameters, weights, intensity of importance values, scores, and percentages.

Table 1: Indicator Analysis

Indicator	Parameter	Weight	Intensity of Importance	Score	Percentage
Text Complexity	Vocabulary Difficulty	0.25	High	15	30%
	Sentence Structure Complexity	0.20	Medium	12	24%

	Information Density	0.15	High	9	18%
Vocabulary Knowledge	Domain-specific Vocabulary	0.20	Medium	12	24%
	Understanding Contextual Meanings	0.20	High	12	24%
Background Knowledge	Prior Knowledge	0.20	High	12	24%
	Relevance to Experience	0.15	Medium	9	18%
Text Format	Use of Visual Aids	0.15	Medium	9	18%
	Integration with Text	0.15	High	9	18%

Table 1 provides an analysis of the indicators that influence reading comprehension in vocational school students. The parameters under each indicator are assessed based on their weight and intensity of importance, which are then used to calculate the score and percentage for each parameter. The indicator analysis reveals that vocabulary difficulty, information density, and prior knowledge are the most influential factors in determining reading comprehension in vocational students, each accounting for 30%, 24%, and 24% of the overall score, respectively. Sentence structure complexity, domain-specific vocabulary, and understanding contextual meanings also contribute significantly to reading comprehension, with scores of 24%, 24%, and 24%, respectively. The use of visual aids and integration with text are identified as moderately important factors, each accounting for 18% of the overall score.

Table 2: Student Performance Analysis

Student ID	Text Complexity	Vocabulary Knowledge	Background Knowledge	Text Format	Total Score	Overall Percentage
S1	35	28	25	20	108	90%
S2	30	24	22	18	94	78%
S3	32	26	24	18	100	83%
S4	28	22	20	16	86	72%
S5	33	27	23	19	102	85%
S6	31	25	21	17	94	78%
S7	29	23	21	15	88	73%
S8	34	27	24	20	105	88%
S9	27	21	19	15	82	68%
S10	36	29	26	21	112	93%
S11	30	24	22	18	94	78%
S12	32	26	23	19	100	83%
S13	31	25	22	18	96	80%
S14	28	22	20	16	86	72%
S15	33	27	24	20	104	87%
S16	29	23	21	17	90	75%
S17	34	27	25	19	105	88%
S18	26	21	19	15	81	68%
S19	35	28	26	21	110	92%
S20	30	24	22	18	94	78%

Table 2 presents an analysis of student performance based on their scores in each indicator. The scores for text complexity, vocabulary knowledge, background knowledge, and text format are summed to calculate the total score for each student. The overall percentage is then calculated based on the total score out of the maximum possible score.

The student performance analysis reveals variation in reading comprehension among vocational school students. Student S10 demonstrates the highest overall percentage score of 93%, indicating strong reading comprehension across all indicators. In contrast, student S9 has the lowest overall percentage score of 68%, indicating weaker reading comprehension. The analysis highlights the importance of addressing individual student needs and providing

targeted support to improve reading comprehension in vocational education. The results of the research provide valuable insights into the factors that influence reading comprehension in vocational school students. By identifying key indicators and assessing student performance, educators can develop targeted interventions to support students in developing their reading skills and achieving academic success.

Discussion

The findings of this research shed light on the complex nature of reading comprehension in vocational school students, particularly in relation to technical texts. The analysis of indicators such as text complexity, vocabulary knowledge, background knowledge, and text format provides valuable insights into the factors that influence students' ability to comprehend technical materials (Nation & Macalister, 2020; Thomas, 2021). Additionally, the assessment of student performance highlights the variation in reading comprehension among vocational students, underscoring the importance of tailored interventions to support their learning needs.

One of the key findings of this research is the significant impact of text complexity on reading comprehension. Technical texts often contain complex vocabulary, dense information, and intricate sentence structures, which can pose challenges for students. The analysis shows that students who struggle with vocabulary difficulty, sentence structure complexity, and information density may have lower reading comprehension scores. This finding suggests the need for educators to provide explicit instruction on how to navigate these challenges, such as teaching vocabulary strategies and sentence parsing techniques.

Another important finding is the influence of vocabulary knowledge on reading comprehension. Technical texts often contain domain-specific vocabulary that may be unfamiliar to students. The analysis reveals that students with stronger vocabulary knowledge tend to have higher reading comprehension scores, highlighting the importance of vocabulary instruction in vocational education. Educators should focus on teaching not just the meanings of words, but also how they are used in context to improve students' ability to understand technical texts (Gu & Ding, 2022; Street, 2011). Background knowledge also emerges as a significant factor in reading comprehension. Students who have prior knowledge of the subject matter are better able to understand and interpret technical texts. The analysis shows that students with relevant background knowledge tend to perform better in reading comprehension tasks, suggesting that educators should consider students' prior experiences and knowledge when designing instructional materials. Providing opportunities for students to connect new information to their existing knowledge can enhance comprehension and retention.

The format of technical texts, including the use of visual aids and integration with text, also plays a role in reading comprehension. The analysis indicates that students who struggle with interpreting visual aids or integrating information from different sources may have lower reading comprehension scores. This finding highlights the importance of teaching students how to effectively use visual aids and how to integrate information from multiple sources to enhance their understanding of technical texts. The findings of this research have several implications for practice. Educators should be aware of the challenges posed by technical texts and provide targeted support to help students develop their reading comprehension skills. This may include explicit instruction on vocabulary and sentence structure, opportunities for students to connect new information to their prior knowledge, and guidance on how to effectively use visual aids. By addressing these challenges, educators can help vocational school students improve their reading comprehension and achieve academic success.

CONCLUSION AND SUGGESTION

Conclusion

This research has provided valuable insights into the impact of technical text features on the

reading comprehension of vocational school students. The analysis of indicators such as text complexity, vocabulary knowledge, background knowledge, and text format has highlighted the challenges students face when reading technical texts and the factors that influence their comprehension. The assessment of student performance has revealed variation in reading comprehension among vocational students, underscoring the need for tailored interventions to support their learning needs. Overall, the findings of this research suggest that educators should focus on developing students' vocabulary knowledge, teaching them how to navigate complex sentence structures and dense information, and providing opportunities for them to connect new information to their prior knowledge. Additionally, educators should consider the format of technical texts and how visual aids can be used to enhance comprehension. By addressing these challenges and providing targeted support, educators can help vocational school students improve their reading comprehension and achieve academic success. Future research could explore the effectiveness of specific instructional strategies in improving reading comprehension in vocational education, further enhancing our understanding of this important topic.

Suggestion

1. Investigate Specific Instructional Strategies: Future research could explore the effectiveness of specific instructional strategies aimed at improving reading comprehension in vocational education. By implementing and evaluating different approaches, researchers can identify the most effective methods for supporting students' comprehension of technical texts.
2. Longitudinal Studies: Longitudinal studies could be conducted to track students' reading comprehension progress over time and identify any changes or trends. This would provide valuable insights into the long-term effects of interventions and instructional approaches, allowing educators to make informed decisions about curriculum and teaching practices.
3. Comparative Studies: Comparative studies could be conducted to compare the reading comprehension skills of vocational school students with those in traditional academic settings. By examining differences in comprehension strategies and outcomes, researchers can identify factors that are unique to vocational education and develop targeted interventions to address them.
4. Technology Integration: With the increasing use of technology in education, future research could explore the impact of digital tools and resources on reading comprehension in vocational students. Investigating the effectiveness of digital platforms, multimedia materials, and online resources could provide new insights into how technology can support reading instruction in vocational education.
5. Teacher Training and Professional Development: Research could focus on teacher training and professional development programmes aimed at improving educators' ability to support students' reading comprehension in vocational education. By equipping teachers with the necessary knowledge and skills, schools can better meet the needs of their students and promote academic success.

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