

ENHANCING INSTRUCTIONAL AND RESEARCH QUALITY THROUGH ORGANIZATIONAL DEVELOPMENT INTERVENTION (ODI) IN AN AVIATION INSTITUTE

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Abstract

This study aims to explore approaches to enhancing instructional quality and research quality through Organizational Development Intervention (ODI) in an aviation institute. The focus of the study is on improving learning engagement, teaching effectiveness, and research capability through the integration of artificial intelligence (AI) tools.

The research employed an intervention-based approach, beginning with faculty development programs in which instructors were trained in the use of AI for teaching and research. Following the training, instructors applied AI tools in their teaching practices and research activities and shared their experiences within the organization.

The findings revealed that most instructors adopted AI tools such as Kahoot, learning management systems (LMS), and ChatGPT to enhance classroom engagement. AI applications helped make lessons more interactive, reduced student cognitive overload, and supported content summarization. In terms of research, AI tools such as Perplexity and Claude significantly reduced time spent on literature search, organization, and writing processes, leading to increased research productivity and improved publication quality.

However, the study also found that AI must be used with caution, as it may produce inaccurate or misleading information (hallucination), particularly in local or context-specific research. Therefore, human judgment remains essential in ensuring research accuracy and quality.

The study highlights the potential of ODI as a strategic approach to integrating AI into teaching and research practices, contributing to continuous improvement in higher education institutions.

Keywords: Artificial Intelligence (AI), Instructional Development, Research Development

Introduction

In recent years, higher education has undergone significant transformation under international quality assurance frameworks such as AUN-QA, which emphasize outcome-based education and the achievement of expected learning outcomes (ASEAN University Network,

2020). This framework focuses on ensuring that graduates are able to apply knowledge and skills in real-world contexts rather than relying solely on theoretical understanding.

This shift presents challenges for universities, as instructors have traditionally focused on content delivery and academic research. Under AUN-QA requirements, teaching must be redesigned to incorporate technology, interactive learning environments, and experiential approaches that enhance student engagement and practical application.

Artificial intelligence (AI) has emerged as an important tool to support these changes. Studies indicate that AI-based and gamified tools can enhance student engagement and motivation, making learning more interactive and effective (Hu, 2024). Additionally, AI technologies such as chatbots and intelligent systems can support personalized learning and improve overall learning experiences (Cao et al., 2023). AI also plays a significant role in research by improving efficiency in literature search, data organization, and academic writing.

To support this transformation, organizational development intervention (ODI) provides a systematic approach to improving institutional performance through training and knowledge sharing (Cummings & Worley, 2019). Therefore, this study applies ODI to examine how AI integration can enhance instructional and research quality in an aviation institute preparing for AUN-QA implementation.

Research Objectives

1. To explore approaches for enhancing instructional quality to support outcome-based aviation education.
2. To explore approaches for improving research quality to align with aviation curriculum development and industry needs.

Literature Review and Theory

Recent developments in higher education emphasize the need to enhance both instructional quality and research quality in response to outcome-based education frameworks such as AUN-QA. These frameworks require universities to produce graduates who are capable of applying knowledge in real-world contexts, while also promoting research that contributes to practical and societal impact (ASEAN University Network, 2020).

In terms of instructional development, recent studies highlight the importance of student engagement and active learning. Learning engagement has been identified as a key factor influencing academic achievement, particularly when supported by digital technologies and interactive learning environments (Bond et al., 2020). The integration of artificial intelligence (AI) in teaching has been shown to significantly enhance engagement, motivation, and learning effectiveness by enabling personalized learning, adaptive feedback, and interactive activities (Holmes et al., 2022; Zawacki-Richter et al., 2019). AI-based tools such as gamified platforms, chatbots, and intelligent tutoring systems can transform traditional teaching into more dynamic and learner-centered approaches.

In addition to teaching, research development in higher education is increasingly supported by AI technologies. Recent studies indicate that AI tools can improve research efficiency by assisting in literature review, data organization, and academic writing, thereby increasing research productivity and output quality (Dwivedi et al., 2023). However, it is also emphasized that AI should be used critically, as issues such as hallucination and lack of contextual accuracy may affect research reliability.

At the policy level, higher education systems are increasingly emphasizing applied research and innovation. In Thailand, the Ministry of Higher Education, Science, Research and Innovation (MHESI, 2022) and the National Research Council of Thailand (NRCT, 2021) highlight the importance of research that contributes to national development and practical application. This aligns with global trends that prioritize impact-driven research over purely theoretical contributions.

To support these transformations, Organizational Development Intervention (ODI) is adopted as a key theoretical framework in this study. ODI is defined as a planned change process aimed at improving organizational effectiveness through interventions such as training, workshops, and collaborative learning (Cummings & Worley, 2019). Recent perspectives emphasize that ODI plays a critical role in higher education by facilitating continuous improvement, enhancing faculty capabilities, and promoting innovation in teaching and research practices.

ODI interventions can be implemented at multiple levels, including individual, group, and organizational levels, through structured activities such as brainstorming sessions, seminars, and knowledge-sharing workshops. These interventions are particularly effective in fostering collaboration, improving competencies, and driving sustainable change in educational institutions.

Therefore, this study integrates AI and ODI as strategic approaches to simultaneously enhance instructional quality and research quality in an aviation institute, ensuring alignment with modern educational standards and real-world application.

Research Methodology

This study employed an organizational development intervention (ODI) approach using a mixed-methods design to enhance both instructional quality and research quality within an aviation institute. The intervention focused on two key dimensions: teaching competency and research development.

In terms of instructional development, the study emphasized enhancing teaching competency to improve students' learning engagement and learning effectiveness. The goal was to create interactive, student-centered learning environments that encourage active participation and meaningful learning outcomes.

In terms of research development, the study focused on promoting research for professionalism and research for practicality. Research for professionalism refers to the development of academic and professional standards in research, while research for practicality emphasizes producing research outputs that are applicable, valuable, and beneficial to real-world professional contexts.

The participants of the study consisted of 25 individuals, including 20 instructors and 5 administrators within the aviation institute.

The ODI process was implemented through four main intervention activities:

1. **AUN-QA Training Programs** organized at both university and faculty levels to enhance understanding of outcome-based education and quality assurance standards.
2. **AI-Based Teaching Development Workshops** conducted by external experts, focusing on the integration of artificial intelligence tools into teaching practices to improve engagement and instructional effectiveness.

3. **AI-Based Research Development Training**, which aimed to enhance research capability by introducing AI tools for literature review, data organization, and academic writing.
4. **Knowledge Management (KM) Activities**, conducted to promote knowledge sharing and collaborative learning. These activities were organized in two areas: teaching and research, with six sessions each.

The research utilized both qualitative and quantitative data collection methods. Qualitative data were obtained through observations, group discussions, and reflections during the ODI activities. Quantitative data were collected through structured questionnaires to evaluate the impact of the intervention.

The collected data were analyzed using descriptive statistics and content analysis to assess improvements in teaching competency and research quality. The findings were used to propose practical guidelines for enhancing instructional and research practices in alignment with AUN-QA standards.

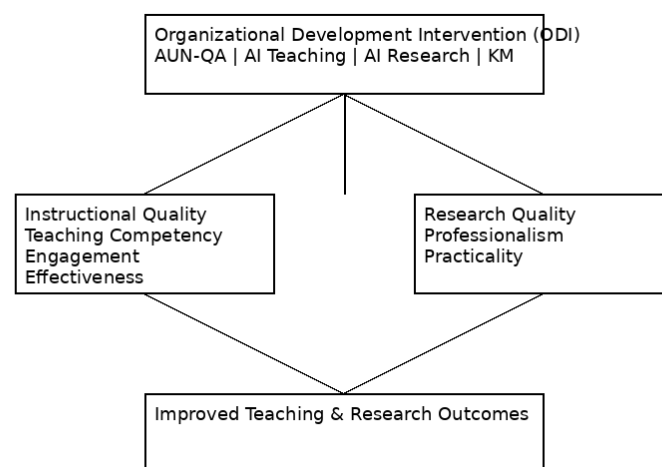
Conceptual Framework

This study adopts an organizational development intervention (ODI) approach to enhance instructional quality and research quality in an aviation institute. The framework is adapted from the ODI-based academic service development model, which emphasizes systematic improvement through planned interventions (Witthawassamrankul, 2020).

ODI is conceptualized as the independent variable, while the dependent variables consist of two key dimensions:

1. **Instructional Quality Development**, focusing on teaching competency, learning engagement, and learning effectiveness, particularly through the integration of AI-supported, student-centered learning environments.
2. **Research Quality Development**, focusing on research for professionalism and research for practicality, which emphasize both academic rigor and the production of applicable and value-driven research outputs.

The framework proposes that ODI, through structured development processes, enhances instructors' competencies and promotes the integration of AI in teaching and research. Consequently, this leads to improvements in both instructional and research quality.



Results

The findings of this study are divided into two main areas: instructional development and research development through the use of artificial intelligence (AI) within an organizational development intervention (ODI) framework.

1. Instructional Development through AI

The findings indicate that effective use of AI in teaching requires instructors to shift their roles from knowledge transmitters to facilitators of learning. Rather than relying on AI to replace teaching, instructors should use AI as a supportive tool to enhance student engagement and learning effectiveness.

AI tools that are compatible with students' daily digital behaviors, particularly mobile-based applications, were found to be highly effective. For example, gamified platforms such as Kahoot, interactive AI tools such as ChatGPT, and learning management systems (LMS) contribute to more engaging and less monotonous learning environments. These tools help reduce cognitive overload, especially in content-heavy subjects, by summarizing information and presenting it in accessible formats.

Furthermore, the integration of AI supports active learning by encouraging student participation, interaction, and real-time feedback, which enhances both learning engagement and effectiveness.

2. Research Development through AI

The findings also reveal that AI plays a significant role in enhancing research capability when used appropriately. AI should be applied as a scaffolding tool to support research processes, such as idea generation, literature review, and structuring academic writing, rather than replacing the researcher's critical thinking.

Effective use of AI in research requires a strong foundation of disciplinary knowledge, which is considered a key component of research ethics. Researchers must possess sufficient expertise to critically evaluate AI-generated information, synthesize knowledge, and ensure the accuracy and relevance of their work.

In addition, ethical research practice requires researchers to avoid confirmation bias and actively consider alternative perspectives to ensure comprehensive and balanced findings. Researchers must also be cautious of AI hallucination, where generated information may be inaccurate or misleading, particularly in context-specific or local studies.

AI tools that support research development include ChatGPT, Perplexity, Claude, and other AI-assisted academic tools such as Elicit and Scite, which help in literature exploration, citation analysis, and evidence-based research.

Overall, the findings suggest that AI can significantly enhance both teaching and research quality when integrated appropriately within an ODI framework, supported by human judgment, ethical awareness, and domain expertise.

Conclusion

This study demonstrates that organizational development intervention (ODI) integrated with artificial intelligence (AI) can effectively enhance both instructional and research quality. The findings show that students' satisfaction significantly improved, particularly in learning enjoyment, accessibility of knowledge, and classroom engagement, with mean scores increasing from 4.1–4.4 to 4.3–4.5 after the intervention.

In terms of research, the number of research outputs increased by more than 20%, and the quality of research became more relevant to professional aviation contexts. The findings highlight that AI can support both teaching and research when used appropriately, while instructors remain key facilitators in the learning process.

Overall, ODI combined with AI provides a practical approach for continuous improvement in higher education, aligning teaching and research with real-world applications.

Discussion and Recommendations

The findings are consistent with previous studies on AI integration in higher education. The improvement in student engagement and learning effectiveness aligns with Bond et al. (2020) and Holmes et al. (2022), while the enhancement of research efficiency is supported by Dwivedi et al. (2023).

The results indicate that AI is an effective tool for supporting both teaching and research; however, instructors remain essential as facilitators. AI should be used as a scaffolding tool to support learning, particularly in professional fields such as aviation, where human guidance is still necessary.

In terms of research, issues related to plagiarism and the reliability of AI-generated content must be carefully considered. Therefore, institutions should promote the appropriate use of AI alongside ethical awareness and human expertise to ensure sustainable academic development.

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