

Applying University Competence Assessment Network Common Competency and EMI Pedagogy

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ABSTRACT

This study created an all-English learning environment for teachers and students by integrating the theoretical framework of the University Competence Assessment Network common competency with the pedagogical method of English as a Medium of Instruction (EMI). The study targeted approximately 45 students, ranging from sophomore to senior, taking general education big data application courses. The study used a questionnaire with a satisfaction scale that combined the school's teaching evaluation items with four EMI skills (listening, speaking, reading, and writing) to assess whether innovative teaching strategies satisfied the students. The results showed that all competencies except interpersonal interaction significantly improved, especially problem solving ability. The teaching environment created by the study employed Tableau software, which makes it easier to create clear and information-rich graphic designs and visual presentations. The all-English teaching method improved students' English listening and other skills. These results suggest that in the future, big data courses using EMI should incorporate more elements of oral expression and technical English writing.

KEYWORDS

University Competence Assessment Network, Common Competency, English as a Medium of Instruction, Big Data Application, Tableau

INTRODUCTION

Big data analysis aims to extract insights from vast and complex datasets, aiding businesses, governments, and other organizations in solving problems and making informed decisions. There are many studies related to big data analysis using complex algorithms in professional curriculums (Gao et al., 2023; Li & Lee, 2024; Wang & Li, 2023). However, in general education, the students come from diverse fields, and some may lack a background in information technology. Therefore, the design of this curriculum needs to be simple and easily understandable for beginners. The visualization software

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Tableau is used in many studies worldwide to simplify complex problems in big data analysis (Jacobs et al., 2024; Jiang & Fitzgerald, 2019). From 2018 to 2022, the course design was adjusted adopted by the department that the researchers served and included instructor-guided steps using a Chinese interface of Tableau to assist students in learning big data applications. At the end of each semester, students presented their big data analysis results through electronically submitted reports. Students' learning outcomes were assessed primarily by creating visual statistical charts for group projects. However, this approach did not effectively measure individual students' problem solving abilities.

The University Career and Competency Assessment Network (UCAN) provides a common competency scale that allows the identification of competency gaps and learning to help students to acquire the correct workplace competencies and enhance individual employability. The researcher as well as the course instructor aimed to design an eighteen-week learning assessment using this scale in the new semester to improve students' employability by developing common competencies (communication, continuous learning, interpersonal interaction, team collaboration, problem solving, innovation, work responsibility, discipline, and application of information technology).

Tableau provides a free sharing platform (Tableau Public) in the international market. Tableau Public hosts millions of interactive data visualizations created by over a million creators from around the world, allowing us to explore various graph-type data visualizations. Tableau Public is the world's largest repository of data visualizations. Hence, in the current study, Tableau was implemented in this EMI course to reinforce learning achievement and improve multiple UCAN competencies. The instructor believes that aligning with the bilingual learning program of the Ministry of Education in the new academic year, and adopting full-English instruction can enhance students' familiarity with the English interface. Moreover, if students intend to deal with big data issues in international databases at the end of the semester, becoming proficient in the English interface can improve their problem solving speed and enhance their professional competitiveness in big data analysis.

The research subjects comprised 45 second-to-fourth-year students enrolled in a general education course on big data applications in the natural sciences domain. Since students were from various departments and colleges (including the Colleges of Information, Languages, Business, and Health), the course design emphasized fundamental theories and practical teaching methods. Oral presentations focused on analyzing and discussing topics using public databases from domestic and international sources, such as analysis of big data concerning Bitcoin and COVID-19, allowing students to collect, integrate, and visualize data on global issues.

The research was conducted through the school's Smart Master e-learning platform, facilitating course announcements, discussions, report submissions, reviews of digital instructional videos, and online surveys. For in-class big data analysis, students used the free public version of Tableau to analyze big data cases and present dashboards using publicly available databases. On the Tableau platform, there was a special "guest author" section for us to find inspiration from the best and brightest works, providing students with demonstrating examples of different types to enhance their data learning. The research framework is summarized in Figure 1.

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