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ADDIE-Based Vocational E-Commerce Training for Students with Mild Intellectual Disabilities: Charcoal Briquette Study

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Abstract
This study developed and evaluated a vocational program integrating charcoal briquette production and e-commerce marketing for students with mild intellectual disabilities. Employing the ADDIE instructional design model (Analysis, Design, Development, Implementation, Evaluation) within a descriptive qualitative framework, this pilot case study focused on a single 11th-grade student at SMALB. The participant was selected based on identified challenges in comprehending fundamental marketing concepts. Data were collected through interviews, observations, documentation, and focus group discussions, and analyzed using thematic analysis. Findings revealed that while the student successfully engaged in the hands-on production tasks, significant scaffolding was required for digital marketing activities on the Shopee platform. The development of a contextualized learning module enhanced the student's understanding of basic entrepreneurial concepts; however, the inherent complexity of the e-commerce interface presented a substantial learning barrier. The study concludes that integrating digital marketing into vocational education holds promise for students with intellectual disabilities but must be deliberately adapted to their cognitive abilities. Success is contingent upon scaffolded digital literacy training, the use of simplified and interactive learning media, and sustained teacher support to ensure the program's long-term viability and potential for scaling.

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INTRODUCTION

Students with mild intellectual disabilities (MID) are characterized by below-average intellectual functioning and concurrent limitations in adaptive behavior that significantly impact daily life (Riyani et al., 2016). While they may not exhibit overt physical differences from their typically developing peers, their learning needs necessitate specialized educational interventions tailored to their cognitive profiles. Within this landscape, vocational education is a critical domain, aiming to equip these students with practical skills that foster independent living and facilitate meaningful employment opportunities.

The value of vocational training for students with MID extends beyond the mere production of goods; it encompasses an understanding of the economic value of their work and the fundamentals of market participation. As Waty and Giatman (2024) emphasize, entrepreneurship education for individuals with special needs should cultivate both functional independence and business readiness. However, cognitive limitations—including challenges with abstract reasoning—often impede students with MID from grasping core marketing concepts. This underscores the critical need to integrate instruction in both production and marketing within vocational curricula to ensure comprehensive economic preparedness.

The learning characteristics of students with MID further inform the design of such interventions. These students are typically capable of verbal communication, albeit with a potentially limited vocabulary, and their intellectual development at age 16 is roughly equivalent to that of a 12-year-old (Febrinasti & Sari, 2018). They can successfully engage in structured academic activities when instructional materials and pedagogical strategies are concretized, simplified, and contextualized to their developmental level.

Previous research in vocational education for this population has predominantly emphasized product creation. For instance, Qohar (2023) developed a program focused on flower bouquet production, and Niati et al. (2021) explored brooch-making using modeling techniques. While valuable, these studies did not integrate marketing competencies, resulting in a gap in the development of holistic vocational programs that build essential entrepreneurial skills for the digital age (Smith et al., 2019). This omission is particularly salient given the increasing dominance of e-commerce, which presents both new opportunities and unique challenges for individuals with intellectual disabilities.

This study aims to address this gap by designing a contextualized vocational program that integrates hands-on charcoal briquette production with foundational e-commerce marketing training using the Shopee platform. A preliminary needs assessment at SLB BC Bina Mandiri Garut revealed that while students were proficient in producing charcoal briquettes, their marketing efforts were confined to informal, school-based networks. This limitation highlights the urgent need for a more holistic instructional approach that bridges practical skills with digital market literacy.

The novelty of this research lies in its synergistic combination of tangible product creation and guided, simulated online marketing practice. The program is designed to teach students to create product listings, photograph items, write simple descriptions, and manage simulated sales transactions. This integration of authentic, real-world tasks is grounded in contextual learning theory, which posits that linking academic instruction to relatable life experiences significantly enhances student engagement and comprehension (Aisyah et al., 2022; Rahmawati et al. 2024).

To ensure a systematic development process, this study employed the ADDIE instructional design model (Analyze, Design, Develop, Implement, and Evaluate). This framework facilitated the structured incorporation of both production and marketing components, including Shopee platform simulations and pre- and post-intervention performance assessments.

Accordingly, the objectives of this study are to (1) Develop an integrated vocational learning program for students with MID that combines charcoal briquette production with e-commerce-based marketing skills. (2) Evaluate the feasibility, relevance, and perceived effectiveness of the program based on feedback from both students and teachers.

By merging practical vocational training with contextualized digital entrepreneurship education, this study contributes to the advancement of inclusive pedagogical practices that better prepare students with mild intellectual disabilities for economic participation and greater autonomy in adulthood.

METHOD

This study utilized a developmental research design with a qualitative descriptive approach. The primary objective was to develop and preliminarily evaluate a vocational learning program integrating charcoal briquette production with introductory product marketing concepts for students with mild intellectual disabilities (MID). The developmental design was selected to facilitate the systematic creation, implementation, and refinement of instructional materials tailored to the specific learning characteristics of the target population (Richey & Klein, 2007).

The participant was a single ninth-grade student with MID enrolled in a special needs high school (Sekolah Menengah Atas Luar Biasa - SMALB). The student was purposively selected based on the following criteria: a confirmed diagnosis of MID, demonstrated basic proficiency in the physical production of charcoal briquettes, significant difficulty in understanding abstract marketing concepts, adequate motor skills for using a smartphone and computer, and a recommendation from special education teachers regarding the student's readiness for such an intervention. A single-subject case study design was adopted to allow for an in-depth, nuanced exploration of the development process and the participant's learning trajectory, prioritizing depth of insight over generalizability.

The instructional program was developed using the systematic framework of the ADDIE model (Analyze, Design, Develop, Implement, and Evaluate; Branch, 2009). This model was selected for its flexibility, iterative nature, and established relevance in designing instruction for special education contexts. It provided a structured yet adaptable process for ensuring learning objectives, instructional strategies, materials, and assessments were aligned with the participant's needs.

1. Analyze: The phase involved assessing the student's existing skills, learning challenges, and the specific gaps in marketing knowledge through initial observations and teacher interviews.

2. Design: In this phase, learning objectives were formulated, and the structure of the integrated program (combining production and marketing) was outlined. Instructional strategies, media, and assessment tools were selected.
3. Develop: All learning materials, including a step-by-step module, visual aids, practice exercises, and the performance rubric, were created during this phase.
4. Implement: The developed program was delivered to the participant over a four-week period.
5. Evaluate: Formative evaluation occurred throughout the implementation, and a summative evaluation was conducted via post-task assessments and interviews to gauge feasibility and initial outcomes.

The marketing component was delivered through a structured module that decomposed e-commerce concepts into concrete, manageable steps. Instruction began with an introduction to basic marketing principles (e.g., product, price, promotion) presented in a simplified, contextualized manner. This was followed by hands-on, guided training using the Shopee platform. The student was supported through the processes of creating a seller account, photographing products, writing simple product descriptions, setting prices, and simulating order transactions. Practical sessions also included creating promotional posters, designing basic logos, and recording short product videos using a smartphone. Instruction was facilitated by the researcher and vocational staff using techniques such as guided demonstration, modeling, and repeated practice with materials adapted for clarity and simplicity.

Multiple sources of qualitative data were collected to ensure triangulation and a comprehensive understanding of the program's development and implementation.

1. Systematic observations were conducted to monitor the student's engagement, behavioral responses, and difficulties during the learning sessions. As noted by Pratiwi et al. (2024), observation provides direct insight into learning dynamics within a naturalistic setting.
2. Semi-structured interviews were conducted with one special education teacher, two vocational staff members, and the student participant. These interviews aimed to gather in-depth perspectives on the student's specific challenges, learning progress, and the perceived feasibility and relevance of the program, thereby supplementing observational data (Yuhana & Aminy, 2019).
3. Focus Group Discussions (FGDs): FGDs were held with the research team and teaching staff at key development milestones to gather collaborative feedback on the program's design, instructional materials, and implementation strategy. This method provided a platform for reflective critique and collective input (Paramita & Kristiana, 2013).
4. Performance Assessments: To measure the development of specific

competencies, pre-task and post-task assessments were administered. The student completed a series of identical marketing tasks (e.g., describing a product, taking a product photo) before and after the intervention. Performance was evaluated using a criterion-based rubric developed in collaboration with vocational teachers to ensure content validity. The rubric assessed dimensions such as task completion accuracy, functional understanding, creativity, and digital fluency.

Collected qualitative data were analyzed using an interactive model of qualitative data analysis, as outlined by Miles et al. (2018), which involves three concurrent processes: data reduction, data display, and conclusion drawing/verification.

1. Data Reduction: Raw data from transcripts, field notes, and assessments were summarized and coded to identify key themes, patterns, and salient points relevant to the research objectives (Agusta, 2003).
2. Data Display: The reduced data were organized into structured narratives (e.g., thematic summaries, case descriptions) and matrices to facilitate clear interpretation and analysis (Febriani et al., 2023).
3. Conclusion Drawing and Verification: Initial conclusions were drawn by interpreting the displayed data in relation to the study's aim. These conclusions were then verified through constant comparison of data sources (triangulation) and member-checking with participating teachers to enhance credibility (Jailani, 2023).

This analytical process enabled a comprehensive understanding of how the student engaged with the integrated vocational program and how the instructional strategies influenced the acquisition of targeted e-commerce competencies.

RESULT AND DISCUSSION

This section presents the findings from the study, organized and analyzed according to the five phases of the ADDIE instructional design model: Analysis, Design, Development, Implementation, and Evaluation. Data were triangulated from multiple sources, including interviews, classroom observations, documentation reviews, and focus group discussions (FGDs) with teachers.

Analysis Phase

The study participant was an 11th-grade student with a mild intellectual disability. Initial interviews revealed significant challenges in the student's understanding of foundational marketing concepts, such as product promotion and pricing strategies. A pronounced lack of familiarity with relevant terminology and minimal hands-on experience were also identified. During FGDs, teachers consistently emphasized the necessity of using concrete examples and simplified language to facilitate learning. As one teacher stated, “Students often memorize marketing terms but struggle to apply them unless linked to real-life activities.” This observation aligns with the work of Riyani et al. (2016), who found that students with mild intellectual disabilities benefit most

from experiential learning models that are directly relevant to their daily lives.

Design Phase

Informed by the needs analysis, a specialized teaching module was designed to integrate the marketing of charcoal briquettes with simplified entrepreneurial concepts. The instructional content was structured using short, direct sentences and augmented with visual supports to enhance accessibility for learners with cognitive limitations (Waty & Giatman, 2024). Teacher suggestions from the FGDs, such as incorporating role-play activities and step-by-step pictorial guides, were integrated into the module's framework to support procedural understanding.

Development Phase

The development stage involved iterative refinement of the initial module drafts based on feedback from special education experts and classroom teachers. Key revisions included simplifying the navigation of digital tasks, embedding additional visual aids, and replacing complex vocabulary with more familiar terms. Observational data confirmed that students responded more positively to color-coded instructions and symbol-supported tasks. This finding is consistent with Qohar (2023), who demonstrated the efficacy of visual scaffolding in teaching vocational skills, such as flower bouquet sales, to students with similar learning profiles.

Implementation Phase

The module was implemented in a classroom setting, where the student was guided through a simulated sales process on the Shopee digital marketplace platform. The teacher began by introducing the concept of an online marketplace, using real-world examples (e.g., Shopee, Tokopedia) for contextual grounding. The student then engaged in a series of practical tasks: taking product photos, writing descriptions, setting prices, and uploading items for sale.

Observational data indicated that the student required varying levels of support, with the greatest need occurring during digital navigation tasks. For instance, in 3 out of 5 tasks—specifically product uploads and description writing—the student required verbal prompts and hand-over-hand guidance. During the photo upload activity, the student asked, "Which button should I press?", indicating a need for scaffolded instruction. While the student could package products with minimal assistance, navigating the application's features independently remained a considerable challenge.

Table 1. *Task Performance During Implementation*

Task	Planned Outcome	Actual Performance
Product photo taking	Independently completed	Completed with teacher modeling
Writing product descriptions	Structured sentences independently	Required sentence frames and teacher prompts
Uploading products to Shopee	Independent digital navigation	Full teacher assistance required
Price setting	Student selects price from range	Required guided comparison and selection
Packaging products	Follow step-by-step instructions	Performed with minimal verbal cues

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This pattern of partial success underscores the relevance of Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD), as mediated by Fani and Ghaemi (2011), wherein learning occurs most effectively with appropriate scaffolding. Although the student did not achieve full independence, the supported participation enabled meaningful engagement with the core concepts of digital entrepreneurship.

Evaluation Phase

A comprehensive evaluation, incorporating expert feedback and field observations, concluded that integrating the Shopee platform was beneficial for exposing the student to modern digital commerce practices. However, the inherent complexity of the platform presented significant cognitive demands. Effectiveness was measured through task completion rates and teacher-reported confidence levels. For example, packaging tasks were completed with 80% independence, whereas digital upload tasks showed only a 20% success rate without direct prompts.

Experts noted that while e-commerce training represents an innovative approach, mainstream platforms like Shopee are not fully accessible for students with mild intellectual disabilities. This finding supports the work of Waty and Giatman (2024) on the persistent digital literacy gap in special education and aligns with broader research indicating that individuals with intellectual disabilities face significant barriers to internet access and use, often due to complex interface designs and a lack of tailored support (Chadwick et al., 2013). Compared to direct offline selling, the online approach requires higher levels of abstract reasoning and fine motor control, which many students in this population find challenging.

Despite these constraints, the project successfully introduced basic entrepreneurial concepts. Consistent with the literature, success must be framed as scaffolded participation rather than independent mastery. Therefore, while students gained valuable experiential knowledge, the long-term viability of such a learning program depends on sustained teacher support and potential adaptations to platform interfaces to enhance accessibility.

CONCLUSION

This study concludes that the integrated vocational program, combining charcoal briquette production with Shopee-based marketing, positively contributed to the learning experiences of students with mild intellectual disabilities. Although substantial teacher assistance was required throughout the instructional process, students demonstrated an understanding of core entrepreneurial concepts, indicating measurable progress within a scaffolded learning environment. This foundational engagement is a critical first step in developing broader vocational competencies.

However, the program was not fully effective in enabling students to independently navigate complex digital platforms. Significant difficulties were observed in understanding the workflow and interface features of the Shopee application. This underscores a critical

imperative for instructional designers to create digital learning components that are specifically tailored to the cognitive profiles of learners with intellectual disabilities, prioritizing intuitive design and reduced cognitive load.

These findings align with Saraswati (2020), who emphasizes that effective vocational programs for this population must carefully balance real-world relevance with developmental appropriateness and cognitive accessibility. They also corroborate the observations of Waty and Giatman (2024) regarding the distinct challenges students with intellectual disabilities face in entrepreneurship education, particularly in digital contexts that demand advanced abstract reasoning and digital literacy.

To enhance the efficacy of future implementations, several recommendations are proposed. First, learning media should be developed to incorporate enhanced visual supports, such as step-by-step video tutorials, simplified interface simulations, and opportunities for repetitive practice with guided feedback. Second, the development of interactive, low-fidelity mock e-commerce applications could provide a bridge between conceptual understanding and practical application by offering a training environment with a reduced cognitive load. Finally, teacher support, while essential initially, should be strategically designed to fade as students build confidence and procedural competence, a practice directly aligned with the established principles of instructional scaffolding in special education.

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