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Discovery Learning, Motivation, and Learning Focus:

A Qualitative Study of Vocational Students

in the TKR Program

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Article Info	Abstract

This qualitative case study examines the influence of the Discovery Learning (DL) model on the motivation, learning focus, independence, and self-confidence of tenth-grade students in the Light Vehicle Engineering (TKR) program at SMK NU Sudirman Rogojampi. Data were collected through classroom observations, in-depth interviews with one English teacher and three students, and document analysis, following Miles and Huberman's analytical framework. The findings indicate that DL implementation enhanced student motivation and engagement through active participation in discovery tasks and collaborative discussions. The teacher's facilitative role was pivotal in guiding students toward autonomous concept discovery, fostering an interactive classroom environment. Additionally, the approach supported the development of student independence and confidence in expressing ideas. This study contributes to the limited qualitative literature on DL within vocational English education, suggesting its potential in promoting a student-centered, practical learning culture aligned with vocational training objectives.

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1. Introduction

The English language occupies a tenuous position within Indonesia's Vocational High School (SMK) system, particularly in technically oriented programs such as Light Vehicle Engineering (Teknik Kendaraan Ringan or TKR). Students allocate the majority of their instructional time to productive subjects—engine maintenance, automotive electrical systems, and workshop practice—which are perceived as having direct bearing on their employment prospects in the automotive sector (Kebudayaan, 2023).

Consequently, general subjects like English receive limited weekly allocation and are often marginalized in students' priorities, fostering a perception of the language as a peripheral formality rather than a core vocational competency (Liani et al., 2025; Widodo & Riyanto, 2021). This learning imbalance is reflected in national evaluations, which indicate neglect of English assignments and a resultant deficit in the communication skills essential for globalized technical careers (Pendidikan, 2024).

This marginalization is structurally reinforced by curricular frameworks. The Merdeka Curriculum, while innovative, categorizes productive subjects as the core of learning, often relegating English to character-strengthening modules without explicit contextual integration (Kebudayaan, 2023; Kementerian Pendidikan Riset, dan Teknologi, 2022). As a result, learning materials remain abstract and misaligned with the practical, kinesthetic experiences of TKR students, who are predominantly male and thrive on hands-on engagement (Masita et al., 2024).

The scarcity of contextual teaching aids, such as English-language simulation videos for vehicle repair, coupled with persistent teacher-centered pedagogy, further disconnects language learning from the real-world work environment, eroding intrinsic motivation and classroom focus (Fadhilah & Ningsih, 2022; Rochimah et al., 2025). This context necessitates pedagogical strategies that can bridge this relevance gap and re-engage learners.

Discovery Learning (DL), rooted in Bruner's (1960) constructivist theory, posits that learning is most meaningful when students actively participate in uncovering concepts autonomously. This approach promotes critical thinking, responsibility for learning, and intrinsic motivation by aligning with the natural curiosity of learners (Shahabani & Ibrahim, 2025). Its potential in vocational contexts is significant, as it mirrors the problem-solving and exploratory nature of technical work. Previous studies have begun to explore this potential.

For instance, Rochimah (2025) quantitatively demonstrated DL's efficacy in improving English outcomes for SMK students with lower intrapersonal intelligence, while (Suhada, 2023) observed increased engagement through DL in hospitality programs. However, these studies predominantly employed quantitative or observational methods within generalized or non-technical vocational settings.

A distinct research gap remains. Existing literature lacks in-depth qualitative investigation into how DL functions within technical majors like TKR, especially in culturally specific environments such as Islamic-based SMKs. Studies by Shahabani and Ibrahim (2025) and (Siahaan et al., 2025) discuss DL's general effectiveness but do not critically link it to the distinct socio-pedagogical characteristics of vocational students who prioritize productive skills. Furthermore, the crucial role of the teacher as a facilitator in adapting DL to a vocational EFL context remains underexplored, particularly regarding the strategies used to contextualize language learning within technical domains (Darling-Hammond et al., 2020; Hiver et al., 2021).

Therefore, this study is designed to address this gap. It aims to conduct a qualitative case study analysis to explore how the implementation of the Discovery Learning model influences the motivation, learning focus, independence, and self-confidence of tenth-grade TKR students at SMK NU Sudirman Rogojampi. The research seeks to:

1. Analyze the impact of DL on student motivation and engagement in English language instruction.
2. Examine the facilitative role of the teacher in adapting and implementing DL within a vocational technical context.
3. Identify the challenges and enablers in applying this student-centered approach in a real-world SMK setting.

The findings are expected to extend theoretical understanding by providing nuanced, empirical insights into the affective and cognitive dynamics of DL in vocational EFL. Practically, the study aims to offer evidence-based recommendations for teachers and curriculum designers to foster a more contextual, engaging, and relevant English learning environment for vocational students, ultimately supporting their holistic development and workplace readiness.

2. Method

Research Setting and Participants This qualitative case study was conducted at SMK NU Sudirman Rogojampi, a private vocational high school situated in Banyuwangi Regency, East Java, Indonesia. The school environment, characterized by a strong emphasis on technical and productive competencies, provides a pertinent context for investigating the implementation of active learning models in general subjects. The study focused specifically on the Light Vehicle Engineering (Teknik Kendaraan Ringan/TKR) program, selected due to the well-documented tendency of its students to prioritize practical, workshop-based subjects over academic ones like English, a phenomenon that aligns with broader patterns in Indonesian vocational education(Liani et al., 2025; Widodo & Riyanto, 2021).

This setting was deemed ideal for examining whether the Discovery Learning (DL) model could enhance student engagement and motivation in a subject often perceived as peripheral. Participants were selected via purposive sampling to ensure they were information-rich cases relevant to the research questions (Patton, 2015). The primary informants consisted of one English teacher (coded as GT) with experience in implementing student-centered approaches, and three tenth-grade TKR students. The students were chosen to represent a spectrum of classroom engagement: one highly active (S1), one collaboratively engaged (S2), and one with a moderate level of focus (S3).

This selection strategy allowed for the capture of diverse perspectives and experiences within the DL process, aiding in the pursuit of theoretical saturation and depth of understanding, a key principle in qualitative inquiry (Creswell & Poth, 2018). A total of four participants was deemed sufficient to achieve data saturation for this focused case study, as the primary goal was depth of insight rather than statistical generalization (Merriam & Tisdell, 2016).

Research Design and Data Collection This study employed a qualitative case study design, which is appropriate for obtaining an in-depth, contextualized understanding of a contemporary phenomenon within its real-life setting (Yin, 2018). The design facilitated an exploration of *how* DL was implemented and experienced by participants, capturing the nuanced emotional and motivational shifts that quantitative methods might overlook (Denzin, 2017). Data collection took place over an eight-week period and involved three complementary techniques:

1. **Non-participant Observation:** Twelve classroom sessions (90 minutes each) were observed to document the implementation of DL, teacher-student interactions, student engagement levels, and overall classroom dynamics. Detailed field notes were taken using a semi-structured observation protocol.
2. **Semi-structured Interviews:** In-depth interviews were conducted with all four participants. Each interview lasted between 45-70 minutes. The interview guides were designed to explore participants' perceptions, experiences, challenges, and perceived outcomes of the DL model.

Ethical Considerations This study adhered to strict ethical guidelines for educational research. Prior to data collection, informed consent was obtained in writing from the school principal, the participating teacher, and the parents/guardians of the student participants. All participants were assured of confidentiality and anonymity; hence, pseudonyms (GT, S1, S2, S3) are used throughout this report. Participants were informed of their right to withdraw from the study at any time without penalty. Data were stored securely and will be destroyed five years after the study's completion, in compliance with standard research data management protocols.

Data Analysis and Trustworthiness Data analysis followed the interactive model proposed by Miles Huberman (Miles et al., 2018), encompassing data condensation, data display, and conclusion drawing/verification. Interview transcripts and field notes were first coded inductively to identify initial themes. These codes were then organized into categories through a process of constant comparative analysis (Glaser & Strauss, 1967). Data display involved creating matrices and narrative summaries to visualize relationships within and across cases.

To add rigor, the analysis was enhanced by supplementary approaches: thematic content analysis was used to systematically identify and report patterns across the dataset (Braun & Clarke, 2022); discourse analysis principles were applied to interpret the meaning and function of language used in classroom interactions and interviews (Gee, 2014); and interpretative phenomenological analysis informed the effort to understand the lived experiences of the participants (Smith et al., 2022).

To ensure the trustworthiness of the findings, several strategies were employed beyond methodological triangulation:

1. **Member Checking:** Preliminary interpretations and summaries were shared with the teacher participant (GT) to verify accuracy and resonance with his experience.
2. **Peer Debriefing:** Analysis processes and emerging themes were regularly discussed with two academic peers not involved in the study to challenge assumptions and reduce researcher bias.
3. **Audit Trail:** A detailed log was maintained, documenting all methodological decisions, analytical steps, and reflections throughout the research process, providing transparency and allowing for dependability.

Table 1. Informant Data Table

No	Informant Name	Position / Role	Class / Major	Gender	Additional Information
1.	GT	English Teacher	X TKR	Male	Teaches English and implements the Discovery Learning model in the TKR class.
2.	S-1	Student 1	X TKR	Male	Actively participated in learning activities and showed high motivation during the concept discovery process.
3.	S-2	Student 2	X TKR	Male	Actively engaged in group discussions and was able to

					explain learning outcomes independently.
4.	S-3	Student 3	X TKR	Male	Actively engaged in group discussions and was able to explain learning outcomes independently.

3. Result

The analysis of observational, interview, and documentary data revealed three interconnected themes regarding the impact of Discovery Learning (DL) on the English learning experience of tenth-grade TKR students at SMK NU Sudirman Rogojampi.

1. Emergence of Student Engagement and Intrinsic Motivation

Data consistently indicated a marked shift in classroom dynamics and student disposition. Prior to the DL intervention, observations noted a predominantly teacher-centered environment characterized by student passivity and reliance on direct instruction. Post-implementation, a significant transformation was observed: students (S1, S2, S3) actively engaged in small-group discussions, collaboratively parsed English texts for technical vocabulary, and proposed solutions to contextual problems.

This active involvement was self-reported as a source of increased motivation. S1 articulated, "Dulu cuma nunggu jawaban dari Pak Guru, sekarang kami diskusi sendiri… lebih tertantang untuk cari tahu" (Before, we just waited for answers from the teacher, now we discuss ourselves… more challenged to find out). This sentiment aligns with the teacher's (GT) observation of a notable increase in student-led inquiry and participation during tasks.

The data suggest this motivation stemmed from the fulfillment of key psychological needs as outlined by Self-Determination Theory. The autonomy to explore and discover within a structured task fostered a sense of ownership. As S2 noted, "Rasanya puas kalau bisa nemuin polanya sendiri, kayak nyelesaiin masalah di bengkel" (It feels satisfying to be able to find the pattern yourself, like solving a problem in the workshop). Furthermore, the collaborative nature of DL tasks and the teacher's facilitative support nurtured feelings of competence and relatedness, reinforcing intrinsic motivation (Ryan & Deci, 2017).

2. The Centrality of Teacher as Facilitator and Scaffolder

The successful enactment of DL was fundamentally dependent on the teacher's (GT) strategic shift from knowledge transmitter to learning facilitator. Observations documented GT's deliberate use of facilitative techniques, including: Contextual Stimulation: Initiating lessons with prompts tied to automotive contexts (e.g., a video on engine maintenance) to spark relevance and inquiry.

Strategic Scaffolding: Providing differentiated support during group work. For struggling groups, GT employed guided questioning (e.g., "Coba bandingkan kalimat ini dengan contoh di buku"*/Try comparing this sentence with the example in the book) rather than supplying answers.

Feedback for Growth: Offering constructive, process-oriented feedback that normalized error as part of learning. This approach was credited by students for creating a psychologically safe environment. S3 shared, "Di sini nggak terlalu takut salah ngomong Inggris, soalnya Pak Guru ngebantu memperbaiki" (Here we are not too afraid to speak English incorrectly, because the teacher helps to correct it). This facilitative role was crucial in managing the balance between student autonomy and necessary instructional support, ensuring the DL process remained productive and focused (T. Bell, 2010; Hattie, 2009).

3. Development of Learner Autonomy and Self-Confidence

A significant outcome was the observable growth in students' independent learning behaviors and confidence in using English. This was evidenced across multiple data sources:

Increased Initiative: Students began seeking resources beyond the classroom. S2 reported watching English-language mechanic YouTube channels to "listen for terms," demonstrating self-regulated learning behavior.

Confidence in Communication: Perhaps the most salient change was in students' willingness to speak. Observational notes and video documentation showed a clear progression from hesitant, read-aloud presentations to more confident, explanatory monologues with peer eye contact. This indicates a reduction in foreign language anxiety within the supportive DL structure.

Collaborative Agency: The group work inherent in DL fostered peer-supported learning. S3, who self-identified as less focused, noted, "Teman-teman di kelompok sabar nerangin. Jadi saya juga lebih berani nyoba" (My group mates patiently explain. So, I also dare to try more). This reflects the development of agentic engagement, where students actively shape their learning interactions (Reeve & Tseng, 2011).

Table 2. Observed Indicators of Increased Autonomy and Confidence

no.	Indicator	Manifestation in Learning Activities	Data Source
1.	Self-Directed Learning	Proactively searching for external references related to lesson topics	Interview (S2), Teacher Report (GT)
2.	Persistence in Problem-Solving	Attempting multiple strategies within a group before seeking teacher intervention	Observation Notes, Field Notes
3.	Confident Oral Presentation	Delivering group findings in English with audible volume, clearer pronunciation, and supportive gestures	Video Documentation, Observation Rubric
4.	Reflective Stance	Articulating challenges faced and insights gained during the discovery process	Student Interview (S1,S3), Reflection Notes

4. Discussion

This study provides a nuanced, qualitative understanding of how Discovery Learning (DL) operates within the specific ecosystem of a vocational English classroom. The findings affirm and extend existing literature while highlighting contextual particularities and practical implications.

Re-contextualizing Motivation and Engagement in Vocational EFL

The observed surge in student engagement corroborates previous studies on DL's effectiveness in fostering active participation (Shahabani & Ibrahim, 2025; Suhada, 2023). However, this study deepens the analysis by linking this engagement directly to the vocational identity of TKR students. The finding that students derived satisfaction from discovery tasks that mirrored technical problem-solving ("like solving a problem in the workshop") underscores the critical importance of contextual relevance. It suggests that DL's efficacy in SMK settings is not merely a function of its methodology but of its alignment with the kinesthetic and problem-oriented learning identities of vocational students (Widodo & Riyanto, 2021). This addresses a gap noted by Siahaan et al. (2025), who called for research better connecting DL to the specific characteristics of vocational learners.

Furthermore, the data strongly support the theoretical framework of Self-Determination Theory (Ryan & Deci, 2017). DL, as implemented, successfully created conditions where students' needs for autonomy (through self-directed exploration), competence (through scaffolded task completion), and relatedness (through collaborative work) were met, thereby catalyzing intrinsic motivation. This theoretical linkage provides a robust explanation for the motivational shifts observed, moving beyond descriptive accounts to explanatory insight.

The Facilitator's Role: Beyond Methodology to Pedagogical Adaptation

A central contribution of this study is its detailed examination of the teacher's role. While the importance of the teacher as facilitator is well-established (Darling-Hammond et al., 2020), this research illuminates what that role entails in a vocational EFL context. It reveals that effective facilitation requires dual competency: mastery of the DL cycle and the ability to contextualize linguistic content within the vocational domain. GT's use of automotive-themed stimuli and analogies was not incidental but a core pedagogical strategy to bridge abstraction and relevance.

This finding implies that teacher training for DL in SMK must extend beyond generic workshop instruction to include strategies for meaningful vocational integration. The study also highlights adaptive scaffolding as a key facilitative skill (B. S. Bell & Kozlowski, 2022). The teacher's ability to diagnose group needs and provide just-in-time, appropriate support—ranging from probing questions to simplified examples—was pivotal in maintaining a productive "zone of proximal development" for diverse learners. This challenges a potential misconception of DL as a purely hands-off approach, instead positioning the teacher as a highly active and responsive guide.

Fostering Autonomy and Confidence: Implications for Holistic Development

The development of learner autonomy and self-confidence represents a significant affective outcome with long-term implications. The observed behaviors—initiative in resource-seeking, persistence, and confident communication—align with the constructs of self-regulated learning (Zimmerman & Schunk, 2021) and agentic engagement (Reeve & Tseng, 2011). This suggests that DL can contribute to developing the "soft skills" or 21st-century competencies crucial for workplace success, such as initiative, communication, and collaborative problem-solving.

This extends the findings of Rochimah (2025), which focused on cognitive outcomes, by demonstrating DL's concurrent impact on the affective and social dimensions of vocational student development. Notably, the creation of a "safe zone" through group work and facilitative feedback appears to be a key mechanism in reducing foreign language anxiety, a major barrier to speaking skills (Hiver et al., 2021). The positive peer dynamics and teacher support allowed students like S3 to take risks, which is essential for language acquisition.

Limitations, Challenges, and Transferability

While the findings are positive, certain limitations and challenges must be acknowledged. The study's depth is achieved through a small, purposive sample within a single institution, which limits statistical generalizability. However, as (Merriam & Tisdell, 2016) assert, the goal of qualitative case study is analytic generalization, providing insights that may be transferable to similar contexts (e.g., other technical majors in Islamic-based SMK). The time-intensive nature of DL for both lesson preparation and classroom execution emerged as a practical challenge,

hinting at potential scalability issues without institutional support. A potential contradiction or challenge noted was the varying pace of group work, which sometimes led to off-task behavior in groups that finished early. This points to a need for effectively designed tiered or extension activities to manage differentiated pacing within a DL framework.

5. Conclusion

This qualitative study substantiates the significant potential of the Discovery Learning (DL) model to transform English language instruction within the specific context of vocational high school education, particularly for students in the Light Vehicle Engineering (TKR) program. The findings demonstrate that a well-implemented DL approach, centered on contextualized problem-solving and collaborative inquiry, effectively catalyzes intrinsic motivation, fosters learner autonomy, and builds self-confidence. Crucially, the study highlights that this transformation is not automatic but is fundamentally mediated by the teacher's skilled adaptation into a facilitator who provides vocational-relevant stimuli and adaptive scaffolding.

This positions DL not merely as a teaching technique but as a holistic pedagogical strategy that aligns with the kinesthetic, practical, and collaborative ethos of vocational education, thereby addressing the persistent challenge of relevance that often marginalizes English in such settings. The study's novelty lies in its in-depth, qualitative illumination of these affective and social dynamics within a technical major—a perspective often absents from prior quantitative-dominated research on DL in SMK.

This study is not without limitations. Its findings are derived from a focused case study involving a single teacher and a small sample of students in one Islamic-based vocational school, which necessarily limits the generalizability of the results. The relatively short duration of the intervention also precludes claims about the long-term sustainability of the observed positive effects. Furthermore, the study's qualitative design, while rich in depth, does not provide measurable data on improvements in specific language competencies. Despite these constraints, the implications for practice and future research are clear.

For practitioners and policymakers, the study underscores the necessity of integrating DL principles into SMK English curricula, supported by targeted teacher training. Such professional development must move beyond theoretical overviews to include coaching on vocational content integration, facilitative questioning techniques, and classroom management for collaborative discovery. School leaders should foster environments that encourage interdisciplinary collaboration between language and vocational subject teachers to co-create authentic learning materials.

For future research, scholars are encouraged to build upon this foundation through longitudinal studies to assess the durability of motivational and confidence gains. Employing mixed-methods designs that combine qualitative insights with quantitative measures of language proficiency would provide a more comprehensive evaluation of DL's impact. Finally, comparative studies across different vocational majors (e.g., hospitality, business, other engineering fields) and school types are needed to determine the transferability of this model and identify context-specific moderating factors, ultimately contributing to a more nuanced and effective framework for English language teaching in diverse vocational landscapes.

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