

OPTIMIZING READING COMPREHENSION IN VOCATIONAL HIGH SCHOOL PHASE F STUDENTS: THE ROLE OF VERBAL-LINGUISTIC INTELLIGENCE AND TEACHER COMPETENCE THROUGH THE UNDERSTANDING BY DESIGN APPROACH

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Abstract

Reading comprehension is a fundamental literacy skill that determines students' academic success and readiness for the workforce. However, Indonesian students' low performance in international assessments highlights the urgency of addressing reading literacy, particularly at the vocational high school level where learners are preparing for internships and direct entry into employment. This study examines the influence of verbal-linguistic intelligence and teacher competence, within the framework of the Understanding by Design (UbD) approach, on students' reading comprehension, with learning motivation considered as a mediating variable. A quantitative research design was applied, involving 104 students from a Vocational High School (Phase F), selected using Slovin's formula and simple random sampling. Data were collected through tests and questionnaires and analyzed using Structural Equation Modeling with the Partial Least Squares method. The findings demonstrate that both verbal-linguistic intelligence and teacher competence have a significant positive effect on learning motivation. These factors also showed a positive influence on reading comprehension, although their direct influence had weak significance. Importantly, learning motivation is confirmed as a strong mediator, strengthening the impact of teacher competence and verbal-linguistic intelligence on reading comprehension. This study underscores the importance of fostering students' linguistic capacity and enhancing teacher competence through the UbD approach, as these efforts are more effective when supported by high learning motivation.

Keywords: *learning motivation; reading comprehension; teacher competence; verbal-linguistic intelligence*

1. Introduction

Reading comprehension is an essential component of literacy that serves as a valuable life skill in today's era of global competition. However, according to the latest

results of the Programme for International Student Assessment (PISA) released on December 5, 2023, Indonesian students scored an average of only 359 points in reading comprehension. It is still far below the OECD (Organisation for Economic Co-operation and Development) average of 476 points (OECD, 2023). The low PISA results highlight a major challenge in improving the quality of education, particularly in the area of reading literacy. The persistently low level of reading literacy not only affects students' academic achievement but also influences graduates' readiness to enter the workforce, especially for those coming from vocational schools (Rahmadani et al., 2023).

The urgency of improving literacy at the vocational high school level, particularly in Phase F (Grades XI and XII), has become a critical concern, considering that Grade XI students are entering their internship period, while Grade XII students are being prepared to graduate and transition directly into the workforce (Depdiknas, 2004). Data from the National Education Report shows that the reading literacy skills of vocational high school students only reached 63.48% (Kemdikbud, 2024). Meanwhile, a good literacy level is defined as achieving at least 70% in accordance with the indicators of the National Education Report.

The increasingly competitive job market requires individuals to develop strong reading and comprehension skills so they can understand work instructions and enhance communication effectiveness. Unfortunately, the teaching of reading comprehension is still far from optimal (Sugandi & Asih, 2019). Research conducted in several vocational high schools confirms that students' low reading comprehension is driven by the limited variety of teaching methods, the lack of effective learning strategies, and weak reading motivation, all of which hinder their ability to understand and connect the content of texts. (Kirana, 2025; Sastri, 2021).

Therefore, the urgency of this study lies in the strategic need to enhance the reading comprehension skills of vocational high school students, particularly those in Phase F who are entering a transitional stage toward the world of work. To address this need, it is essential to explore the various factors that may influence students' ability to comprehend texts. One of the key factors affecting reading comprehension is verbal-linguistic intelligence. Dewi & Wilany (2019) It is stated that there is a significant relationship between verbal-linguistic intelligence and reading ability. Strong intellectual capacity enables individuals to learn more effectively and to further develop their thinking skills. The potential of verbal-linguistic intelligence grows in line with the increase in students' learning motivation, since motivation is strongly and significantly connected to cognitive ability (Misliyanti et al., 2024). In addition, students' success in reading classes cannot be separated from the role and competence of their teachers (Adnan Hakim, 2015). Teachers play a crucial role in creating meaningful learning experiences. The teaching approach currently applied by educators aligns with the training materials in the Teacher Professional Education Program, namely an approach known as *Understanding by Design* (UbD). UbD emphasizes the importance of conceptual understanding and the development of thinking skills that can be applied across various contexts, rather than merely focusing on the mastery of facts (Sutanto, 2024).

Considering the various factors that influence reading comprehension, it is essential to establish a more specific research focus in order to gain a comprehensive understanding of how each factor contributes to improving students' reading comprehension skills. To this end, the present study is framed around two key areas of inquiry: (1) How the partial effects of verbal-linguistic intelligence and teacher competence, when applied through the UbD approach, influence the reading comprehension of Phase F students; and (2) To what extent learning motivation contributes as a mediating variable in the relationship between these two factors and students' reading comprehension. The findings of this study are expected to contribute to the development of a reading literacy instructional model that is more contextual, practical, and aligned with learners' needs.

2. Literature Review

Reading cannot be separated from comprehension, as comprehension is the outcome of an effective reading process (Dewi & Wilany, 2019). Reading comprehension can be optimized when students are provided with examples to complete skill-based activities, given plenty of guided practice with feedback from the teacher, and encouraged to continue applying those skills independently (Pearson & Gallagher, 1983). In this study, students' reading comprehension was assessed using test items designed according to the levels of the revised Bloom's Taxonomy by Anderson and Krathwohl, namely remembering (C1), understanding (C2), applying (C3), analyzing (C4), evaluating (C5), and creating (C6) (Larsen et al., 2022).

Internal factors that contribute to reading comprehension include self-potential, particularly multiple intelligences, a concept introduced by Howard Gardner. Each individual possesses nine distinct types of intelligence, which can continue to develop over time (Rofifah & Aflah, 2023). From the nine types of intelligence, this study focuses on verbal-linguistic intelligence. Verbal-linguistic intelligence refers to the ability to analyze information and produce works that involve spoken and written language, such as speeches, books, and memos (Davis et al., 2011).

The potential of verbal-linguistic intelligence develops in line with the increase in students' learning motivation, as learning motivation has a strong and significant relationship with thinking ability (Misliyanti et al., 2024). The higher a student's motivation, the greater the opportunity to sharpen their language skills both spoken and written as well as their ability to understand and process information critically. Learning motivation itself can be categorized into two main types: intrinsic and extrinsic. Intrinsic motivation stems from within the student, such as curiosity, personal interest in a subject, or the sense of satisfaction gained from completing a task. In contrast, extrinsic motivation arises from external factors, such as rewards, encouragement from teachers or parents, and competition with peers. Both forms of motivation play an equally important role in fostering a supportive learning environment for the development of verbal-linguistic intelligence.

Students' success in reading classes cannot be separated from the role and competence of their teachers (Adnan Hakim, 2015). Teachers must create a learning environment that centers on students' understanding so that the learning objectives can be more effectively achieved (Hidayat et al., 2024). There are various

approaches to teaching and learning, one of which is Understanding by Design (UbD). UbD is an instructional framework based on the principle of backward design, introduced by Wiggins and McTighe in 1999. The backward design model consists of three stages: identifying the desired learning outcomes, determining acceptable evidence of achievement, and planning the learning experiences and instruction. UbD emphasizes the importance of conceptual understanding and critical thinking skills that can be applied across different contexts, rather than merely focusing on the mastery of facts and procedures (Sutanto, 2024).

The application of UbD in lesson planning for reading classes follows three main stages. The first step is to set clear learning goals, emphasizing that reading is not merely about memorization but about transferring knowledge. The second step involves designing assessments, such as contextual quizzes, to measure students' comprehension. The final step is creating meaningful learning activities in which the teacher ensures that the process is engaging and encourages students to learn independently through authentic performance tasks. At this stage, the teacher provides guiding questions to stimulate critical thinking and help students analyze the text comprehensively. In addition, regular reflection is essential to continuously improve the quality of the learning process (Sariyanti et al., 2024).

3. Research Method

This study employs a quantitative approach. The quantitative method is applied to systematically test the theory by analyzing the relationships among the existing variables. (Creswell, John W, 2018). The type of research employed in this study is associative or correlational research (Yusuf, 2017). This study aims to test the relationship between independent variables consisting of verbal-linguistic intelligence (X1) and X2 namely teacher competence with the Understanding by Design (UbD) approach, on the dependent variable of students' reading comprehension skills (Y) with learning motivation (Z) as an intervening variable.

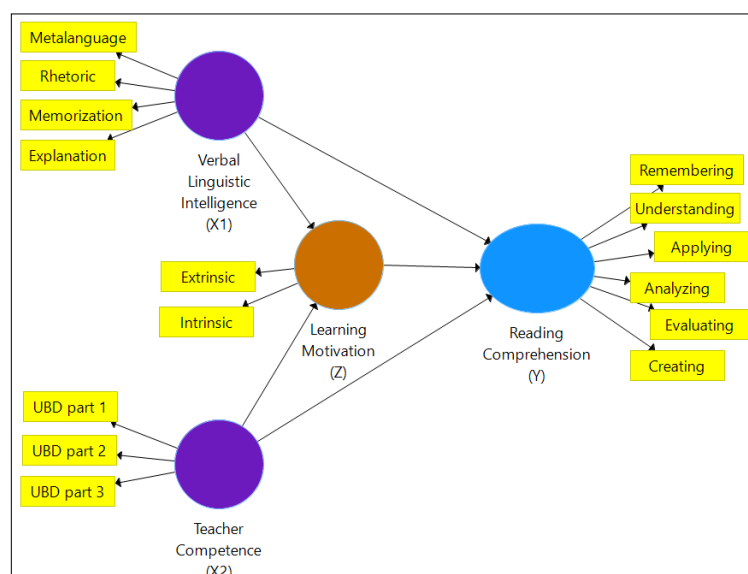


Figure 1. Conseptual Framework

The research will be conducted in 2025 at one of the Phase F schools. The population of this study consists of all Phase F students at SMK Muhammadiyah. The sample was determined to be 104 students, calculated using the Slovin formula. The next step was to employ simple random sampling to select and identify the participants who would serve as samples for each educational level (Yusuf, 2017).

The research instruments consisted of a test instrument in the form of multiple-choice questions and a non-test instrument in the form of a questionnaire. The questionnaire employed a four-point Likert scale with the following options: (1) Never, (2) Rarely, (3) Often, and (4) Always.

No	Variabel	Jenis Instrumen	Item
1	Y (reading comprehension)	Test	A set of 15 multiple choice questions
2	X1 (verbal-linguistic intelligence)	questioner	8 Questions
3	X2 (teacher competence through the UbD approach)	Questioner	9 Questions
4	Z (learning motivation)	Questioner	8 question

Source: Researchers' analysis

Table 1. Research Instrument

All research instruments were developed under the guidance of expert validators, followed by validity and reliability testing using the SmartPLS analysis tool. The outer model analysis was carried out to determine the extent to which the indicators represent the latent variables, thereby ensuring that the measurement meets the standards of validity and reliability. (Hair et al., 2017). There are three approaches, the first being the convergent validity test. An indicator is considered to have convergent validity if it has a loading factor value of ≥ 0.70 and an Average Variance Extracted (AVE) value of ≥ 0.50 . These values indicate that more than half of the variance in the indicators is explained by their construct. Based on Tables 3 and 4, it can be concluded that the indicators in this study meet the criteria for convergent validity.

	Verbal Linguistic Intelligence (X1)	Teacher Competence (X2)	Learning Motivation (Z)	Reading Comprehension (Y)
Metalanguage	0.726			
Rhetoric	0.747			
Memorization	0.752			
Explanation	0.764			
UBD part 1		0.858		
UBD part 2		0.769		
UBD part 3		0.809		
Extrinsic			0.848	
Intrinsic			0.867	
Remembering				0.712
Understanding				0.737
Applying				0.776
Analyzing				0.820
Evaluating				0.848

	Verbal Linguistic Intelligence (X1)	Teacher Competence (X2)	Learning Motivation (Z)	Reading Comprehension (Y)
Creating				0.710

Source: SmartPLS 3 processed results

Table 2. Loading Factor

	Average Variance Extracted (AVE)
Verbal Linguistic Intelligence (X1)	0.559
Teacher Competence (X2)	0.661
Learning Motivation (Z)	0.735
Reading Comprehension (Y)	0.591

Source: SmartPLS 3 processed results

Table 3. Average Variance Extracted (AVE)

The second stage is the discriminant validity test. One of the indicators used to assess discriminant validity is the Fornell-Larcker criterion, which states that the AVE value of each construct must be higher than its correlation with other constructs. Based on Table 5 below, it can be concluded that the indicators in this study meet the requirements for discriminant validity.

	Teacher Competence (X2)	Learning Motivation (Z)	Reading Comprehension (Y)	Verbal Linguistic Intelligence (X1)
Teacher Competence (X2)	0.813			
Learning Motivation (Z)	0.554	0.858		
Reading Comprehension (Y)	-0.089	0.045	0.769	
Verbal Linguistic Intelligence (X1)	0.298	0.446	0.163	0.748

Source: SmartPLS 3 processed results

Table 4. Fornell-Larcker

The final stage is the reliability test. This test was carried out by analyzing the Composite Reliability (CR) value. A CR value of ≥ 0.70 is expected, as it indicates internal consistency among the indicators and reflects the reliability of the study. Based on Table 6 below, it can be concluded that the indicators in this research are reliable.

	Composite Reliability
Verbal Linguistic Intelligence (X1)	0.835
Teacher Competence (X2)	0.854
Learning Motivation (Z)	0.848
Reading Comprehension (Y)	0.896

Source: SmartPLS 3 processed results

Table 5. Composite Reliability (CR)

All validity and reliability tests were successfully passed, indicating that the entire set of research instruments is dependable and suitable for further analysis. The data analysis technique in this quantitative study employed inferential statistical analysis through Structural Equation Modeling (SEM) using the Partial Least Squares approach (PLS-SEM), processed with the assistance of SmartPLS software. SEM makes it possible to test the relationships among latent variables, namely variables that cannot be measured directly (Setiabudhi et al, 2025, h.17). This analysis was chosen because of the model's complexity, which involves several latent constructs

4. Discussion

4.1 Descriptive Analysis

Score Range	Students	%	Category
1-5	11 students	11%	Low reading comprehension
6-10	17 students	16%	Middle reading comprehension
11-15	76 students	73%	High reading comprehension
Total	104 students	100%	

Source: Processed data

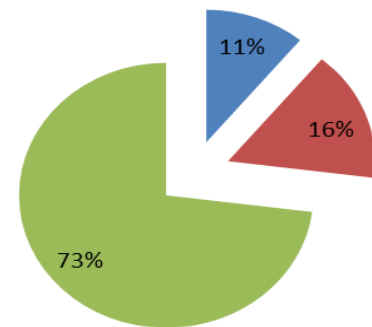


Table 6. Descriptive Statistical Analysis

Literacy achievement at this vocational high school is above the national education report's target, which is set at a minimum of 70%. The reading comprehension scores of students in the SMK Phase F program significantly improved to a proficient literacy level of 73% following an intervention using the Understanding by Design (UbD) approach. Teacher competence in teaching using the UbD approach is a strategic approach in teaching reading. The Understanding by Design (UbD) approach positions teachers not only to teach what to read but also to guide students in developing their literacy skills by honing their understanding and interpretation of information.

4.2 Hypothesis Testing

	Original Sample	P Values	Interpretation
Verbal Linguistic Intelligence (X1)→Learning Motivation(Z)	0.309	0.000	Positive effect as $p < 0.05$
Teacher Competence (X2) → Learning Motivation (Z)	0.462	0.000	Positive effect as $p < 0.05$
Verbal Linguistic Intelligence (X1) → Reading Comprehension (Y)	0.390	0.062	Positive effect approaching significance ($p=0.062$)
Teacher Competence (X2) → Reading Comprehension (Y)	0.279	0.070	Positive effect approaching significance ($p=0.070$)

Source: SmartPLS 3 processed results

Table 7. Direct Effects

The Effect of Verbal-Linguistic Intelligence (X1) on Learning Motivation (Z)

The results presented in Table 7 indicate that Verbal-Linguistic Intelligence (X1) has a positive and significant effect on Learning Motivation (Z), with a path coefficient of 0.309 and a p-value of 0.000. This finding suggests that the higher the students' verbal-linguistic abilities, the greater their motivation to engage in the learning process. Students with high verbal-linguistic intelligence tend to be curious about language structures and enjoy reading, discussing, writing, and interpreting information. This strengthens their intrinsic motivation, as the learning process becomes a fun and meaningful experience.

The Effect of Teacher Competence (X2) on Learning Motivation (Z)

Teacher Competence (X2), when applied through the Understanding by Design (UbD) approach, also shows a positive and significant effect on Learning Motivation (Z), as reflected by a coefficient of 0.462 and a p-value of 0.000. This implies that the stronger the teacher's competence, the greater the encouragement and willingness of students to participate actively in learning. Teachers with high competence not only understand the teaching material, but are also able to manage the learning experience by fostering a supportive and motivating classroom atmosphere, where students feel valued as thinking individuals, not just recipients of information.

The Effect of Verbal-Linguistic Intelligence (X1) on Reading Comprehension (Y)

Furthermore, Verbal-Linguistic Intelligence (X1) was found to have a direct and positive effect on Reading Comprehension (Y), with a path coefficient of 0.390 and approaching significance ($p=0.062$). This result indicates that the ability to process language is related to students' level of reading comprehension. Students with high linguistic abilities tend to have a rich vocabulary with reflective reading strategies and are even able to understand the implied meaning of various sources of information.

The Effect of Teacher Competence (X2) on Reading Comprehension (Y)

Teacher Competence (X2), implemented through the UbD approach, also demonstrated a positive influence on Reading Comprehension (Y), with a coefficient of 0.279 approaching significance ($p = 0.070$). A competent teacher is able to transform the reading experience into more than just a word recognition activity, but also one that guides students to understand, evaluate, and apply information in real-life contexts.

Overall, this analysis highlights that verbal-linguistic intelligence and teacher competence are crucial in fostering students' learning motivation, although their influence is not as strong as their impact on overall academic performance. The analysis above aligns with the findings of Adirestuty (2017) who emphasized that teachers play a significant role in enhancing students' motivation and academic achievement. Similarly, a case study conducted at an international school by Widyasari (2016) revealed that efforts to improve English proficiency were carried out by optimizing linguistic intelligence. These efforts involved designing a supportive curriculum, providing

relevant learning materials, strengthening human resources, and implementing instructional processes characterized by interactive, creative, and enjoyable activities.

Path	Original Sample	P Values	Interpretation
Verbal Linguistic Intelligence (X1) → Learning Motivation (Z) → Reading Comprehension (Y)	0.719	0.005	Positive effect as $p < 0.05$
Teacher Competence (X2) → Learning Motivation (Z) → Reading Comprehension (Y)	0.508	0.042	Positive effect as $p < 0.05$

Source: SmartPLS 3 processed results

Table 8. Indirect Effects

The Effect of Verbal-Linguistic Intelligence (X1) on Reading Comprehension (Y) Mediated by Learning Motivation

The analysis presented in Table 8 indicates that Verbal-Linguistic Intelligence (X1) has a positive and significant effect on Reading Comprehension (Y) through Learning Motivation (Z), with a coefficient value of 0.719 and a p-value of 0.005. This result suggests that the higher the students' verbal-linguistic ability, the stronger their motivation to learn, which in turn leads to an improvement in reading comprehension.

The Effect of Teacher Competence (X2) on Reading Comprehension (Y) Mediated by Learning Motivation

Furthermore, Teacher Competence (X2), particularly within the UbD approach, also shows a positive and significant influence on Reading Comprehension (Y) through Learning Motivation (Z). This is evidenced by a coefficient value of 0.508 with a p-value of 0.042, which is below the 5% significance threshold. These findings highlight that teacher competence not only directly affects students' learning motivation but also indirectly contributes to the enhancement of reading comprehension through the increase in motivation.

Overall, the results emphasize that learning motivation serves as a crucial mediating variable in bridging the influence of teacher competence and verbal-linguistic intelligence on reading comprehension. In other words, the impact of these two factors becomes more effective when students possess a high level of learning motivation. This finding is consistent with the study conducted by Lei et al (2021), which highlighted that learning motivation plays a significant role in mediating the relationship between multiple-intelligence-based teaching strategies and academic achievement.

5. Conclusion

Teacher competence through the implementation of the UbD approach in teaching successfully improved the reading comprehension of vocational high school students (Phase F), with 73% of students achieving a good literacy level. Verbal-Linguistic Intelligence (X1) and Teacher Competence (X2) partially had a positive and significant direct influence on students' Learning Motivation (Z). Verbal-Linguistic Intelligence (X1) and Teacher Competence (X2), when combined with the UbD approach, also showed a positive influence although with a low level of significance

($p > 0.05$). However, this relationship became significant when learning motivation was added as a mediating variable that bridged the influence of teacher competence and verbal-linguistic intelligence on students' reading comprehension. In other words, the impact of these two factors becomes more effective when students have high learning motivation.

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