

**EXPLORING INDUSTRY 4.0 COMPETENCIES FOR PRE-SERVICE
TEACHERS: AN EXPLORATORY FACTOR ANALYSIS**

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**THESIS SUBMITTED TO THE FACULTY OF INSTITUTE
OF GRADUATE AND PROFESSIONAL EDUCATION,
DAVAO DEL SUR STATE COLLEGE, DIGOS
CITY, IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR
THE DEGREE OF**

**MASTER OF ARTS IN EDUCATION
(Science Teaching)**

JUNE 2025

ABSTRACT

SARTE, ALBERTO JR. R., Davao del Sur State College-Institute of Graduate and Professional Education, Mati, Digos City. April 2025.
EXPLORING INDUSTRY 4.0 COMPETENCIES FOR PRE-SERVICE TEACHERS: AN EXPLORATORY FACTOR ANALYSIS. Master's Thesis.

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This study looked into what competencies pre-service teachers in Davao del Sur, Philippines, need to effectively respond to the demands of the Fourth Industrial Revolution (4IR) in the classroom. While there has been growing international discussion on 4IR in education, there's still a noticeable gap locally—particularly in the Philippines—where no contextualized framework exists to guide and measure teacher readiness for this evolving landscape. This research aimed to address that gap by identifying the unique set of 4IR-related competencies relevant to Filipino pre-service teachers. Using a quantitative, non-experimental design, the study employed Exploratory Factor Analysis (EFA) to analyze responses from fourth-year education students who were currently in their teaching practicum. Participants came from six teacher education institutions in Davao del Sur. The instrument used in the study was developed through a review of existing literature and was validated by a panel of experts. Results

showed a high level of sampling adequacy (KMO = 0.928), and Bartlett's Test confirmed that the data was suitable for factor analysis ($p < 0.000$). EFA revealed five key factors, which were labeled as: Operational Teaching Readiness in 4IR, 4IR Orientedness, Contextual Relationality, TPACK Grounded, and Instructional Flexibility. These represent various dimensions of readiness—from practical use of digital tools to relational and adaptive teaching strategies. The study suggests that teacher education programs revisit and enhance their curricula to build these core competencies. It also encourages further validation of the instrument through Confirmatory Factor Analysis (CFA) in other regions.

Keywords: 4IR, *Fourth Industrial Revolution, Exploratory Factor Analysis, Confirmatory Factor Analysis, Competencies*

SDGs: 4. *Quality Education*