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Preparation of Competency Test for Professional Teacher Program Participants (UKPPPG) for Automotive Teachers at the West Sumatra Automotive Engineering MGMP to Improve Professionalism and Competence

Persiapan Uji Kompetensi Peserta Program Profesi Guru (UKPPPG) bagi Guru Otomotif pada MGMP Teknik Otomotif Sumatera Barat untuk Meningkatkan Profesionalisme dan Kompetensi

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Abstract

The Competency Test for Teacher Professional Education Program Participants (UKPPPG) is an essential stage for assessing the professionalism of vocational teachers, including those in the field of automotive engineering. Adequate preparation is required to ensure that teachers meet competency standards while also improving the quality of learning in vocational schools. This study aims to describe the preparation strategies facilitated by the Automotive Engineering Subject Teacher Forum (MGMP) in West Sumatra and to identify the challenges teachers face in preparing for the UKPPPG. This research employed a descriptive qualitative approach with a case study design. The subjects consisted of 15 automotive teachers who were actively involved in MGMP activities and preparing for the UKPPPG. Data were collected through in-depth interviews, participatory observation, and document analysis. Thematic analysis was carried out through coding, theme identification, and verification using source and method triangulation. The findings indicate that MGMP preparation strategies include lesson plan development, microteaching, and exam discussions. These activities improved teachers' pedagogical skills; however, limitations such as inadequate workshop facilities, conventional teaching materials, and the lack of computer-based simulations hindered optimal preparation. This study concludes that MGMP plays a significant role in preparing teachers for the UKPPPG, although its effectiveness remains limited to pedagogical aspects. A more comprehensive strategy involving curriculum renewal, access to updated materials, psychological support, and digital technology integration is needed.

Keywords: *MGMP, UKPPPG, automotive teachers, vocational education, teacher professionalism.*

Abstrak

Uji Kompetensi Peserta Program Profesi Guru (UKPPPG) merupakan tahapan penting untuk menilai profesionalisme guru vokasi, termasuk bidang teknik otomotif. Persiapan yang matang diperlukan agar guru mampu memenuhi standar kompetensi sekaligus meningkatkan kualitas pembelajaran di sekolah kejuruan. Penelitian ini bertujuan mendeskripsikan strategi persiapan yang dilakukan Musyawarah Guru Mata Pelajaran (MGMP) Teknik Otomotif Sumatera Barat, serta mengidentifikasi tantangan yang dihadapi guru dalam menghadapi UKPPPG. Penelitian menggunakan pendekatan deskriptif kualitatif dengan rancangan studi kasus. Subjek terdiri atas 15 guru otomotif yang aktif dalam MGMP dan sedang mempersiapkan diri untuk mengikuti UKPPPG. Data diperoleh melalui wawancara mendalam, observasi partisipatif, dan analisis dokumen. Analisis dilakukan dengan teknik tematik melalui proses pengkodean, penentuan tema, serta verifikasi hasil dengan triangulasi sumber dan metode. Hasil penelitian menunjukkan bahwa strategi persiapan MGMP meliputi penyusunan RPP, microteaching, dan diskusi soal. Kegiatan ini membantu meningkatkan keterampilan pedagogik guru, tetapi keterbatasan fasilitas bengkel, dominasi materi konvensional, dan minimnya simulasi berbasis komputer membuat persiapan belum optimal. Penelitian menyimpulkan bahwa MGMP berperan penting dalam persiapan UKPPPG, meskipun efektivitasnya masih terbatas pada aspek pedagogik. Strategi komprehensif yang melibatkan pembaruan kurikulum, akses materi terkini, dukungan psikologis, dan integrasi teknologi digital perlu dikembangkan.

Kata Kunci: MGMP, UKPPPG, guru otomotif, pendidikan vokasi, profesionalisme guru.

1. Introduction

Teachers are vital to advancing education quality, particularly in vocational education, where both technical and pedagogical expertise are crucial (Depdikbud, 2024). Globally, vocational education equips a skilled workforce prepared for Industry 4.0 (Training & In, 2021). The World Bank notes TVET (Technical and Vocational Education and Training) teachers must deliver both technical and social skills communication, critical thinking, and collaboration essential for the workforce's success. Vocational educators not only build competencies but also drive regional innovation and inclusion through hands-on training (UNESCO, 2019; Rahayu & Wirza, 2020). In Indonesia, the Teacher Professional Program (PPG) aims to heighten educators' professionalism through integrated theory, practice, and competency assessment. PPG bridges the academic and practical gap that has developed through blended learning and closer industry partnerships to meet the requirements of Industry 4.0 (Fathullah, 2020). Indonesia's PPG faces issues such as weak industry engagement and insufficient training infrastructure. Nonetheless, it serves as a cornerstone for cultivating adaptive, professional teachers capable of meeting labor market and technological needs.

In the field of Automotive Engineering, the challenges in improving teacher competence are increasingly complex. With the development of increasingly sophisticated vehicle technology, teachers are required to update their understanding of modern automotive systems, including electric vehicles and electronic-based systems (Hidayat et al., 2022). However, in reality, many teachers still face difficulties in dealing with the UKPPPG, both from a pedagogical and technical perspective (Susanto et al.,2021). One of the main obstacles is the limited understanding of the analytical question format based on case studies, which requires critical thinking and problem-solving skills, not just memorization (Hmelo-silver, 2004). In addition, there is a clear gap between theory and practice in vocational education. Teachers are often more dominant in theoretical aspects than in practical fieldwork (Wood, 2003). Limited laboratory or workshop facilities in schools also exacerbate this condition, because without adequate infrastructure support, it is difficult for teachers to master the latest automotive technology (Stepien et al.,2015). The lack of industry-based training opportunities adds to the obstacles (Barrows, 1986).

In West Sumatra, the Automotive Engineering MGMP, a professional organization for subject teachers, serves as a primary support system for automotive teachers seeking to enhance their competencies. In the UKPPPG preparation process, MGMP provides a platform for sharing teaching practices and organizing targeted training. However, several obstacles to learning effectiveness have been identified. These include the lack of specific learning modules designed to help automotive teachers understand UKPPPG question patterns and answering strategies (Savery et al., 1996). Additionally, the limited use of technology in MGMP-facilitated learning, such as mobile learning or augmented reality, results in less interactive and in-depth experiences for teachers (Carruth, 2017).

Variations in teachers' abilities in facing UKPPPG also pose a challenge in efforts to improve competence. Some teachers have strong industrial experience but are still weak in pedagogical aspects, while others have mastered learning theory but lack direct practical experience (Wood, 2003). The limitations of exam simulations as part of the preparation also mean that teachers are not yet accustomed to the real conditions of the UKPPPG (Susanto et al., 2021). The state of teacher readiness shows that the UKPPPG preparation process has not been optimally and structurally developed. Therefore, a more systematic and technology-based learning approach is needed to improve teacher readiness for the exam.

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The problems in preparing for the UKPPPG stem from several main factors. The teacher education curriculum, which is not yet fully based on industry needs, has caused a gap between the world of education and the automotive industry (Hidayat et al., 2019). The use of the old curriculum, which is still widely used as a reference by teachers, is less relevant to the latest developments in automotive technology. The lack of synergy between the world of education and the automotive industry also has an impact on the lack of industry-based training for teachers (Manubey et al., 2022). Teachers' limited access to the latest learning materials relevant to the UKPPPG is also a serious obstacle in improving teacher competence (Hmelo-silver, 2004).

Preparing West Sumatra automotive teachers for the UKPPPG involves persistent, immediate challenges that threaten professionalism and competence. The MGMP Automotive Engineering can facilitate targeted, technology-driven training reflecting current industry demands. Effective preparatory strategies will better equip teachers for the UKPPPG and elevate the quality of vocational education (Depdikbud, 2024).

2. Literature Review

Teacher professionalism is a comprehensive concept, encompassing mastery of pedagogical, professional, social, and personal competencies that are integrated into learning practices. (Beijaard et al., 2004) asserts that a teacher's professional identity is formed from the interaction between experience, knowledge, and continuous reflection. In Indonesia, regulations such as Permendikbud No. 37 of 2017 and Director General of GTK Regulation No. 2626/B/HK.04.01/2023 serve as references for the teacher competency standards that must be achieved. Thus, teacher professionalism is not only about administrative certification, but also includes lifelong learning through reflection, practice, and continuous training (Darling-hammond et al., 2017).

The Teacher Professional Program (PPG) is a government strategy to produce professional teachers in accordance with national standards. One important instrument in the PPG is the Teacher Professional Program Participant Competency Test (UKPPPG), which measures the extent to which prospective teachers have mastered four main competencies. Notanubun's (2019) research shows that well-designed competency tests can provide constructive feedback, not only assessing learning outcomes but also encouraging improvements in teaching practices. Meanwhile, research by Garet et al. (2001) reinforces the idea that comprehensive professional assessments can have a positive impact on teacher development when followed up with training or reflective guidance.

Subject Teacher Working Groups (MGMP) play a strategic role as a forum for collaboration in improving teacher professionalism. MGMPs serve as a platform for exchanging experiences, discussing learning strategies, and collectively developing teaching materials. Based on Ma'rifataini's (2016) research, it is emphasized that effectively managed MGMPs can improve teaching skills as well as student learning outcomes. Meanwhile, research by Djumaria et al. (2025) affirms that MGMP is a space for strengthening the learning community's professional development, especially in responding to vocational learning challenges that require contextual references. In the context of UKPPPG preparation, MGMP can function as a center for information sharing, question training, and facilitating discussions on strategies for facing exams.

At the practical level, several MGMPs have developed technology-based innovations to support teacher preparation. For example, in 2024, the West Sumatra Automotive Engineering MGMP organized online-based training and mentoring in response to teachers' needs to master learning technology (Ningsih, 2025). This initiative shows that MGMPs are not just discussion

forums, but can also act as facilitators of digital transformation. Research by Firman (2016) adds that MGMP forums can help teachers share their experiences in dealing with the UKPPPG, although there are still limitations in exam simulations that closely resemble real conditions.

Automotive teachers face a double challenge in carrying out their duties. From a technical perspective, rapid developments in automotive technology require teachers to constantly update their knowledge and skills to keep pace with the latest industry standards. Research by Billinghurst & Kato (2012) emphasizes the importance of work-based learning (WBL), which enables teachers to master technology through direct work experience. Research by Viona and Afrianti (2024) on the apprenticeship model based on Work-Based Learning (WBL) in Automotive Engineering education found that this approach is effective in improving pre-service teachers' readiness. Non-technical factors, such as motivation, self-confidence, and stress management skills, also significantly influence teacher performance in professional assessments (Susanto et al., 2021).

The use of technology in preparing for the UKPPPG is increasingly important in the digital age. Research by Suryani (2024) shows that online learning, when combined with intensive guidance, can help teachers overcome limitations in accessing relevant materials. A similar study found that using e-learning platforms, discussion forums, and digital question banks enhances exam participants' readiness compared to conventional methods (Pahrijal et al., 2023). Research conducted by Wardana et al. (2024) confirms that the quality of technologically analyzed tryout questions can predict pass rates, so digital-based assessments need to be continuously developed to improve the accuracy of competency evaluations.

The Technological Pedagogical Content Knowledge (TPACK) framework is relevant for mapping the competencies of 21st-century teachers, including vocational teachers. Koehler's (2006) research emphasizes that teacher professionalism is not only measured by mastery of content and pedagogy, but also by the ability to integrate technology into learning practices. Handromi et al. (2024) found that although vocational school teachers have fairly high TPACK competencies, the aspect of technology application is still a weakness. Case-based learning methods can increase the self-efficacy of automotive teachers within the TPACK framework (Joshi, 2023; Hadromi et al., 2024), while research by Effendi & Elmunsyah (2024) emphasizes that TPACK development is an important part of vocational teacher professionalism. Kerse's (2023) research shows that automotive teachers innovate through improvisation strategies, technology utilization, and a mixed workshop classroom approach to optimize TPACK application.

Based on a literature review, there are several research gaps that need to be filled. First, there is still little research that deeply examines the role of the Automotive Engineering MGMP at the local level in facilitating digital-based UKPPPG preparation. Second, the development of specific digital modules for automotive teachers and the evaluation of the effectiveness of computer-based exam simulations that resemble actual UKPPPG conditions are still limited. Third, research on the influence of psychological factors such as motivation, self-confidence, and stress management on the success of UKPPPG is rarely conducted systematically. Fourth, although TPACK literature is growing rapidly, its specific application in vocational MGMP communities has not been widely researched. Therefore, research that integrates MGMP, competency-based digital modules, realistic simulations, and the application of TPACK in the local context is expected to make a significant contribution to strengthening the professionalism of automotive teachers.

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3. Research Methods

This study uses a qualitative descriptive approach with a case study method. This approach was chosen because the study focuses on a deep understanding of the preparation strategies, experiences, and challenges faced by automotive teachers in facing the UKPPPG, not just numerical results. Research by Yin (2018) confirms that case studies are highly relevant for understanding phenomena holistically in real-life contexts, while Creswell (2018) adds that qualitative research can explore the meaning behind participants' experiences.

The research subjects consisted of 15 automotive teachers who were members of the West Sumatra Automotive Engineering MGMP. Participants were selected using purposive sampling according to specific criteria, namely automotive teachers at vocational schools who were active in MGMP activities and had experience participating in or preparing for UKPPPG. According to Patton (2002), selecting participants using purposive sampling allows researchers to obtain informants who are truly relevant to the research focus. In addition to teachers, the data was also reinforced through interviews with PPG instructors and MGMP administrators.

The main instrument of this research was the researcher as a key instrument (human instrument) who played a role in planning, collecting, and analyzing data (Sugiyono, 2017). Supporting instruments included semi-structured interview guides, participatory observation sheets, and documentation. The interviews included open-ended questions about learning strategies, preparation obstacles, and experiences participating in MGMP. The observations focused on interactions and learning methods, while the documentation included training modules, teaching materials, lesson plans, and MGMP notes.

Data collection techniques included in-depth interviews, participatory observation, and document analysis. Interviews were used to explore teachers' personal experiences, while observations allowed researchers to understand the dynamics of MGMP activities. Document analysis was conducted to supplement the information and provide written evidence regarding the preparation strategies used. According to Huberman (2014), combining various data collection techniques yields richer, more comprehensive information.

The data were analyzed using thematic analysis, following the procedures of Braun and Clarke (2014), which included six stages: data familiarization, coding, initial theme identification, theme review, theme definition and naming, and narrative report writing. This approach was used to reveal patterns and meanings from complex data.

To ensure data validity, this study used source and method triangulation techniques (Lincoln, Y. S., & Guba, 1985). Source triangulation was conducted by comparing information from teachers, instructors, and MGMP administrators, while method triangulation was conducted by comparing the results of interviews, observations, and documents. In addition, member checking was conducted by confirming the findings with participants to ensure they aligned with their experiences.

The ethical aspects of the research were maintained by obtaining informed consent from all participants before the research was conducted. The teachers' identities were concealed to maintain confidentiality, and the data was used only for academic purposes. This is in accordance with the qualitative research ethics guidelines that emphasize respect for the confidentiality and rights of participants (Alwasilah, 2022).

With a systematic design and the application of validity and research ethics principles, this study is expected to provide a comprehensive picture of the UKPPPG preparation strategies implemented by the West Sumatra Automotive Engineering MGMP, as well as contribute to the development of a more effective preparation model in the future.

4. Results and Discussion

4.1. Research Results

This study found that the UKPPPG preparation strategy implemented by the West Sumatra Automotive Engineering MGMP focused on teacher collaboration in developing teaching materials, conducting microteaching exercises, and discussing exam questions. Each meeting began with an activity of analyzing the lesson plans prepared by the teachers, which were then presented to other participants for feedback. The results of the observation showed an improvement in the quality of the lesson plans, for example, clearer learning indicators and more varied assessments. Teachers also attempted to integrate the Problem-Based Learning (PBL) method to better suit the vocational context. However, microteaching still emphasized speaking skills in front of the class. Workshop practices or industry-based contextual approaches were rarely seen, so some teachers felt that their preparation was not fully in line with the UKPPPG requirements.

On the other hand, this study reveals considerable technical challenges. Most teachers admit to having difficulty mastering the latest automotive technology, especially electric vehicles, hybrid systems, and digital-based workshop management. Based on interviews with 15 participants, 10 participants felt unconfident when dealing with issues related to new technology. Furthermore, observations in school workshops showed that practical facilities remained limited to conventional machines, such as carburetor-based engine trainers or simple injection systems. The modules used in MGMP also still focused on conventional automotive technology, with very little material on electric vehicles. This situation caused a gap between the demands of UKPPPG and the resources available in schools and MGMP.

In addition to technical challenges, non-technical obstacles also emerged quite prominently. Many teachers expressed feelings of anxiety and lack of confidence ahead of the exam. Some of them admitted to having failed previous exams, which added to their psychological pressure. The heavy teaching load at school also makes it difficult for them to find time for independent study. Observations during the simulation showed that some participants were quiet, reluctant to answer, or only followed instructions passively. The MGMP did try to address this by holding experience-sharing sessions, but these activities were more spontaneous and unsystematic, so they were unable to provide in-depth psychological support.

MGMP continues to play an important collaborative role for automotive teachers in West Sumatra. This role is demonstrated by the high average attendance of 13–14 out of 15 teachers, indicating a shared commitment. Teachers said that they felt more helped when learning together because they could exchange strategies, share materials, and discuss difficulties in facing the UKPPPG. MGMP also uses online media such as WhatsApp groups to maintain communication outside of face-to-face meetings. However, not all members are active; some teachers only read the material without participating in the discussion. This shows a gap in the utilization of online forums.

The use of technology in preparing for the UKPPPG still varies. Younger teachers are generally more active in using Google Classroom to share lesson plans and practice questions, as well as utilizing online quiz applications for simulations. In contrast, senior teachers are more comfortable with printed teaching materials. Computer-based simulations have been implemented, but only half of the teachers can operate the system smoothly, while the others still

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need technical assistance. This difference in digital literacy has implications for teacher readiness, as those who are familiar with technology are more confident in facing exam simulations.

In general, most teachers stated that they felt more prepared to face the UKPPPG after participating in a series of MGMP activities. They claimed to have a better understanding of the question format, to be more skilled at developing teaching tools, and to be more confident during microteaching. Observations showed an increase in skills in conveying concepts, using visual media, and linking theory with workshop practice. However, limited practice facilities and a lack of technology-based exam simulations remain unresolved issues. As a result, teacher readiness varies; some have improved significantly, while others still feel uncertain when faced with new technology-based questions.

To ensure the validity of the findings, data were obtained through triangulation from interviews, observations, and document analysis. The results were consistent, especially in terms of limited mastery of modern automotive technology and the emergence of psychological barriers. Confirmation through member checking with teachers also showed that the description of the research results was in line with their experiences.

4.2. Discussion

The research findings show that the West Sumatra Automotive Engineering MGMP implements various preparation strategies through the preparation of lesson plans, microteaching, and question discussions. In general, these strategies are in line with the idea of a professional learning community that emphasizes the importance of teacher collaboration in improving their professional capacity (Darling-hammond et al., 2017). Panduwinata's (2022) research also confirms that MGMP forums play a major role in improving teaching skills because they allow teachers to provide each other with feedback and peer supervision. However, when viewed from the requirements of UKPPPG, the strategies implemented in MGMP West Sumatra still have limitations, mainly because the implementation of microteaching emphasizes classroom learning and has not integrated workshop practices as a key feature of vocational education, thus showing a gap between the ideal concept of MGMP in theoretical studies and its suboptimal implementation in the field.

Teachers' limitations in mastering the latest automotive technology pose a serious challenge. Billinghurst & Kato's (2012) research emphasizes that vocational teachers risk falling behind technological developments if they do not gain industry-based experience or work-based learning. The conditions in West Sumatra show that conventional practice facilities, MGMP modules based on old technology, and teachers' limited access to electric vehicle learning resources are the main obstacles. These findings are in line with Joshi's (2023) research, which states that vocational school teachers' TPACK competencies are still weak in terms of technology, although relatively good in terms of pedagogy. These problems are not only individual but also structural, considering that the teacher education curriculum is not yet fully oriented towards industry needs (Hidayat & Purwanto, 2023) and the synergy between vocational education and the industrial world is still limited (Manubey et al., 2022), so that teachers' efforts through MGMP have not been able to optimally respond to the demands of UKPPPG and the development of the modern automotive industry.

Non-technical factors also significantly influence teacher readiness, particularly anxiety, low self-confidence, and time constraints due to teaching loads. Research by Nengsih (2017) emphasizes the importance of psychological aspects, such as motivation and stress management, in the success of UKPPPG. Although MGMP in West Sumatra has attempted to provide support through experience-sharing sessions, this approach remains informal and has only a short-term

impact. This indicates a gap between previous research recommendations emphasizing the need for formal and continuous psychological support and actual practices in the field, which have not implemented systematic mentoring (Ilahi et al., 2020).

The role of the Subject Teacher Working Group (MGMP) in this study is significant as a forum for the exchange of experiences, learning strategies, and social support among teachers, as reflected in the high level of teacher participation and the strengthening of the professional learning community (Ma'rifataini, 2016; Darling-hammond et al., 2017). The role of MGMP in West Sumatra has not been strongly institutionalized because activities still depend on the initiative of individual teachers, so the continuity of the forum is not guaranteed. The connection between MGMP and the automotive industry is also still limited, even though this collaboration is important for updating teacher competencies. This condition shows that MGMP is useful, but does not fully meet the needs of teachers in comprehensively facing UKPPPG.

The results of the study show a digital literacy gap among teachers, where younger teachers are more adaptive to the use of digital applications, while senior teachers tend to still rely on printed materials. This gap is also evident in the implementation of computer-based exam simulations, which not all teachers have been able to participate in optimally. Based on research by Ilahi et al. (2020), online learning has the potential to improve teacher readiness, but its effectiveness is hampered by limited access and digital literacy. Hadromi et al. (2024) also emphasize that technology integration through case-based learning can increase the self-efficacy of vocational teachers. However, the available technology has not been utilized evenly and has actually widened the gap between digitally literate teachers and those who still experience technological difficulties (Dewi et al., 2025). This condition places digital literacy as the main obstacle to the effectiveness of preparation strategies in MGMP.

Most teachers feel more prepared after participating in MGMP activities, especially in preparing teaching materials, understanding questions, and conducting microteaching. Research by Sugiarto et al. (2024) states that structured preparation produces better results than conventional methods. However, the increase in teacher preparedness is not evenly distributed because teachers with high digital literacy show more significant improvement than teachers with low digital literacy. The limitations of technology-based exam simulations further reinforce this gap. Sutiana & Sdauranto (2025) emphasize that the quality of tryout questions affects the pass rate, while the West Sumatra Automotive Engineering MGMP does not yet provide simulations that resemble actual exam conditions. Thus, the effectiveness of the MGMP strategy is still more dominant in the pedagogical aspect, while the professional and technical aspects have not been optimally facilitated.

This study contributes to filling the research gap by highlighting the specific role of the Automotive Engineering MGMP in facilitating UKPPPG preparation. The findings of the study " " indicate that the problems do not only originate from individual teachers but are also structural in nature, including a teacher education system that is not yet fully oriented toward industry needs (Maksum et al., 2024), weak synergy between the education sector and industry (Manubey et al., 2022), and limited access to up-to-date learning materials (Hmelo-Silver, 2004). These findings emphasize that strengthening the role of MGMP needs to be supported by curriculum reform, improved literacy and access to technology, and strengthened partnerships with the automotive industry.

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5. Conclusion

This study shows that the West Sumatra Automotive Engineering MGMP plays a strategic role in supporting UKPPPG preparation through the preparation of lesson plans, microteaching, and question discussions that contribute to improving teachers' pedagogical competence. But its effectiveness is still limited due to technical constraints in the form of low mastery of the latest automotive technology and limited practice facilities, as well as non-technical constraints such as anxiety, low motivation, and poor time management, which are exacerbated by the uneven use of digital technology. Therefore, an integrated strategy is needed through industry-based curriculum renewal, expansion of access to up-to-date materials, strengthening of psychological support, and comprehensive integration of digital technology. The limitations of this study lie in the number of participants and the limited coverage area, so that further comparative and longitudinal studies need to be conducted. Practically, the research results recommend increasing industry-based training and exam simulations by MGMP, updating vocational school facilities, and government support through the development of standard digital modules, digital literacy training, and structured psychological assistance to improve the effectiveness of UKPPPG preparation and the professionalism of automotive engineering vocational teachers.

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