

ENHANCING PROFESSIONAL COMPETENCIES WITH HYPERMEDIA: A STUDY OF VOCATIONAL ENGLISH TEACHER

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ABSTRACT

The development of competencies is crucial for teachers in the era of Education 5.0. The advancement of technology and science requires teachers to master the concepts and use of these technologies in teaching learning process. The rapid advancements in technology and science demand that teachers in the era of Education 5.0 enhance their competencies, particularly in integrating digital tools into the teaching-learning process. This study explores the role of hypermedia in enhancing the professional competence of English teachers at SMK Negeri 1 Kandeman, with a particular focus on its potential to support self-directed learning, continuous professional development, and collaborative practices. Using a phenomenological approach, data were collected through interviews, observations, and documentation involving five English teachers. The findings reveal that hypermedia empowers teachers to adopt innovative teaching strategies and fosters growth in four key areas: pedagogical competence, professional competence, social competence, and personal development. The research highlights the need for ongoing professional development programs to help teachers effectively integrate hypermedia into their teaching practices, aligning with the goals of the Merdeka Curriculum framework. This study contributes to understanding the intersection of digital tools and teacher competence in vocational education, offering valuable insights for future educational policies and practices.

Keywords: Hypermedia, Merdeka Curriculum, Teacher Competence

A. INTRODUCTION

In the era of Education 5.0, the development of teacher competencies has become essential to meet the demands of an increasingly digital and interconnected world. As technological and scientific advancements reshape educational landscapes, teachers are required not only to understand these innovations but to integrate them effectively within the teaching-learning process (Zhang & Yu, 2022). For educators, mastering and employing these digital tools promotes an interactive, student-centered learning environment that is adaptive to the needs of modern learners (Suhendar & Syakir, 2022). In this context, hypermedia is regarded as an

important tool to help teachers meet the needs of modern education and engage students effectively. Hypermedia is an educational technology combining text, audio, video, and interactive elements emerged as a powerful medium that enhances teachers' ability to deliver content dynamically, supports varied learning preferences, and fosters student engagement (Waal & Souissi, 2023). It is particularly significant for vocational teachers, who are tasked with preparing students for industry standards that emphasize practical, hands-on experience. Previous studies have shown that hypermedia not only improves content delivery but also enhances teachers' capacity for self-directed learning, continuous professional development, and collaborative practices (Erni et al., 2024).

With hypermedia, teachers can present information using multimedia elements videos, interactive modules, and audio that appeal to a range of learning styles, from visual to kinesthetic. This aligns with a constructivist approach, which posits that learners construct knowledge more effectively when they actively engage with content, a process supported by digital tools that promote interactivity and autonomy (Ibrohimov & Norboyev, 2024). Hypermedia serves not only as a content delivery tool but as a catalyst for a richer, more self-directed educational experience that mirrors the demands of the digital world. Furthermore, hypermedia's integration into teaching frameworks, especially in vocational education, emphasizes its impact on both students' and teachers' readiness for evolving job markets that demand digital literacy, adaptability, and critical thinking (Mesuwini & Mokoena, 2024). For teachers, hypermedia supports continuous professional growth by offering resources for self-guided improvement and professional networks that encourage collaboration and shared learning (Riska et al., 2024). Through virtual communities, teachers can exchange strategies, access up-to-date resources, and receive feedback, fostering an ecosystem of continuous development and shared expertise (Ikram et al., 2024)

Hypermedia's integration has demonstrated potential to enhance content delivery and support varied learning preferences, yet its role in fostering professional competence remains underexplored in vocational education contexts. This study addresses this gap by investigating how hypermedia supports the professional competencies of English teachers at SMK Negeri 1 Kandeman. This study investigates how hypermedia supports the professional competencies of English teachers at SMK Negeri 1 Kandeman, specifically within the vocational education context. Using a phenomenological approach, this research highlights hypermedia's transformative role in empowering teachers to employ innovative teaching strategies while fostering collaborative relationships and personal growth (Badil et al, 2023). The study explores four key themes that emerged from the application of hypermedia in classroom practices: (1) Pedagogical Competence Improvement, (2) Enhancement of Professional Competence, (3) Social Competence Improvement, and (4) Personal Growth and Development. These findings discover the need for targeted professional development programs that guide teachers in effectively integrating hypermedia tools, aligning with the Merdeka Curriculum's emphasis on adaptive and student-centered teaching (Darling-Hammond et al, 2017) The implications of this research extend to policymakers and educators, who can use these insights to inform strategies that incorporate digital tools in vocational education. By understanding the intersection of hypermedia and teacher competence, stakeholders can better support teachers in adapting to the digital demands of Education 5.0, enhancing the quality of vocational education and preparing students more effectively for the workforce (Sumarlin et al., 2024).

B. METHOD

This study employed a phenomenological approach to explore the role of hypermedia in enhancing the professional competence of English teachers at SMK Negeri 1 Kandeman. Phenomenology was chosen to gain in-depth insights into teachers' experiences with hypermedia, focusing on their subjective interpretations and reflections on how hypermedia supports their professional growth and classroom practices. By examining teachers' lived experiences, this approach allowed for a comprehensive understanding of how hypermedia impacts teaching competencies, particularly within the context of the Merdeka Curriculum (Aditama et al, 2022). The study involved 5 (five) English teachers from SMK Negeri 1 Kandeman. These teachers were selected through purposive sampling to ensure they had at least a basic familiarity with digital tools and were actively integrating technology into their instructional practices.

The data of this study were collected through a combination of semi-structured interviews, classroom observations, and documentation analysis. Semi-structured interviews were conducted to explore teachers' perceptions of and experiences with hypermedia. Each interview lasted approximately 45–60 minutes and was guided by open-ended questions to encourage participants to share detailed responses about their use of hypermedia, challenges, and perceived benefits (Creswell & Poth, 2018). Classroom observations were conducted to gather direct evidence of how teachers used hypermedia tools in their instructional activities. These observations allowed the researcher to analyze specific teaching strategies and student interactions facilitated by hypermedia, as well as to assess the impact on classroom dynamics (Aditama et al, 2023). Relevant documents, such as lesson plans, teaching materials, and training certificates, were reviewed to further understand how hypermedia was integrated into lesson planning and professional development activities (Etikan & Bala, 2017).

Data analysis followed an inductive approach using thematic analysis to identify key patterns and themes related to teachers' experiences with hypermedia. Each interview was transcribed verbatim, and observation notes and documents were reviewed to triangulate findings across data sources. Analysis focused on identifying recurring themes that described how hypermedia impacted the following competencies: pedagogical, professional, social, and personal. Key themes were coded, categorized, and synthesized into four main categories: Pedagogical Competence Improvement, Enhancement of Professional Competence, Improvement in Social Competence, and Personal Growth and Development. The levels of teachers' competencies are described and classified according to the indicators of Teachers' Competencies which described in Table 1.

Table 1. The Teacher Competency Standards Framework and Danielson's Framework for Teaching (UNESCO, 2016; Danielson, 2007)

Competence	Indicator	Level 1 (Novice)	Level 2 (Basic)	Level 3 (Proficient)	Level 4 (Advanced)	Level 5 (Expert)
Pedagogical	Lesson Planning & Implementation	Needs guidance, limited curriculum alignment	Basic plans, limited alignment	Well-aligned plans, student-centered	Interactive, adaptive lessons	Engaging differentiated, exceeds standards
	Instructional Strategies	Basic methods, minimal	Attempts student-centered methods	Uses diverse strategies effectively	Advanced, tailored strategies	Innovates with cutting-

		strategy diversity				edge methods
Professional	Subject Mastery	Basic understanding, needs support	Moderate understanding	Solid knowledge, accurate explanations	Advanced, links to broader concepts	Expert, deep content resource
	Continuous Learning	Rarely engages in PD	Occasionally participates	Regularly engages, applies new learning	Actively seeks advanced training	Models lifelong learning, mentors others
Social	Communication Skills	Struggles with clarity	Basic skills, occasional misunderstandings	Clear communication, builds rapport	Strong, fosters positive environment	Exceptional, inspires and motivates
	Collaboration	Rarely participates	Participates, limited contribution	Works well, contributes to team	Enhances team dynamics, takes initiative	Highly collaborative, strengthens team outcomes
Personal	Self-Reflection	Rarely self-reflects	Occasional reflection, limited improvement	Regularly reflects, improves consistently	Thoughtful, targeted adjustments	Exemplifies reflection, seeks feedback
	Adaptability	Struggles with change	Somewhat adaptable, needs support	Adapts positively	Highly adaptable, adjusts to challenges	Anticipates, navigates change seamlessly

The table provides a comparative analysis of the Teacher Competency Standards Framework (UNESCO, 2016) and Danielson's Framework for Teaching (2007), highlighting key indicators across four major competence categories: Pedagogical, Professional, Social, and Personal. In the Pedagogical category, teachers' competence in Lesson Planning & Implementation and Instructional Strategies is assessed, ranging from novice teachers who need guidance and show limited curriculum alignment, to expert teachers who deliver engaging, differentiated lessons that exceed standards. Moving to Professional Competence, this category focuses on Subject Mastery and Continuous Learning, demonstrating how novice teachers have a basic understanding of their subject matter and rarely engage in professional development, while expert teachers possess deep content knowledge, make broader conceptual connections, and actively mentor others in their professional growth. Transitioning to Social Competence, the emphasis shifts to Communication Skills and Collaboration. Novice teachers may struggle with clarity and infrequent collaboration, while expert teachers communicate exceptionally, build rapport, and foster a positive classroom environment. They are also highly collaborative and take initiative in strengthening team dynamics. Finally, in Personal Competence, the focus is on Self-Reflection and Adaptability. While novice teachers may rarely self-reflect or struggle with adapting to change, expert teachers exemplify continuous self-reflection, seek feedback, and navigate changes seamlessly, anticipating challenges. This framework serves as a comprehensive tool for assessing teacher growth across various competencies, helping guide them from novice to expert stages of professional development.

C. FINDINGS AND DISCUSSION

The findings from this study provide detailed insights into how hypermedia use has transformed various dimensions of English teachers' professional competencies at SMK Negeri 1 Kandeman. Through thematic analysis of interviews, observations, and supporting documents, four primary themes emerged: (1) Pedagogical Competence Improvement, (2) Enhancement of Professional Competence, (3) Social Competence Improvement, and (4) Personal Growth and Development. It can be seen from teachers' competence improvement in figure 1 below:

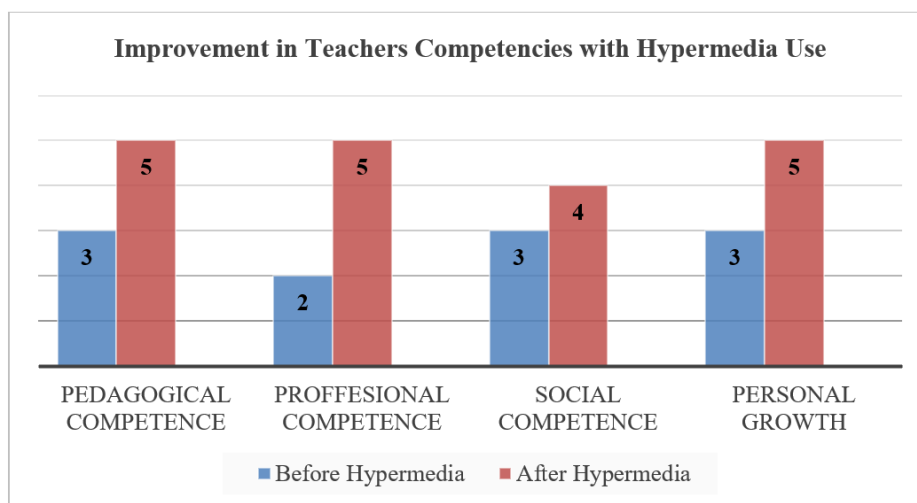


Figure 1. Teachers' Competence Improvement

Figure 1 above shows the development in four key competencies among English teachers at SMK Negeri 1 Kandeman as a result of integrating hypermedia into their teaching practices. Each competency: Pedagogical Competence, Professional Competence, Social Competence, and Personal Growth; was assessed both before and after the use of hypermedia, on a scale from 1 to 5 (with 5 representing the highest level of competency).

1. Pedagogical Competence Improvement

One of the most prominent impacts of hypermedia observed was its influence on pedagogical competence. Before Hypermedia use, pedagogical competence was rated at 3, indicating a moderate level. Teachers relied more on traditional teaching methods with limited multimedia engagement. Furthermore, after Hypermedia use, the competency increased significantly to a level of 5. With hypermedia, teachers became able to present content in more interactive, engaging formats. This helped them address different learning styles and facilitated more student-centered approaches, such as guided discovery and independent learning. In addition, teachers reported that hypermedia enabled them to design and deliver content in a more dynamic and engaging manner, catering to various student learning styles. The multimedia elements allowed teachers to incorporate visual, auditory, and interactive elements that enriched the learning experience. This indicates that hypermedia allowed for differentiated instruction, providing alternate ways for students to access and interact with content. This supports a constructivist approach to teaching, where learners construct knowledge through interaction with diverse resources. By empowering teachers to deliver tailored learning experiences, hypermedia helps address the Merdeka Curriculum's goal of fostering adaptable, student-centered instruction (Aditama & Sugiharto, 2021).

Moreover, Teacher 01 utilized interactive videos and simulations to explain complex English language concepts, which significantly improved student comprehension and engagement. Observations indicated that these multimedia resources helped students better grasp abstract grammar rules and vocabulary usage by providing real-life contexts and examples. Additionally, hypermedia facilitated differentiated instruction by offering diverse content formats, thereby addressing varied learning needs within the classroom. Teacher 02 noted, *"With hypermedia, I can present materials in multiple ways, so students who struggle with traditional methods now have alternative resources."* This indicates that multimedia resources help students understand complex subjects by providing information in varied formats, catering to different learning preferences (Dermawan & Sumarni, 2024). This study's results align with such findings, as teachers reported that hypermedia tools made abstract English grammar rules and vocabulary usage more accessible through visual and interactive aids. Furthermore, this shift to a more active learning environment is consistent with Education 5.0 principles, which emphasize flexibility, personalization, and digital literacy (Fraillon et al, 2021). Thus, it can be concluded that the availability of hypermedia materials allowed teachers to implement a more student-centered approach, shifting from lecture-based instruction to guided exploration and discovery. Observational data showed that teachers encouraged students to engage with interactive resources independently or in small groups, fostering a more autonomous and active learning environment. This transition aligned with the Merdeka Curriculum's emphasis on adaptability and self-directed learning.

2. Enhancement of Professional Competence

Hypermedia also contributed significantly to teachers' professional competencies, particularly in relation to their technological literacy and instructional innovation. Figure 1 shows that before Hypermedia use, teachers initially scored a 2 in this area, indicating challenges with digital skills and limited access to innovative teaching methods. Moreover, after implementing hypermedia, this competency jumped to a level of 5. The teachers gained substantial digital literacy and became comfortable with various hypermedia tools, which allowed them to adopt new instructional techniques and incorporate real-time analytics into their lessons. This indicates a strong shift toward data-driven, evidence-based teaching. The results indicate a notable advancement in teachers' professional competencies, especially in terms of digital literacy and innovative instructional strategies. Teachers initially expressed challenges in using digital tools effectively, indicating a low level of confidence and limited exposure to technology-driven teaching. However, as teachers became more proficient with hypermedia tools, they reported enhanced digital literacy and a readiness to integrate new technologies into their classrooms. Hypermedia platforms provided teachers with both content creation and analytics capabilities, which enabled them to monitor and adapt instructional strategies based on student engagement data (Andrini, 2024). This data-driven approach reflects a shift toward evidence-based teaching, which is increasingly important in today's educational landscape (Waal & Souissi, 2023). The findings show that teachers could measure student engagement in real-time, allowing for adaptive teaching that aligns with students' immediate learning needs. This aspect of professional development through hypermedia also aligns with research suggesting that digital tools are effective in facilitating ongoing teacher learning, especially when aligned with their teaching practices (Ikram et al., 2021).

This enhancement in professional competence supports the Education 5.0 vision, where educators are encouraged to use technology as an integral part of their instructional design. Moreover, hypermedia-equipped teachers now serve as role models for digital literacy in

vocational education, promoting digital skills among students that will be essential for future workforce demands. It is supported by the data from interview as conveyed by teachers that learning to use hypermedia tools required them to develop new skills, which initially posed challenges but ultimately enhanced their professional expertise. Teacher 03 described the process as “*a steep learning curve but rewarding,*” noting that gaining proficiency with hypermedia tools empowered them to diversify teaching techniques.

In addition, document analysis of lesson plans and training certifications further confirmed that teachers actively engaged in professional development to improve their hypermedia skills. Many teachers attended workshops and online courses focused on digital tools, indicating a commitment to continuous learning. Teacher 04 shared that mastering hypermedia was both a technical and creative exercise, encouraging them to think more flexibly and critically about instructional design. Moreover, the teachers expressed that hypermedia integration provided opportunities to experiment with and evaluate the effectiveness of different teaching methods. By using analytics features in certain hypermedia platforms, teachers could monitor student engagement and comprehension in real-time, allowing them to adjust their instructional strategies accordingly (Bello et al., 2024). This data-driven approach represented a shift toward evidence-based teaching practices, which teachers found valuable in enhancing their effectiveness and confidence in the classroom.

3. Social Competence Improvement

The use of hypermedia also played a key role in enhancing teachers' social competencies, fostering stronger connections with students, colleagues, and the broader school community. It can be seen in figure 1 that before Hypermedia use, teachers had an average level (rated 3) of social competence, with moderate collaboration in classroom settings and limited professional network expansion. After Hypermedia use, the score rose to 4, showing improvement. The use of hypermedia fostered collaborative classroom environments, encouraged group activities, and allowed teachers to participate in online communities, thus expanding their professional networks. This strengthened their ability to connect with both students and colleagues. It is in line with the data from interview that teachers reported that hypermedia facilitated more collaborative and communicative classroom dynamics, as students frequently engaged in group activities involving multimedia tools. Teacher 05 observed, “*Hypermedia encourages group work, where students help each other explore digital resources, and I guide them as a facilitator.*” This indicates that another significant impact of hypermedia use observed in this study was on teachers' social competencies. By creating collaborative learning environments and expanding professional networking opportunities, hypermedia strengthened teachers' connections with students and colleagues. Classroom observations indicated that hypermedia-facilitated group activities encouraged peer interaction, fostering a sense of community and support among students. This collaborative environment also transformed teachers' roles from knowledge transmitters to facilitators, as they guided and supported group-based exploration (Benfarha & Lamarti, 2024).

The social benefits extended beyond the classroom. Teachers engaged with digital learning communities and professional forums, exchanging ideas and resources with peers in similar educational contexts. This networking enabled teachers to gain new perspectives and insights, fostering an openness to new teaching methods (Zhang & Yu, 2022). These findings are significant as they suggest that hypermedia not only supports the Merdeka Curriculum's goal of cultivating independence and collaboration but also enhances teachers' capacity to

engage with professional communities, thus contributing to a culture of shared knowledge and continuous improvement. Moreover, observations revealed that hypermedia-driven group activities created a more inclusive classroom environment, with students actively participating and sharing their findings. This collaborative atmosphere helped teachers build stronger rapport with students, as they transitioned from being traditional instructors to facilitators who supported collaborative inquiry. Consequently, teachers were able to understand and address student needs more effectively, promoting a sense of mutual respect and trust. Additionally, hypermedia allowed teachers to participate in professional learning communities, both within and outside their schools. Through online forums and digital platforms, teachers exchanged best practices, resources, and experiences, thus expanding their professional networks and gaining insights from peers. These interactions were particularly valuable for teachers at SMK Negeri 1 Kandeman, where resources are often limited. Collaboration through hypermedia empowered teachers to leverage external expertise and enrich their own teaching practices (Forsler et al., 2024).

4. Personal Growth and Development

Finally, the study identified significant personal growth and development among teachers as a result of hypermedia integration. Before Hypermedia Use, teachers scored 3, indicating a moderate sense of professional satisfaction and limited openness to change. After Hypermedia use, this increased to 5, illustrating substantial personal development. Hypermedia encouraged teachers to overcome initial challenges, adapt to new teaching technologies, and experience a renewed sense of relevance and fulfillment. This personal growth was linked to increased resilience and a stronger commitment to lifelong learning. As conveyed by the teachers that the process of adopting and mastering hypermedia tools fostered a sense of accomplishment and personal fulfillment. For many, learning to effectively use hypermedia not only improved their professional abilities but also boosted their confidence and willingness to embrace change. Teacher 02 shared that using hypermedia made them *“feel relevant and updated with current technology,”* which positively impacted their motivation to teach and interact with students. The challenge of integrating hypermedia, while initially daunting, encouraged teachers to develop resilience and adaptability traits they found useful not only in their professional lives but also in personal contexts. Moreover, the use of hypermedia contributed to teachers' reflective practices. Engaging with digital tools prompted them to regularly assess their teaching methods and seek continual improvement. Teachers expressed that they became more open to feedback and constructive criticism, as the use of hypermedia exposed them to different perspectives and evaluations of their teaching effectiveness.

Personal growth emerged as a critical area of development, reflecting how hypermedia use positively impacted teachers' professional identities and self-efficacy (Thomas & Perwez, 2024). Initially, teachers reported feelings of uncertainty and apprehension when adopting hypermedia, citing fears of inadequacy and resistance to change. However, as they became more adept with these tools, teachers expressed increased confidence and a renewed sense of relevance in the digital age. This aligns with studies indicating that professional development through technology integration leads to enhanced confidence and adaptability (Roblyer & Hughes, 2021). Teachers described hypermedia integration as a challenging but ultimately rewarding process, fostering resilience and encouraging a growth mindset. Teacher reflections showed that they valued the opportunity to develop digital skills that benefited their teaching practice and personal development. This shift toward continuous

self-improvement aligns with Education 5.0's emphasis on lifelong learning, preparing teachers to meet the evolving demands of the educational landscape (Khasawneh, 2024).

The data shows that all competencies benefited from hypermedia integration, with the most dramatic increases in Professional Competence and Personal Growth. This suggests that hypermedia not only enhances teaching skills but also contributes to teachers' confidence, adaptability, and openness to innovation. The results align with the Merdeka Curriculum's goals of fostering self-directed learning and digital literacy, positioning teachers to better navigate the demands of Education 5.0. The results of this study illustrate the powerful role hypermedia can play in enhancing the professional competencies of English teachers, particularly within a vocational education setting like SMK Negeri 1 Kandeman. The four main areas of competency Pedagogical, Professional, Social, and Personal demonstrate how hypermedia integration fosters more dynamic teaching approaches, encourages continuous professional development, enhances collaborative classroom environments, and supports personal growth among educators. The improvement in pedagogical competence highlights the transformative impact of hypermedia on teachers' ability to engage diverse learning needs. Initially, teachers at SMK Negeri 1 Kandeman relied heavily on traditional, lecture-centered methods, which limited students' active participation and engagement. Hypermedia, however, enabled teachers to adopt more student-centered, multimodal approaches, as evidenced by their integration of videos, interactive simulations, and other multimedia tools.

The findings discover the necessity of integrating hypermedia training and resources within professional development programs to equip teachers with the skills needed for Education 5.0. Schools and educational policymakers should consider providing ongoing support and training opportunities, as well as fostering collaborative professional learning communities that emphasize digital literacy and innovation (Jaedun et al., 2024). These efforts could not only enhance teachers' instructional competencies but also support the Merdeka Curriculum's goals of fostering student-centered, technologically enriched learning environments. This study highlights hypermedia as a valuable tool in developing teacher competencies across multiple dimensions. By fostering pedagogical, professional, social, and personal growth, hypermedia prepares teachers to navigate the complexities of modern education (Silitonga et al., 2024). The results emphasize the need for continuous professional development programs and suggest that hypermedia can be an effective medium for delivering the innovative, adaptable teaching practices demanded by the Merdeka Curriculum and Education 5.0. The findings offer valuable insights for vocational education and suggest that hypermedia integration can provide a model for teacher competency development in similar contexts. Future studies should explore long-term impacts and further examine how hypermedia integration can be optimized for varying educational settings.

D. CONCLUSION

This study shows that hypermedia significantly enhances vocational English teachers' competencies, particularly within the framework of Education 5.0 and the Merdeka Curriculum. By improving pedagogical, professional, social, and personal competencies, hypermedia supports teachers in adopting interactive, student-centered approaches, enhancing digital literacy, and fostering collaborative environments. The findings underscore the importance of continuous professional development to ensure effective hypermedia integration, empowering teachers to meet modern educational demands.

Hypermedia thus serves as both a valuable teaching tool and a pathway for teacher growth, with potential to improve educational practices and outcomes across diverse contexts.

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