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ARTIFICIAL INTELLIGENCE -DRIVEN MANAGEMENT AND IMPLEMENTATION OF TECHNOLOGY AND LIVELIHOOD EDUCATION IN NORALA

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ABSTRACT

Artificial Intelligence (AI) in educational management and implementation has transformed the ways in which institutions operate to ensure quality learning experiences to students. Using the Pearson r Correlation, the study determined the relationship between Artificial Intelligence (AI)-driven management and implementation of Technology and Livelihood Education (TLE) among secondary schools Norala, South Cotabato for school year 2025-2026. Based on the findings, the e**xtent of Artificial Intelligence (AI)-driven management** shows a consistently high degree of AI uptake across core management functions, with AI-based curriculum design and AI for professional development scoring at the very greatest extent and AI applications in resource allocation and administrative tasks following closely behind producing an overall mean that likewise indicates very great integration.

Further, findings suggest that the program is being implemented with strong fidelity and effectiveness. Also,it also shows that as schools integrate AI tools and systems to a greater extent—particularly in curriculum design, resource allocation, administrative automation, and

teacher professional development—the implementation of TLE tends to become more effective, structured, and responsive to student needs. It was also concluded that Norala district appears to prioritize AI not only for back-office efficiency (scheduling, grading, attendance, resource planning) but equally for pedagogical design and staff capacity building — a balance that suggests an institutional strategy linking instructional innovation with operational modernization.

Keywords: *Artificial Intelligence, School Management, Technology And Livelihood Education, Norala Philippines*

INTRODUCTION

Background of the Study

Artificial Intelligence (AI) in educational management and implementation has transformed how institutions operate, ensuring a quality learning experience for students Technology and Livelihood Education (TLE), a critical component of education that enables students to gain better career prospects, can benefit from AI, improving the effectiveness of education. However, these applications are not limited to private organizations; AI tools can also be integrated into Educational Institutions.

Internationally, AI is increasingly being accepted in education. Research has shown that artificial intelligencz helps teachers provide individualized learning experiences and get many administrative tasks done (Brynjolfsson & McAfee, 2014). Concerning the Philippines, the consolidation of technology in schooling has been a cut-and-dry approach of policymakers, with all-around trying out liberating programs like DepEd's "ICT4E" program (De Guzman, 2017). Yet the role of AI in the administration and implementation of Technology and Livelihood Education is still largely unexamined, especially in rural settings.

Specifically, in South Central Mindanao, where the province of South Cotabato is located, there is an emphasis on the conventional mode of educating learners while new technologies remain underutilized. TLE has the potential to boost self-reliance and improve vocational skills, and there is consensus on its desirability. Most studies on the role of AI in education focus only on urban areas, and little information is available on rural areas, including Norala (Marasigan, 2020). Designed to fill this research gap, this article explores the implications of artificial intelligence (AI) for the administration of TLE programs in the region, offering insights on how it can positively impact educational outcomes and prepare students for the workforce of tomorrow.

AI has been explored in the broader education landscape (Baker & Siemens, 2014), yet there is little to no focus on its application to vocational and livelihood-based subject areas such as TLE. In provinces like South Cotabato, the role of AIs in rural areas has yet to be sufficiently explored, particularly a study that stands out or may be harder to implement in this setting. Moreover, little is known about how TLE can be leveraged for livelihood skills development, particularly in local settings with limited resources and technology.

This study found possible method of using AI to administer the Technology and Livelihood Education for the municipality of Norala in South Cotabato, which needs improvement in their educational performance, especially in rural areas where resources are limited and traditional teaching methods may not be effective, is a significant factor that

necessitates innovative approaches that enhanced the quality of education and ensure its relevance and effectiveness to students.

Statement of the Problem

Generally, the study examined the relationship between Artificial Intelligence (AI)-driven management and implementation of Technology and Livelihood Education (TLE) among secondary schools in Norala, South Cotabato, for the school year 2025-2026.

Specifically, this study aims to answer the following questions:

1. What is the extent of **Artificial Intelligence-Driven Management, in terms of**
   - 1.1. AI-based Curriculum Design;
   - 1.2. AI in Resource Allocation;
   - 1.3. AI for Administrative Tasks; and
   - 1.4. AI for Professional Development?
2. What is the extent of the implementation **of Technology and Livelihood Education (TLE) in Norala, in terms of:**
   - 2.1. Curriculum Implementation Effectiveness;
   - 2.2. Student Engagement and Participation;
   - 2.3. Teaching Quality and Methodology; and
   - 2.4. Skills Development and Competency?
3. Is there a significant relationship between the extent of Artificial Intelligence-Driven Management and the extent of the implementation of Technology and Livelihood Education (TLE) in Norala?

METHODOLOGY

Research Design

The study is quantitative, specifically a descriptive-correlational study to determine the relationship between Artificial Intelligence (AI)-driven management and implementation of Technology and Livelihood Education (TLE) among secondary schools in Norala, South Cotabato, for the school year 2025-2026.According to Bhandari (2021), correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. Further, a correlation reflects the strength and/or direction of the relationship between two (or more) variables. The direction of a correlation can be either positive or negative. Correlational research is ideal for gathering data from natural settings. That helps you generalize your findings to real-life situations in an externally valid way.

Respondents of the Study

The respondents in this study were 30 TLE teachers and 7 secondary school heads from the identified secondary schools in Norala District, South Cotabato Division, for the school year 2025–2026.

Teachers were considered the most appropriate respondents since they were directly involved in the planning, delivery, and assessment of the TLE curriculum, making them vital sources of information regarding its implementation and effectiveness. School heads, on the other hand, played a crucial role in administrative oversight, resource allocation, and the integration of

AI-driven management strategies, thus providing essential insights into leadership and management perspectives.

Selecting both teachers and administrators ensured that the study captured a comprehensive view of the instructional and managerial dimensions, aligning with Creswell and Creswell (2021); respondents were chosen based on their direct relevance to the research problem. Furthermore, purposive sampling was consistent with educational research practices since the participants were selected based on their expertise and first-hand experience in the phenomenon under study (Etikan & Bala, 2017; Palinkas et al., 2015).

Sampling Technique

The total sampling technique was used to select seven secondary school heads from the identified secondary schools in Norala, south Cotabato Division for the school year 2025-2026

Total enumeration, also known as census sampling, is appropriate when the population size is relatively small and accessible, allowing researchers to include all members of the population to ensure complete representation (David & Sutton, 2016; Dudovskiy, 2022).

The **Simple Random Sampling Technique** was used to select the 30 TLE teachers from the same schools. The Simple Random Sampling Technique was used to select the 30 TLE teachers from the same schools.

Simple random sampling is one of the most widely accepted probability sampling methods because it gives each member of the population (Taherdoost, 2017; Creswell & Creswell, 2021).

Using this method enabled the study to obtain reliable and generalizable findings on TLE implementation practices while maintaining fairness and objectivity in participant selection.

Research Instruments

This study employed a researcher-made survey questionnaire and a Five-Point Likert Scale evaluated by a panel of experts.

Data Gathering Procedure

To ensure reliable and authentic findings, the researcher adhered to a methodology that aligned with the objectives of the study to determine the relationship between Artificial Intelligence (AI)-driven management and implementation of Technology and Livelihood Education (TLE) in secondary schools in Norala, South Cotabato, for the school year 2025-2026.

Initially, the study's implementation required the endorsement of the DepEd-Division Superintendent and the CGS Dean.

An additional letter of authorization was dispatched to the school principals and to the TLE department head. To ensure the accuracy of the data collected for this study, a survey questionnaire was developed, assessed, and used. The researcher employed a random sampling technique through a self-generated random number table to select participants for the study.

Beforehand, the study had undergone ethical considerations. The researcher sought clearance from the EWMCI Research Ethics Committee (EREC).

Provided that the health protocol was adhered to, the researcher initiated the face-to-face dissemination of the Survey Questionnaire. The data derived from the distributed survey questionnaire were compiled, assessed, and analyzed.

Data Transcription Process

The collected data were presented in tabular form, analyzed, and subsequently interpreted. The statistical techniques outlined in Chapter I were utilized to address the issues.

Initially, the Mean was employed to identify the extent of Artificial Intelligence (AI)-driven management and Technology and Livelihood Education (TLE) implementation among secondary schools in Norala, South Cotabato, for the school year 2025-2026.

On the other hand, Pearson r Correlation was also employed to calculate the relationship between the extent of Artificial Intelligence (AI)- driven management and Technology and Livelihood Education (TLE) implementation among secondary schools in Norala, South Cotabato, for the school year 2025-2026.

Scope and Delimitation

The study examined the relationship between Artificial Intelligence (AI)-driven management and the effective implementation of Technology and Livelihood Education (TLE) among secondary schools in Norala, South Cotabato, during the school year 2025–2026 It specifically involved school administrators and TLE teachers as respondents, as they were the primary stakeholders in the integration and delivery of AI-supported management practices.

The research was conducted in the public secondary schools, employing a quantitative correlational design to determine how AI-driven management influenced the efficiency, effectiveness, and quality of TLE implementation.

Data was collected using standardized survey questionnaires, establishing measurable correlations between the two variables.

The scope was delimited to the context of secondary education in Norala, excluding private schools, other subject areas, and higher education institutions, to provide focused insights on how AI could enhance school management and teaching practices in TLE This delimitation ensured the study's relevance to improving local educational management systems and instructional delivery.

RESULTS AND DISCUSSIONS

Artificial Intelligence (AI) in educational management and implementation has transformed how institutions operate, ensuring high-quality learning experiences for students This study

determined the relationship between Artificial Intelligence (AI)-driven management and the implementation of Technology and Livelihood Education (TLE) in secondary schools in Norala, South Cotabato, for the school year 2025-2026.

Based on the findings, the extent of Artificial Intelligence (AI)-driven maanagement showed a consistently high degree of AI uptake across core management functions, with AI-based curriculum design (M = 4.57 and AI for professional development (M = 4.57) scoring at the very greatest extent and AI applications in resource allocation and administrative tasks following closely behind (both M = 4.37), producing an overall mean that likewise indicates very great integration (M = 4.30).

Further, findings show very high mean scores (4.40–4.63) across all domains of Technology and Livelihood Education (TLE) implementation in Norala, suggesting that the program is being implemented with strong fidelity and effectiveness.

The overall grand mean of 4.51 ("Very Highly Implemented") indicates that stakeholders perceive the TLE curriculum as well executed across Curriculum Implementation Effectiveness, Student Engagement and Participation, Teaching Quality and Methodology, and Skills Development and Competency.

Furthermore, the Pearson's r value of 0.89 indicates a very strong positive and highly significant relationship between the Extent of Artificial Intelligence (AI)-Driven Management and the Level of Implementation of Technology and Livelihood Education (TLE) in Norala District. This suggests that as schools integrate AI tools and systems to a greater extent—particularly in curriculum design, resource allocation, administrative automation, and teacher professional development, the implementation of TLE tends to become more effective, structured, and responsive to student needs.

Conclusion

The following conclusions were made considering this study's findings:

First, Norala district prioritized AI not only for back-office efficiency (scheduling, grading, attendance resource planning) but also for pedagogical design and staff capacity building — a balance that suggests an institutional strategy linking instructional innovation with operational modernization.

Second, the TLE program in Norala served as a model for other schools seeking to strengthen livelihood education, and supports the argument that TLE, when implemented at high standards, can meaningfully enhance students' practical skills and employability.

Third, Norala District benefited greatly from AI-driven management practices. The more AI is utilized in planning, administration, and teacher support, the more effectively TLE is implemented.

Recommendations

In light of the findings of the study, the following were recommended:

1. DepEd (Central, Regional, and Division Offices) may develop and institutionalize an AI Integration Framework for TLE, ensuring standard guidelines for AI-based curriculum design, resource allocation, and competency assessment.
2. District Supervisors & School Administrators may create an AI Readiness and Capacity-Building Plan for all TLE teachers, including hands-on training, AI tool familiarization, and continuous monitoring of AI implementation gaps.
3. TLE Teachers may integrate AI-assisted instructional strategies such as automated skills assessment, simulation-based learning, and AI-guided performance feedback into TLE lessons.
4. Future Researchers may investigate the long-term effects of AI-driven management on student competencies, teacher workload, and equity among low-resources schools.

Compliance with Ethical Standards

In preparation for implementation, all the plans and recommendations were presented to East-West Mindanao Colleges Inc to ensure compliance with prescribed procedures and protocols.

Within the context of the research on examining the extent of Artificial Intelligence (AI)-driven management and level implementation of Technology and Livelihood Education (TLE) among secondary schools Norala, South Cotabato, for the school year 2025-2026, it was imperative to emphasize the paramount importance of ethical considerations.

Before commencing this study, the following ethical principles were highlighted:

Informed Consent:

Before participation, consent was obtained from all school heads involved in the study. They must possess a comprehensive understanding of the study's objectives, methodologies, potential risks, and benefits. Furthermore, participation remained entirely voluntary, allowing the participants to withdraw from the study at any juncture without adverse consequences.

Anonymity and Confidentiality:

To safeguard the identities and responses, rigorous measures were put in place to ensure anonymity and confidentiality. Rather than using actual names, pseudonyms or codes were used to uphold the participants' privacy. The collected data was securely stored with access restricted solely to the research team.

Avoiding Harm:

Delicate subjects, such as the challenges inherent in their roles, were discussed with meticulous consideration for the potential emotional and psychological impact on the participants. Strategies were in place to minimize distress, and a support system was readily available to assist participants should the need arise.

Researcher-Participant Relationship:

The researcher maintained a professional and respectful rapport when engaging with the school heads.

Any actions that may harm the participants were scrupulously avoided, ensuring their utmost dignity and respect throughout the research process.

Data Protection:

Adherence to data protection regulations and laws was followed to safeguard the participants' personal information. Stringent measures were employed to ensure the secure storage and transmission of data.

Voluntary Participation:

Participants were assured that their involvement in the study was voluntary, devoid of any coercion or external pressure.

Researcher Bias:

The researcher remained vigilant regarding potential biases that might influence data collection and analysis, upholding objectivity and transparency throughout the research endeavor.

Institutional Approval:

Before initiating the study, the researcher sought ethical clearance from the pertinent institutional review boards or ethics committees.

Honesty and Integrity:

The research findings were reported truthfully and accurately, free from manipulation or distortion to align with preconceived notions or biases.

Beneficence:

The potential benefits of the research in educational practices and policies were thoughtfully considered, ensuring that the study contributes to the education system.

Cultural Sensitivity:

The researcher demonstrated cultural sensitivity by respecting local customs, beliefs, and practices within the research setting, refraining from imposing external values on participants.

Inclusion and Diversity:

The study's structure prioritized inclusivity and diversity, encompassing a wide spectrum of Artificial Intelligence (AI)-driven management in the implementation of Technology and Livelihood Education (TLE) in secondary schools in Norala, South Cotabato, for the school year 2025-2026.

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AI Tools Declaration

I do hereby declare the use AI tools, such as Chat GPT and Grammarly for grammar checking and sentence organization purposes only.

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