Jurnal Keguruan dan Ilmu Pendidikan(JKIP)
FKIP Unismuh Makassar, Volume 13 No. 1 June 2026

# DEVELOPMENT OF AN INTEGRATIVE TEACHING MODULE BASED ON TECHNICAL COMMUNICATION SKILLS USING A COLLABORATIVE APPROACH FOR STUDENTS IN THE MECHANICAL ENGINEERING DEPARTMENT (TKR) AT SMKN 5 BULUKUMBA

**Ratna[1], Ummu Kalsum R[2], Nensilianti[3], Muhammad Saleh[4]**
[1,2,3,4]Master's Program in Language Education, Faculty of Languages and Literature, Makassar State University,Indonesia
zalfa.ratna@gmail.com , 250001301012@student.unm.ac.id , nensilianti@unm.ac.id . m.saleh7506@unm.ac.id

## ABSTRACT

This study addresses the urgent issue of low technical communication skills among Grade XI TKR students at SMKN 5 Bulukumba, where 91.3% were categorized as "Needs Coaching," alongside the persistent dichotomy between vocational theory and practice. Using the 4D Research and Development model, this study developed an integrative module combining verbal literacy with workshop practice through speaking for technical purposes. The module demonstrated high industrial relevance (87%) and flexibility (90%). Trials involving 23 students revealed significant improvements in self-confidence (82.6%) and logical technical speaking ability (78.3%). The novelty of this research lies in integrating technical communication training into automotive workshop activities, addressing a gap in previous studies that primarily emphasized mechanical competencies. Despite constraints in teacher coordination, the module functioned effectively as a standalone learning instrument while maintaining DUDI standards. The findings confirm its contribution to strengthening student self-efficacy and supporting adaptive Deep Learning policies in vocational automotive education.

Keywords: Integrative Module, Technical Communication, Deep Learning, Teacher Collaboration

## INTRODUCTION

Language proficiency is an individual's capacity to utilize language as a means of communication (Fadhil, 2022). According to Kundharu and Slamet (2014), there are four main pillars of Indonesian language proficiency: listening, reading, writing, and speaking. In their classification, listening and reading are categorized as receptive aspects, with listening focusing on the oral domain and reading on the written domain. Conversely, speaking is a productive activity involving two-way interaction (Harianto, 2020).

Jayanti et al. (2022) explain that the process of speaking itself functions as a medium for conveying messages from the sender to the recipient, which is influenced by both linguistic and non-linguistic indicators. According to Kundharu and Slamet (2014), effective speaking requires systematic stages, starting from determining the topic, deepening the material, and developing an outline of ideas. In line with this, Tarigan (2008) defines speaking as the ability to produce articulate sounds to communicate ideas and feelings. Furthermore, this activity

involves the integration of various physical, psychological, and linguistic elements, making it a vital instrument in human social control, Mustakim (2021).

Khoiriyyah, et al. (2018) agree that in the modern industrial era, speaking skills occupy a strategic position for Vocational High School (SMK) graduates, especially as the main link in the technical production and marketing process. Vocational education is not only oriented towards mastering theory, but also on providing practical skills relevant to the needs of the world of work. Primary (2024)The primary focus of this educational model is to produce graduates who are technically and non-technically competent, enabling them to adapt to a dynamic job market. Although the curriculum has been designed to be applicable to specific areas of expertise, Bertha (2025) emphasized that students' career readiness is greatly influenced by their mastery of soft skills, particularly effective verbal communication.

Vocational high school graduates are projected to have an effective and efficient work ethic, both when working independently and in teams, supported by the ability to negotiate and collaborate professionally, Ryohandoko, et al. (2024). Based on a recent study (SOTA), Bertha (2025) emphasized that student competitiveness does not only rely on technical skills (hard skills), but also on the ability to articulate ideas clearly. However, the reality of vocational education in Indonesia shows that Indonesian language teaching is often trapped in theoretical aspects and is less relevant to the practical needs of expertise programs, Suherman (2024).

Tanjung et al. (2021) explained that to address this gap, the government's "link and match" policy, launched in 2021, encourages integration between general and productive subjects. Through this thematic approach, cross-disciplinary collaboration aims to equip students with competencies aligned with the demands of the industrial world (Tanjung, 2021).

The Ministry of Education and Culture's launch of the Deep Learning guide provides a strong foundation for integrating vocational school curricula to achieve quality education. Through a collaborative inquiry approach, teachers are expected to collaborate across subjects to create relevant learning solutions, directly strengthening the connection between general aspects and technical expertise (Kemendikdasmen, 2025).

In a global context, the development of integrative teaching materials is indeed a priority, but the field of TKR has not been explored in depth, Ulum (2016). Meiliyanthi (2025) highlighted that students in this field are actually faced with complex communication challenges, ranging from explaining vehicle technical problems to negotiating service with customers in a professional environment.

Objective conditions at SMKN 5 Bulukumba indicate a significant gap between Indonesian language learning materials and the vocational competency requirements of TKR. Currently, general and productive subjects remain trapped in a rigid dichotomy, with language instruction lacking to strengthen students' vocational skills.Setiawan (2020). As a result, students' low speaking skills are not caused by a lack of mastery of grammar,Indriany (2025). Rather, it's the loss of contextual relevance in the material being taught. The lack of learning modules that integrate mechanical and automotive concepts into speaking practice makes it difficult for students to communicate their technical expertise, especially when interacting with

customers or explaining standard operating procedures (SOPs) in the industrial world.Primary (2024).

The results of literature searches through Google Scholar show that studies in this field are generally still limited to aspects of general career orientation for students or limited to partial mastery of Light Vehicle Engineering (TKR) technical competencies.Son (2021). Based on the author's in-depth observations, to date, the author has identified a gap in the academic literature regarding the development of oral teaching modules that are structurally integrated with vocational expertise in the field of TKR,Hutama (2015)This literature gap emphasizes the urgency of developing teaching tools that are able to synergize language skills with the real context of motor vehicle maintenance and repair in a systematic manner.Mustakim (2021).

Based on this gap, this writing offers a novelty through the development of a speaking skills learning module that is fully integrated with the TKR vocational concept. Different from language modules in general, this module is designed by synergizing language competency standards with real activities in automotive practice workshops. The presence of Indonesian subjects in this writing is positioned as a 'strengthening instrument' of productive competencies, so that in addition to improving speaking skills, this module also deepens students' understanding of the TKR discipline they are studying at SMKN 5 Bulukumba.

## WRITING METHOD

The approach applied in this study was Research and Development (R&D). According to Sugiyono (2015), the primary orientation of this method is to create a specific product while verifying its effectiveness in real-world use. In its implementation, this study refers to the 4D model framework developed by Thiagarajan et al. (1974). This model included four systematic phases: define, design, develop, and disseminate.

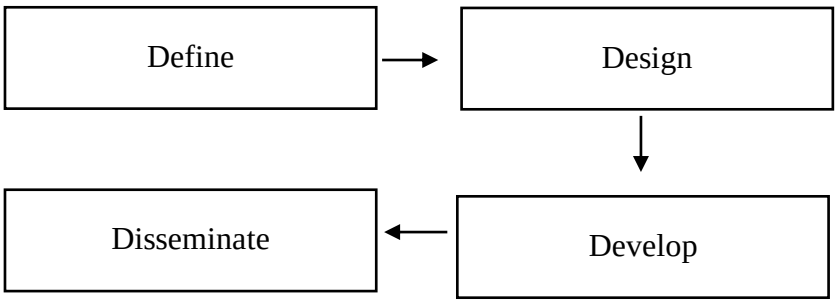


Figure 1. 4D Model Development Procedure Flow

- Phase Define: The author conducted an in-depth analysis to establish learning parameters, ranging from a case study of learning obstacles at SMKN 5 Bulukumba to an analysis of student characteristics. This was done to align curriculum objectives with the technical needs of the TKR workshop.

- Design Phase:The focus at this stage was on designing a comprehensive module draft. The author selected the most appropriate media and format so that the Indonesian language material could organically integrate with the work context of Light Vehicle Engineering.
- Production Phase (Develop):This stage focused on the module's implementation and quality assessment. Through input from expert validators and direct feedback from students during trials, the author was able to refine the module to make it suitable for use on a larger scale.
- PhaseDissemination: The validated final product was then introduced to colleagues. The dissemination focus is directed at the teaching community at SMKN 5 Bulukumba to support the strengthening of vocational literacy.

## DISCUSSION RESULTS

### Profile of students' initial needs and conditions

The results of the initial identification of the technical communication skills of class XI TKR students at SMKN 5 Bulukumba showed a significant competency anomaly, where cumulatively 91.3% (21 students) were in the 'Needs Coaching' category and only 8.7% (2 students) were declared 'Eligible' in full. This low level of eligibility is rooted in the imbalance in mastery of fundamental aspects of technical communication; the data shows that only 21.7% (5 students) have self-efficacy or self-confidence, and only 26.1% (6 students) are able to construct logical speech structures. Although there was a slight increase in the aspects of technical articulation and mastery of professional vocabulary, each reaching 30.4% (7 students), this partial achievement has not been able to raise the level of eligibility of students collectively to professional standards. This condition provides strong justification that theoretical mastery of procedural texts has not been transformed into practical skills (speaking for technical purposes), so that the development of collaborative modules that integrate language literacy with automotive practice is an absolute requirement to meet the expectations of the Business World and the Industrial World (DUDI).

### Profile of teacher needs and initial conditions

The findings of the writing on the managerial aspects of the curriculum reinforce the urgency of developing this module. Based on the results of initial observations of the teaching materials documents for the 2025/2026 academic year sourced from the Vice Principal for Curriculum, it was identified that although SMKN 5 Bulukumba has adequate teaching resources, consisting of 3 Indonesian Language teachers and 4 productive TKR teachers, there has not been a teaching module that integrates the two disciplines through a collaborative approach. This condition indicates a disconnect between the latest policy of the Ministry of Primary and Secondary Education (Kemendikdasmen) and the practice of preparing learning administration at the vocational high school level.

This phenomenon is paradoxical considering that the school has successfully completed a series of Deep Learning training courses. However, in-depth interviews with teachers revealed that the theoretical understanding gained from the training has not been internalized

into practical skills in developing integrative teaching materials. On average, informants stated that they do not yet have a significant methodological understanding of the structure and collaboration patterns within the integrated modules. Therefore, the development of an integrative teaching module based on technical communication skills is a strategic intervention to bridge the limitations of teachers' understanding and actualize the vision of collaborative learning at SMKN 5 Bulukumba.

**Design of teaching modules and expert validation results**

StageThe planning of the teaching module begins with a curriculum synchronization process involving intensive collaboration between Indonesian language subject educators and Light Vehicle Engineering (TKR) productive educators. This process aims to deconstruct and reconstruct Learning Outcomes (CP) to produce Integrated Learning Outcomes, which are then positioned as the main parameters in the formulation of Learning Objectives (TP) and the design of assessment instruments.Setiawan (2020)Based on the prepared TP, a series of instructional activities was designed for 8 to 16 face-to-face sessions. Implementation in the classroom was carried out independently, adopting a project-based learning scheme and real-life problem-solving, reinforced through collaborative methods between students.

The draft module was constructed following the Deep Learning tool structure as per the latest technical guidelines from the Ministry of Primary and Secondary Education. To ensure the quality and validity of the tool, the module underwent a validation test conducted by the Principal as the deep learning facilitator, and was assisted by two similarly qualified teachers from SMKN 5 Bulukumba. Based on the validators' assessment, this learning tool was proven to have a very strong link with industry standards (87%). This module was also deemed very flexible for application to material ranging from engine maintenance to light vehicle electricals (90%), and effective in integrating 4C skills into technical work practices (88%).

The final stage of this development cycle is dissemination through presentations to 21 educators from three subject groups from 8 vocational schools in Bulukumba Regency at an in-depth learning training forum.Various constructive suggestions from the team of experts and practitioners served as the primary basis for revising the project flow and sharpening the assessment parameters for inter-mechanical collaboration activities. Based on this integration of quantitative and qualitative data, the module was deemed to have a high level of acceptability.and is worthy of being fully implemented in the learning process at vocational schools.

**Efficacy of Module Use on Student Competency Achievement**

During the limited trial phase, students were instructed to compose and present procedural texts with in-depth technical content, ranging from chassis maintenance to electrical systems. Of the 23 respondents involved, a convincing jump in performance was seen. This was evidenced by the growing confidence of 19 students (82.6%), as well as the success of 18 students (78.3%) in constructing a systematic flow of speech. Furthermore, 17 respondents (73.9%) achieved impressive mastery of professional terminology and technical articulation.

This positive achievement is directly proportional to qualitative testimonials from teachers and students who confirm that the use of this module creates a substantial, stimulating learning atmosphere, and is closely related to the work ecosystem in automotive workshops. Through this collaborative pattern, students can actualize various crucial soft skills attributes, such as the accuracy in the use of technical terminology according to industry standards, strong self-efficacy in public communication, and the ability to construct presentation materials systematically. The integration of materials aligned with the expertise competency of Light Vehicle Engineering (TKR) has proven effective in growing student self-confidence because they feel they have knowledge authority over the technical material presented,Meiliyanthi (2025).

**Integration of Indonesian Language in Vocational Engineering Education**

The integration of Indonesian into vocational schools serves as a bridge to developing technical speaking skills and digital literacy relevant to today's demands. Through honing verbal skills, students are trained to explain automotive technical aspects professionally and in a comprehensible manner. This focus on articulation skills ensures students understand the importance of accurate terminology in team collaboration in the industrial world, thus better preparing them to compete and adapt to real-world work situations. (Meiliyanthi, 2025)

**Implications for Curriculum and Policy**

This approach has real implications for the development of a more responsive and integrated vocational curriculum, in line with the principles of deep learning experiences. By integrating language aspects into productive materials, schools can mitigate the rigid separation between subjects that has hampered the alignment of education with the needs of the modern workplace (Akbar, 2025).This collaborative practice is projected to become a new standard in vocational education policy, aiming to produce a workforce that balances automotive technical acumen with communication skills in the workplace. Thus, graduates are no longer confined to purely mechanical skills.

In conclusion, the implementation of integrative teaching modules at SMKN 5 Bulukumba has been proven to be able to revolutionize students' technical communication skills, from an initial condition dominated by the "Needs Coaching" category (91.3%) to achieving "Good" in the aspects of self-efficacy (82.6%) and articulation accuracy (78.3%). The novelty of this study lies in the synergy between Indonesian and productive TKR subjects in sharpening technical speaking skills (speaking for technical purposes), a dimension rarely touched on by previous writings that usually only emphasize mechanical competencies, Sudira (2018). Although time synchronization between educators is a challenge, the systematically structured module framework still ensures the consistency of the material according to professional standards. This positions the module as a strategic instrument in equipping students with knowledge authority and communication readiness that aligns with the expectations of the world of work (DUDI).

## CONCLUSION

Through the 4D development model, this paper successfully produced an integrative teaching module that synergizes Indonesian language subjects with TKR competencies at SMKN 5 Bulukumba. The impact of this intervention is seen in the shift in students' technical communication skills, which were initially dominated by the "Needs Coaching" category (91.3%) to the "Good" category in the aspects of self-confidence (82.6%) and technical articulation accuracy (78.3%). The novelty of this study lies in strengthening speaking for technical purposes that connects verbal literacy with direct workshop activities, an area often overlooked in previous vocational research. Although synchronization between educators is limited, this module, which has an industry relevance of 87%, is able to serve as an independent guide that is consistent with DUDI standards. By optimizing the learning community (Kombel), this module plays a strategic instrument to realize relevant Deep Learning policies for automotive graduates.

In terms of policy, this model confirms the importance of cross-disciplinary collaboration between general and productive subjects as a strategy to eliminate curriculum dichotomy, in order to create a vocational education ecosystem that is more integrative and responsive to the demands of modern industry, Sudira (2018).

## REFERENCE

Akbar, Sahrul. (2025). "Kriteria Pengembangan Bahan Ajar." *Pengembangan Bahan Ajar*, 67.

Bertha, Amelia, and Elisabeth Christiana. (2025). "Pengaruh Kepercayaan diri terhadap Keterampilan Berbicara di Depan Umum pada Siswa SMK." *Jurnal BK UNESA*, 15(3), 16-23.

Fadhil, Muhammad, et al. (2022). *Problematika Keterampilan Berbicara Siswa Kelas X Perhotelan 1 SMKN 2 Pacitan*. (Skripsi/Laporan, instansi terkait).

Gafur, Abdul. (2010). "Konsep, Prinsip, dan Prosedur Pengembangan Modul Sebagai Bahan Ajar." *Jurnal Civics: Media Kajian Kewarganegaraan*, 7(1).

Harianto, E. (2020). "Metode Bertukar Gagasan dalam Pembelajaran Keterampilan Berbicara." *Didaktika: Jurnal Kependidikan*, 9(4), 411–422.

Hutama, Praditya Rizky, Indira Chanum, and Herdi Herdi. (2015). "Pengembangan Modul Informasi Karier Untuk Peserta Didik Kelas X Jurusan Teknik Kendaraan Ringan (TKR) SMK Negeri 26 Jakarta." *INSIGHT: Jurnal Bimbingan Konseling*, 4(2), 87-91.

Imaduddin, Achmad Zuhri. (2019). *Pengembangan bahan ajar berupa jobsheet praktikum motor starter untuk kelas XI Teknik Kendaraan Ringan di SMK Negeri 11 Malang*. Diss. Universitas Negeri Malang.

Indriany, Yunita, Nika Sintesa, and Asep Candra Hidayat. (2025). "Pelatihan dan Pendampingan Public Speaking Bagi Siswa Sebagai Upaya Peningkatan Soft Skill Dalam Program Pengabdian Masyarakat." *Journal Abdi Mandala*, 4(2), 37-46.

Jayanti, R., Rinayuhani, T. R., & Hasanudin, C. (2022). "Pendampingan Siswa SMK Palapa Mojokerto dalam Meningkatkan Keterampilan Berbicara sebagai Bentuk Dimensi Kreatif dalam Proyek Penguatan Profil Pelajar Pancasila (P5)." *J-ABDIPAMAS (Jurnal Pengabdian Kepada Masyarakat)*, 6(2), 281–290.

Kementerian Pendidikan Dasar dan Menengah Republik Indonesia. (2025). *Naskah Akademik Pembelajaran Mendalam Menuju Pendidikan Bermutu untuk Semua*. Jakarta.

Khoiriyyah, Siti Baniyyatul, and I. Made Arsana. (2018). "Pengembangan Modul Pembelajaran Sistem Starter Mobil Pada Mata Pelajaran Sistem Starter Jurusan Teknik Kendaraan Ringan di SMKN 1 Jatirejo."

Meiliyanthi, Ina. (2025). " Pengembangan Model Pembelajaran Kolaboratif Berbasis Coding dan Kecerdasan Artifisial Untuk Meningkatkan Keterampilan Abad Ke-21 di Pendidikan Vokasi." *Jurnal Riset Guru Indonesia*, 4(3), 139-146.

Mustakim, Mustakim. (2021). "Penerapan Metode Mind Mapping untuk Meningkatkan Keterampilan Berbicara (Berceramah) Siswa SMK." *Journal of Education Action Research*, 5(4), 447-452.

Pratama, Arema Dimas. (2024). *Pengembangan E-Modul Interaktif Berbasis Aplikasi Canva pada Mata Pelajaran Dasar-dasar Teknik Otomotif Siswa Kelas X Teknik Kendaraan Ringan SMK Swasta Mandiri*. Diss. UNIMED.

Putra, Mego Hannanto Ihsa, and Theodorus Wiyanto Wibowo. (2021). "Pengembangan Modul Pembelajaran Trainer Sistem Starter untuk Siswa Teknik Kendaraan Ringan di SMK Rajasa Surabaya."

Ryohandoko, Harsono, Marsono Marsono, and Muhammad Aris Ichwanto. (2024). "Pengembangan Modul Pembelajaran Pemeliharaan Sasis dan Pemindah Tenaga Kendaraan Ringan Untuk Program Keahlian Teknik Kendaraan Ringan." *Briliant: Jurnal Riset dan Konseptual*, 9(3), 708-715.

Saddhono, Kundharu, dan Slamet. (2014). *Pembelajaran Keterampilan Berbahasa Indonesia: Teori dan Aplikasi*. Yogyakarta: Graha Ilmu.

Setiawan, Nanang. (2020). "Pengembangan Modul Pada Mata Pelajaran Produk Kreatif Dan Kewirausahaan Untuk Siswa Kompetensi Keahlian Teknik Kendaraan Ringan Otomotif Smk N 2 Pengasih." *Jurnal Pendidikan Vokasi Otomotif*, 3(1), 95-101.

Sudira, P. (2018). *Filosofi dan Teori Pendidikan Vokasional dan Kejuruan*. Yogyakarta: UNY Press.

Sugiyono. (2020). *Metode Penelitian Kualitatif*. Bandung: Alfabeta.

Suherman, Maman, et al. (2024). "Peran Pendidikan Vokasi dalam Melahirkan Wirausahawan (Studi Kasus Peserta Didik SMK Negeri 1 Cikalongkulon Kabupaten Cianjur)." *EDUKASIA Jurnal Pendidikan dan Pembelajaran*, 5(1), 2401-2410.

Tanjung, P. S., Rania, D. M., Aminarsih, R. I., & Limun, M. (2021). *Judul Laporan/Artikel Tentang Link and Match*. Jakarta: Pusat Data dan Teknologi Informasi Ketenagakerjaan, Kementerian Ketenagakerjaan RI.

Tarigan, Djago, dkk. (1998). *Pengembangan Keterampilan Berbicara*. Bandung: Angkasa.

Ulum, Muhammad Showi Nailul. (2016). *Pengembangan bahan ajar pemeliharaan mesin kendaraan ringan pada kompetensi memahami sistem bahan bakar bensin untuk kelas XI Teknik Kendaraan Ringan di SMK Negeri 11 Malang*. Diss. Universitas Negeri Malang