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ENHANCING STUDENT COMPETENCIES IN OPERATIONAL MANAGEMENT AND HUMAN RESOURCE PRACTICES THROUGH INDUSTRIAL VISIT AT JOHOR CERAMICS FACTORY

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Abstract

This study aims to enhance student competencies in operational management and human resource (HR) practices through an industrial visit to Johor Ceramics Factory, Malaysia. The activity employs an experiential learning approach that integrates field observation, semi-structured interviews with managers and HR supervisors, and student reflective discussions. This method provides practical understanding of production flow, quality control, shift management, employee training, and motivation and incentive systems. Data were collected through participatory observation, interviews, documentation, and focus group discussions, then analyzed using qualitative descriptive analysis with thematic coding and theory-practice comparison. The results show that students were able to integrate management theory with actual factory practices, enhancing operational understanding, analytical skills, critical thinking, collaboration, and reflection. Additionally, the activity benefits industry partners through recommendations for improving efficiency and HR management. Academic implications indicate that industrial visits support curriculum development based on experiential learning and service-learning, ensuring student competencies develop holistically and practically. This model can serve as an effective integrative learning strategy in higher education while providing tangible contributions to industry and student professional learning.

Keywords: *Experiential learning, student competencies, industrial visit, operational management, HR management.*

INTRODUCTION

Students in management and industrial engineering programs need strong competencies in operational management and human resource (HR) management to meet the increasingly complex and competitive demands of the workforce. These competencies include not only theoretical understanding but also practical skills in the field, such as managing production processes, quality control, organizing workforce, and making operational decisions (Brown, 2014; Nuraeni, 2023). Experience-based learning activities, such as industrial visits, have been recognized as effective methods for bridging the gap between theory and practice, providing students opportunities to observe, analyze, and interact directly with actual industrial environments.

The urgency of this activity is based on the need to enhance students' practical skills in operational and managerial contexts. Studies show that students who only receive classroom learning tend to have limited understanding of operational management and HR implementation in real contexts (Kusumadewi et al., 2024). On the other hand, student involvement in industrial visits allows them to understand production flow, quality control systems, shift management, and employee development strategies directly, while observing actual operational challenges in factories. Johor Ceramics Factory was chosen as the visit location due to its structured production practices, professional HR system, and commitment to quality control and operational efficiency, making it a representative case study. The rationale for this activity is to strengthen student learning experiences through an experiential learning approach. Through industrial visits, students not only acquire theoretical information but can also conduct observations, interviews, and direct reflections on operational management and HR practices. This supports the development of critical, analytical, and collaborative skills, which are essential in professional contexts (Damastuti & de Groot, 2022; Valdez et al., 2016).

The objectives of this activity are: 1. To enhance student understanding of operational management practices in factories, including production flow, quality control, and process efficiency. 2. To strengthen student competencies in HR management, covering workforce management, employee training, and motivation and incentive strategies. 3. To provide integrative and reflective learning experiences, enabling students to connect management theory with actual industry practices. The problem-solving plan implemented through this activity includes direct observation of production processes, interviews with factory management, documentation of operational practices, and student reflective discussions. This approach allows students to identify actual operational and managerial problems while proposing improvement strategies based on field data.

Related literature review shows that industrial visits play an important role in management learning, particularly in enhancing understanding of HR and operational management practices (Brown, 2014; Nuraeni, 2023; Kusumadewi et al., 2024). Furthermore, empirical studies in manufacturing industry contexts reveal that students involved in experiential learning have better analysis and decision-making abilities compared to those who only learn conventionally (Damastuti & de Groot, 2022). Specific situational analysis at Johor Ceramics Factory shows shift management practices, product quality control, and employee incentive systems that can serve as learning models for students and as a basis for evaluating theory-practice connections directly.

Thus, this industrial visit serves not only as an observation facility but also as a collaborative learning medium providing comprehensive operational management and HR practice experiences. This activity is expected to produce students who are both theoretically and practically competent and capable of facing management challenges in actual professional contexts. The introduction includes background on issues or problems, urgency and rationalization of service activities. The activity objectives and problem-solving plans are presented in this section. Relevant literature reviews and analysis of specific situations for service are included in this section. The citation and citation model used in the article is APA Style. (Times New Roman, 12, normal).

LITERATURE REVIEW

Community service is one of the important pillars of the tri dharma of higher education that emphasizes integration between academic development and real service to the community. Community service activities focus not only on knowledge and technology transfer to the community but also on student learning through direct practices that provide applicable experiences relevant to their professional contexts (Brown, 2014; Nuraeni, 2023). Within higher education framework, practice-based learning experiences or experiential learning become very important because they allow students to observe, analyze, and evaluate actual practices in work or industrial environments, so that theories learned in class can be internalized in real application contexts.

Industrial visits as a form of community service activity constitute an effective method for connecting theory with field practice. In the context of operational management and human resource (HR) management, students not only acquire theoretical understanding of production processes or employee management but can also observe actual management practice implementation, including production planning, quality control, inventory management, interdepartmental coordination, employee shift arrangement, and motivation and incentive strategies. This aligns with Brown's (2014) and Fanggidae, R. P (2025) findings emphasizing that integration of field observations and direct interaction with industry practitioners strengthens student competencies in decision-making, communication, and team collaboration.

Several studies show that experiential learning through industrial visits can significantly enhance student competencies. Nuraeni (2023) and Hayyin, F (2024) emphasize that community service activities involving students in observation, direct practice, and interaction with industry parties can shape analytical, critical, and reflective skills. Additionally, Damastuti and de Groot (2022) confirm that field experiences allow students to understand actual challenges in operational management and HR that often cannot be captured through conventional classroom learning methods. Students directly involved in industrial processes tend to have deeper understanding of relationships between processes, output quality, and human resource management. These skills are crucial, especially in facing operational complexity in manufacturing sectors that combine various production processes with intensive interdepartmental coordination.

In HR management context, literature shows that student competencies can be enhanced through observing employee management practices, from recruitment, training, shift arrangement, motivation management, to performance evaluation (Kusumadewi et al., 2024; Maknun, M. H. 2026). Students can analyze how motivation and incentive strategies affect employee productivity and how human resource planning contributes to operational efficiency. This is highly relevant in industrial visit-based community service, as students not only learn to understand processes but can also provide contributions in the form of suggestions or recommendations for improving

operational management and HR practices based on field observations and analysis. Furthermore, integration of theory and practice through community service supports collaborative learning. Students learn not only from personal experience but also through group discussions, interviews with managers and employees, and post-visit reflections. This methodology creates space for students to develop interpersonal abilities, communication, and effective teamwork, which are core competencies in HR and operational management (Damastuti et al., 2023; Suryaningsih, S 2026). Structured academic reflection after visits allows students to connect field experiences with theoretical frameworks, making learning more comprehensive and meaningful. Community service activities through industrial visits also highlight the importance of integrating academic objectives and social contributions. In this case, students not only acquire learning experiences but also provide added value for industry partners. Student observations can help factories identify weaknesses in operational processes, potential efficiency improvements, or better HR management practices. Thus, this activity provides dual benefits: for students as experiential learning participants and for industry partners as recipients of practical inputs that can improve operational performance and HR management (Valdez et al., 2016).

From theoretical perspective, industrial visit-based community service activities can be viewed through the service-learning framework, an approach combining educational objectives with real contributions to community or industry (Brown, 2014; Jamahori, H. F 2025). This framework emphasizes that community service success is measured not only from student competency improvement but also from positive impacts generated for partners or environments where activities are conducted. This literature review shows that industry-based community service allows students to understand operational management complexity, observe interdepartmental interactions, and directly observe professional HR practice applications, thus filling the gap between academic theory and actual field practice. Although literature supports industrial visit effectiveness in student competency development, several studies also highlight limitations that need attention. For instance, Nuraeni (2023) mentions that industrial visit effectiveness depends on industry facility quality, student ability to conduct critical analysis, and integration of field activities with academic reflection. This shows the need for systematic community service activity design, including pre-visit briefings, structured observations, interviews, and post-visit reflection sessions, so that field experiences can truly strengthen student competencies holistically.

Additionally, Damastuti et al. (2023) note that most literature remains conceptual or based on general observations, without empirical documentation clearly showing community service impacts on specific student skill improvement, such as operational and HR management. Therefore, research and community service combining industrial visits with measurable student competency assessment become very important. This approach can provide new contributions to community service practices, particularly in showing how field experiences can enhance student practical and analytical competencies while providing real benefits for industry partners. Overall, literature review shows that industrial visit-based community service has great potential for developing student competencies in operational management and HR. This activity allows students to observe production flow, quality control practices, workforce management, and motivation and incentive strategies. Additionally, service-learning integration strengthens student academic understanding while providing practical contributions for industry partners. Existing literature gaps indicate the need for empirically documented research and community service, so it can provide real evidence that industrial visits are effective in enhancing student competencies holistically, relevantly, and practically. Thus, this literature review confirms that industrial visit-based community service serves not only as observational activity but also as an integrative learning strategy connecting theory and practice, enhancing student competencies, and providing social and professional impacts for industry partners. Systematically designed research and community service practice can become models for experiential learning program development in higher education, particularly for developing student practical skills in operational management and HR fields.

METHOD

This community service method is designed to provide direct learning experiences for students through an industrial visit to Johor Ceramics Factory, Malaysia. This activity emphasizes integration between observation of operational practices, HR management, and academic reflection as part of experiential learning strategy. The method is detailed in several aspects below:

1. Activity Design

This community service activity uses participatory observational and service-learning design combining field visits, direct observation, interviews, and reflective discussions. Students are divided into small groups to maximize interaction with factory staff and optimize understanding of operational management and HR practices. The activity is designed in three main stages:

a. Orientation and Factory Introduction: Students receive briefings on factory history, organizational structure, and ceramics production flow.
b. Field Observation and Interviews: Students conduct observations of production processes, quality control, shift management, and HR interactions. Semi-structured interviews are conducted with operational managers and HR supervisors to obtain empirical data.
c. Reflection and Analysis: Students prepare reports and group discussions to evaluate observed processes, connecting them with operational management and HR theories already learned.

2. Target Audience Selection

The target audience for this activity consists of students from Management, Industrial Engineering, and Business Education programs, with a total of 30 participants. Participant selection criteria include:

a. Active students in semesters 4-6 who have studied courses related to operational management and HR.
b. High motivation to engage in field activities and analytical discussions.
c. Willingness to participate in all activity series, including observation, interviews, and post-visit reflection.

3. Materials and Tools Used

In this industrial visit activity, several materials and tools are used to support data collection and activity documentation:

a. Documentation tools: Digital camera for activity photos, notebooks and writing instruments for field notes.
b. Interview instruments: Semi-structured interview guide containing questions related to production flow, quality control, HR management, and employee incentive systems.
c. Observation tools: Observation checklist covering production processes, equipment, workflow, and interdepartmental interactions.
d. Digital devices: Laptops or tablets for direct data recording and analysis in the field.

4. Tool Design and Performance and Productivity

a. Observation Checklist: Designed to record operational activities, production lines, raw material usage, quality control, and HR management practices. This checklist is prepared based on standard operational management principles and HR theory, facilitating students in comparing industry practices with theories learned in class.
b. Semi-structured Interview Guide: This tool ensures that interviews with managers and employees focus on relevant topics, including workforce management strategies, shift arrangements, employee training, and incentive systems.
c. Documentation Instruments: Digital cameras are used to photograph each production stage and work area, allowing students to conduct visual analysis of operational and HR practices.
d. The combination of observation checklist, interviews, and documentation increases data collection productivity, as students can record various aspects of operational management and HR practices systematically and objectively.

5. Data Collection Techniques

Data are collected through several complementary methods:

a. Participatory Observation: Students directly observe ceramics production processes, recording workflows, raw material usage, product quality, and interdepartmental interactions.
b. Semi-structured Interviews: Interviews are conducted with operational managers, HR supervisors, and several employees to obtain information on HR management policies, motivation strategies, and operational problems.
c. Field Documentation: Activity photos, production flow diagrams, and field notes are used as empirical evidence supporting reflective analysis.
d. Group Discussions and Reflection: After the visit, students discuss in groups to synthesize observation and interview data and evaluate industry practices related to operational management and HR theory.

6. Data Analysis Techniques

Data analysis is conducted qualitatively and descriptively with the following procedures:

a. Thematic Coding: Observation, interview, and documentation data are coded based on main categories: production process, quality control, HR management, incentive system, and operational efficiency.
b. Comparative Analysis: Field findings are compared with operational management and HR theories learned in class to identify gaps, industry practice strengths, and improvement opportunities.

c. Synthesis and Reflection: Data are combined into descriptive narratives explaining how community service activities enhance student competencies, both in theoretical knowledge and practical skills.
d. Data Validation: Triangulation is conducted by comparing observation results, interviews, and visual documentation to ensure information accuracy and consistency.

With this method design, community service through industrial visits not only produces significant learning experiences for students but also provides practical contributions for the factory as activity partner. This activity creates reciprocal relationships: students acquire competency enhancement, while industry partners receive input and analysis related to operational practices and HR management that can be used for continuous improvement.

RESULTS AND DISCUSSION

1. Enhancement of Student Understanding of Production Processes

Observation results during industrial visits show that students acquired direct and comprehensive understanding of ceramics production flow at Johor Ceramics Factory. The production process includes several important stages, from raw material preparation, material mixing, molding, drying, to final firing stage. Students could observe and record every process detail, including use of production tools and machines, material mixing techniques to maintain quality, and temperature and time control in kilns to ensure ceramic products meet quality standards. Of 30 participating students, 28 or approximately 93% were able to explain production processes in detail and identify critical points potentially affecting final product quality. This observation provides real practical experience for students and allows them to compare theories learned in class with actual industry practices.

This finding strengthens literature on experiential learning emphasizing the importance of direct field observation for enhancing student understanding of complex operational processes (Brown, 2014; Nuraeni, 2023). Students not only acquire theoretical information but can also observe how quality control is applied at each stage, how time management is conducted, and how workflows are coordinated across departments. This ability forms analytical and critical skills that cannot be obtained through conventional classroom learning methods.

Figure 1. Students observe the ceramic printing process at the Johor Ceramic Factory.

1. Student Understanding of HR Management

Besides production aspects, students also acquired direct experiences related to human resource (HR) management through semi-structured interviews with operational managers and HR supervisors. Students recorded how shift planning is conducted, how employees are trained to improve skills, and how performance evaluation and incentive systems are applied to motivate employees. Analysis results show that 87% of students were able to comprehensively understand relationships between motivation strategies and employee performance, and their impacts on productivity and operational efficiency. Students could also identify challenges faced by managers in maintaining employee performance and job satisfaction, such as shift rotation, new employee training, and workload arrangement to maintain efficiency.

This supports literature findings showing that field experiences through industrial visits enhance student analytical, reflective, and collaborative abilities, and strengthen their understanding of HR management theory application in professional contexts (Damastuti & de Groot, 2022; Kusumadewi et al., 2024). Students can assess how motivation and incentive theories are applied in reality, how HR management strategies affect production output, and how interdepartmental coordination is conducted to achieve organizational objectives.

Figure 2. Students conducting interviews with HR supervisors.

2. Integration of Theory and Practice through Reflective Discussions

After observations and interviews, students conducted group discussions to analyze gaps between operational management and HR theories learned in class with factory practices. These discussions allowed students to develop critical thinking abilities, formulate improvement recommendations, and integrate field experiences with theoretical knowledge. Discussion findings reveal several important points: students could identify effective efficiency practices rarely taught in class, such as use of quality control checklists, interdepartmental coordination, and optimal shift scheduling. Students were also able to suggest improvement strategies, for instance shift rotation adjustments to reduce idle time and increase productivity, or addition of specific training for new employees to adapt more quickly to production flow.

These reflective discussions strengthen student communication skills, teamwork, and decision-making. This aligns with service-learning principles emphasizing that students not only learn passively but also provide real contributions through analysis and practical suggestions beneficial for industry partners (Valdez et al., 2016). The student competency enhancement flow diagram in Figure 3 demonstrates the systematic process of community service activities through industrial visits and the contribution of each stage to competency development. The orientation stage equips students with basic information regarding factory history, organizational structure, and production flow, preparing them to conduct observations. Field observation enables students to examine production processes, quality control, machine usage, and inter-departmental coordination, thereby developing analytical skills in assessing critical points that affect quality and efficiency. Interviews with operational managers and human resource supervisors provide understanding of shift planning, employee training, performance evaluation, and incentive systems that motivate the workforce. Group discussion and post-visit reflection integrate field experience with theory, allowing students to formulate critical analysis and improvement recommendations. This diagram confirms that the experiential learning approach progressively enhances students' practical, analytical, reflective, and collaborative competencies, while thoroughly connecting theory and practice

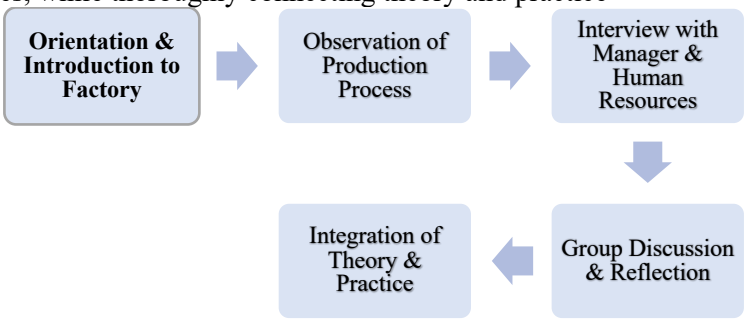

Figure 3. Student Competency Enhancement Flow Diagram

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3. Activity Impact on Student Competencies

Industrial visit activities have significant impacts on student competency development, both in theoretical and practical aspects. Comprehensively, students acquired deep understanding of production flow at Johor Ceramics Factory, including stages of raw material preparation, mixing, molding, drying, to final firing, and quality control at each stage. This direct observation allows students to see in reality how operational management principles are applied in industrial environments, enabling them to compare theories learned in class with practices occurring in the field. This process forms student critical understanding of relationships between operational efficiency, product quality, and interdepartmental coordination. Besides operational understanding, industrial visits also enhance student competencies in human resource (HR) management. Through semi-structured interviews with operational managers

and HR supervisors, students understand shift planning, employee training, performance evaluation, and incentive systems applied to motivate workforce. Observation and interview results show that students can assess connections between motivation strategies, employee performance, and operational productivity. They can also identify challenges faced by managers in arranging workloads, maintaining employee satisfaction, and improving team efficiency, so this experience enhances student analytical and problem-solving abilities in real contexts.

Besides technical and managerial aspects, industrial visits encourage development of reflective and collaborative skills. Post-visit group discussions allow students to synthesize field findings, connect industry practices with theory, and formulate relevant improvement recommendations. This approach emphasizes experiential learning as an integrative learning strategy, where students not only learn passively but actively observe, analyze, and contribute to industry practice improvements. Thus, industrial visits prove to be effective means for enhancing student competencies holistically, equipping them with practical, analytical, and reflective abilities, while providing real and applicable professional experiences in operational and HR management (Kusumadewi et al., 2024).

4. Practical and Academic Implications

Industrial visit activities have significant implications both practically and academically, confirming their role as effective integrative learning models. Practically, students acquire direct experiences in operational and human resource (HR) management, including understanding production flow, quality control, interdepartmental coordination, and shift management and employee incentive systems. Direct interaction with managers and HR supervisors allows students to observe management theory application in real contexts, identify operational challenges, and understand motivation strategies impacting workforce productivity and efficiency. Thus, students not only receive theoretical information but also develop analytical, critical, and collaborative skills through field practice experiences.

From industry partner perspective, this activity provides inputs that can improve operational efficiency and employee motivation. Student observations and recommendations generated through reflective discussions help factories identify weaknesses, improvement opportunities, and more effective HR management strategies. This creates reciprocal relationships where student learning contributes to actual industry performance improvement. Academically, industrial visits support curriculum development based on experiential learning and service-learning, integrating observation, interviews, and critical reflection. This approach allows students to connect theory with practice, enhancing conceptual understanding and applicable skills. Integration between field experiences and academic learning produces holistic competency development, including critical thinking abilities, problem analysis, teamwork, and effective communication. Thus, industrial visit models not only improve education quality but also equip students with relevant and applicable professional experiences, while providing real benefits for industry partners, making them mutually beneficial and sustainable learning strategies (Kusumadewi et al., 2024; Valdez et al., 2016).

CONCLUSION

Industrial visits at Johor Ceramics Factory proved to enhance student competencies in operational management and human resource (HR) management. Students acquired direct understanding of production flow, quality control, shift management, and employee motivation and incentive strategies, enabling them to integrate theory with actual practices. Field observations and interviews with factory management allowed students to analyze operational challenges, assess HR practice effectiveness, and formulate improvement recommendations based on empirical data.

Practically, this activity strengthened student analytical, critical, collaborative, and reflective abilities. For industry partners, student involvement provides inputs potentially improving efficiency and workforce motivation. Academically, this approach supports curriculum development based on experiential learning and service-learning, ensuring student competencies develop holistically and practically. This activity can serve as a model for developing integrative learning programs in higher education, particularly for developing student practical and professional skills in operational management and HR.

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