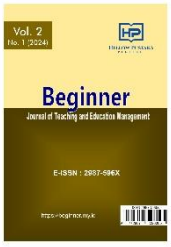

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Research Article

The Influence of English Proficiency on Vocational Students' Speed in Solving Network Troubleshooting Tasks: A Study at SMK Prawira, Carita, Pandeglang, Banten

N. Erna Marlia Susfenti[1], Naylur Rosyid[2]

1. UIN Sultan Maulana Hasanuddin Banten; erna.marlia@uinbanten.ac.id
2. universitas bestari Banten; Nayl.muze@gmail.com

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Abstract. This study investigates how technical English proficiency influences the speed at which students in Computer and Network Engineering (TKJ) resolve network troubleshooting problems. Conducted at SMKS Prawira, Carita, Banten, this ex post facto study involved 42 students who completed a technical English test and performed simulated troubleshooting scenarios using Cisco Packet Tracer. The results show a strong negative correlation (r = -0.934) between English proficiency and troubleshooting time. Students with higher proficiency were able to resolve problems faster, highlighting the functional importance of technical English comprehension. The findings emphasize the necessity for vocational curricula to incorporate English for Specific Purposes (ESP), especially for

technology-related fields. Integrating language and technical instruction could bridge the gap between communication skills and real-world problem-solving capabilities. This study advocates for targeted instructional modules and collaborative teaching approaches to enhance students' readiness for industry demands.

Keyword: Technical English, Troubleshooting, Vocational Education, ESP, Correlation.

INTRODUCTION

Technology, whether in the form of media or other tools, is developed by humans to make life easier. However, without the necessary skills to use it effectively, it can become increasingly burdensome (Rosyid & Suhayati, 2020). In today's interconnected digital age, proficiency in English—particularly technical English—has evolved into a vital skill for students in vocational education. This is especially true for those studying Computer and Network Engineering (Teknik Komputer dan Jaringan, or TKJ), where access to accurate, up-to-date information often depends on the ability to read and interpret English-language sources. From user manuals and technical specifications to software documentation and troubleshooting forums, English dominates the global discourse on technology.

Unfortunately, many vocational students struggle with the linguistic demands of this field. The terminology, structure, and abbreviations used in technical English can pose significant challenges, especially when the educational system does not adequately integrate language training with technical content. For students tasked with resolving complex network issues, the inability to comprehend essential instructions or interpret error logs can result in prolonged delays or even incorrect configurations, leading to systemic disruptions.

Several researchers have underscored the growing importance of English in professional and academic settings (Crystal, 2003; Hutchinson & Waters, 1987). In the context of TKJ education, language is more than a medium of communication it is a tool for analysis, diagnostics, and decision-making. The ability to quickly grasp technical directives, command-line instructions, or configuration protocols is not merely advantageous; it is essential.

This study was designed to explore how well technical English proficiency predicts a student's speed and accuracy in troubleshooting network problems. Rather than relying on subjective perceptions, we employed a data-driven approach, combining standardized testing with real-time network simulation tasks to establish measurable outcomes. By doing so, we aim to contribute meaningful insights to both educators and curriculum developers on the need to incorporate English for Specific Purposes (ESP) into vocational training programs, particularly in fields where English is the default language of the domain.

METHODOLOGY

This research adopted a quantitative approach using an ex post facto design, which is appropriate when the independent variable—English proficiency in this case—cannot be manipulated because it already exists (Ary et al., 2010; Murat, G. 2021). The study was conducted at SMKS Prawira in Carita, Pandeglang, Banten, Indonesia, involving 42 students from the Computer and Network Engineering (TKJ) program, this research from October 2024 to February 2025.

Given the manageable size of the population, the sampling technique used was total sampling, where all eligible students were included. This approach ensured that the study captured a complete picture of student performance across the cohort, enhancing the reliability of correlation analysis.

Two primary instruments were employed to collect data. First, a technical English proficiency test composed of 30 multiple-choice questions assessed students' understanding of key network-related terminologies, configuration commands, documentation interpretation, and error message comprehension. Second, a practical troubleshooting simulation was carried out using Cisco Packet Tracer. Students were tasked with resolving two network failure scenarios designed to mimic real-world situations. The time taken by each student to complete both tasks was recorded as the dependent variable.

For data analysis, descriptive statistics were used to summarize the central tendencies and dispersions of the test scores and completion times. Subsequently, the Pearson correlation coefficient was calculated to determine the strength and direction of the relationship between technical English proficiency and troubleshooting speed. The choice of this statistical test is justified by its widespread use in studies that aim to explore associations between continuous variables (Sugiyono, 2017).

RESULTS

The analysis of the collected data provides clear evidence of the relationship between technical English proficiency and students' ability to solve network problems effectively. From the 42 TKJ students who participated, technical English scores ranged from 64 to 93, while the time required to resolve simulated network issues ranged between 27 and 49 minutes. The Pearson correlation test yielded a coefficient of r = -0.934, indicating a strong negative correlation. This means that as students' English proficiency increases, their troubleshooting time significantly decreases.

Table: Results of English Proficiency Tests and Speed in Solving Network Troubleshooting Tasks

No	X1	X2	No	X1	X2	No	X1	X2	No	X1	X2
1	88	30	**12**	80	33	**23**	69	44	**34**	78	34
2	83	29	**13**	77	36	**34**	86	30	**35**	80	33

3	92	32	**14**	74	39	**25**	91	27	**36**	75	36
4	79	35	**15**	68	43	**26**	66	47	**37**	83	29
5	85	29	**16**	73	38	**27**	64	49	**38**	85	28
6	93	28	**17**	71	42	**28**	87	31	**39**	82	30
7	70	45	**18**	82	30	**29**	89	29	**40**	88	31
8	81	31	**19**	90	31	**30**	84	32	**41**	77	37
9	72	41	**20**	78	34	**31**	73	39	**42**	72	41
10	76	38	**21**	65	48	**32**	79	35	$\bar{X}$	**78,642**	**35,548**
11	75	36	**22**	67	46	**33**	76	37	**r**	**-0,934**	

EXPLANATION:

X1: Results of English Proficiency Tests

X2: Speed in Solving Network Troubleshooting Tasks (in minute)

Based on the table above, the following diagram can be constructed:

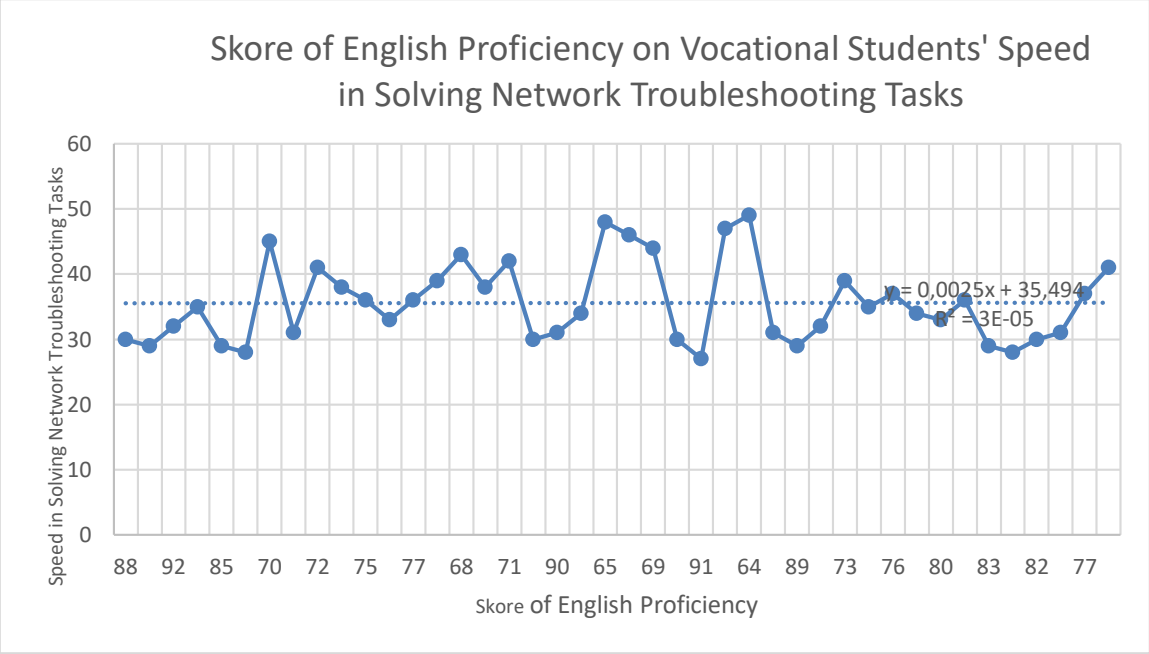

Figure: Correlation Diagram between English Proficiency and Speed in Solving Network Troubleshooting Tasks

To further understand the implications, students with the highest English scores (above 90) consistently completed tasks faster, averaging below 30 minutes. Conversely, those with lower scores (below 70) took significantly longer, with several exceeding 45 minutes. The trend line in the correlation graph clearly illustrates this inverse relationship, affirming the hypothesis that language comprehension plays a central role in practical problem-solving.

Statistical analysis also showed minimal variance among high performers, suggesting that once a certain threshold of proficiency is met, students are able to

interpret configuration instructions, diagnostic outputs, and command-line feedback with greater ease and confidence. On the other hand, students with weaker language skills tended to struggle not because of their technical incapacity, but due to their difficulty in interpreting English-language system outputs.

These findings not only validate prior assertions about the significance of English in technical education (Altavilla, 2019; English Proficiency Report, 2023) but also demonstrate the urgent need for language training to be embedded within technical training programs. The evidence is clear: technical English fluency is a decisive factor in student performance.

DISCUSSION

The findings of this study reinforce the increasingly acknowledged perspective that technical English is not merely an accessory in vocational education—it is a core competency. For students in the Computer and Network Engineering field, language proficiency serves as both a gateway and a barrier to success, depending on the level of mastery. When troubleshooting network issues, learners rely heavily on their ability to comprehend system logs, configuration files, error messages, and online forums—all predominantly in English (Comer, 2018; Hutchinson & Waters, 1987).

This dependency places non-native speakers at a disadvantage unless their training explicitly addresses this gap. Our data-driven approach revealed that students with better command of English completed their troubleshooting tasks more efficiently, underscoring the need to integrate English for Specific Purposes (ESP) into core technical subjects. Rather than teaching language in isolation, vocational programs should adopt an interdisciplinary framework where language learning is contextualized within the students' field of expertise (Nunan, 2003).

This approach has been successfully implemented in other global settings where technical fields demand rapid skill acquisition supported by language fluency (Crystal, 2003). In our case, a simple lack of understanding of terms like 'default gateway', 'packet loss', or 'access control list' led to confusion and inefficiency in several low-performing students.

Curriculum developers must also note that proficiency in English is not only about vocabulary memorization. It involves reading comprehension, problem-solving, and the ability to think critically using language as a medium. Our recommendation aligns with previous research urging policymakers to consider ESP programs not as electives, but as foundational components of vocational training (Altavilla, 2019; English Proficiency Report, 2023). Only through such intentional integration can vocational education fully prepare students for industry standards and international certifications.

CONCLUSION

This research highlights a critical insight: technical English proficiency plays a decisive role in the speed and accuracy with which vocational students resolve network-related problems. The strong negative correlation observed confirms that as students' understanding of technical English improves, so too does their ability to perform under pressure in simulated real-world tasks.

Based on these findings, several practical recommendations are proposed. First, vocational schools should embed ESP-focused modules into their technical curricula. Second, collaboration between English and technical subject instructors can foster meaningful language exposure tied directly to job skills. Third, training programs and workshops aimed at improving students' digital literacy should include components on interpreting English-language resources.

Ultimately, the goal is not just to teach students how to pass exams or memorize terms, but to cultivate confident professionals who can navigate global technologies. English, in this sense, becomes more than a subject—it becomes an essential tool for success in the modern workforce.

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