ESTABLISHING A RESEARCH-ORIENTED CULTURE IN TECHNICAL-VOCATIONAL EDUCATION TO FOSTER INDUSTRY INNOVATION AND PROBLEM SOLVING

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One of the prevalent misconceptions shaping school cultures and student mindsets is that research is reserved exclusively for those in STEM, ABM, HUMSS, and other academic tracks. This perception has led to the belief that students in technical vocational education should focus solely on mastering practical skills prioritized in their respective fields of study. However, this divide, often seen as a deliberate focus on specialized learning, ultimately proves disadvantageous. This is because knowledge and skills must go hand in hand, and industries require professionals who are both seekers of knowledge and masters of their craft. Technical vocational education, which primarily emphasizes skill development while offering limited opportunities for research and knowledge advancement, may contribute to the scarcity of truly impactful and accessible innovations.

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Visiting the MATATAG EPP/TLE/TVL Curriculum goals for Grades 4 to 10 reveals a clear and deliberate emphasis on developing certifiable and relevant skills while guiding students toward their desired career paths. Although knowledge enhancement is cited as one of the curriculum's goals, the term research appears only in its conceptual framework. While prioritizing skill development seems intuitive, it is equally important to reconsider the critical role of research in fostering student growth and learning and driving global progress through knowledge and innovation. To move beyond the existing culture of confining technical vocational education students to narrowly defined domains, we must reshape the experiences and mindsets shaped by the current curriculum design. This reimagining involves integrating opportunities for exploration

and inquiry, ensuring that TVE graduates contribute to the world as skilled practitioners and innovative thinkers.

This reality in classrooms and school cultures underscores the gap between how research is emphasized in the curriculum and how it is implemented. For instance, one of the career and business opportunities for aquaculture and fisheries students is to become a research officer, yet integrating research into their education remains superficial. Similarly, research is listed as a skill to be developed among ICT and Family and Consumer Science (FCS) students, but its application is limited and lacks depth. In ICT, research skills are focused on tasks such as detecting fake news and assessing credibility—important, yet insufficient to develop a robust research foundation. For FCS students, research is mentioned primarily in the context of developing recipes, which reduces its scope to a supplementary tool rather than a core component of the learning process. This superficial integration reflects a lack of prioritization, framing research as merely an accessory to skill development rather than a central element. To address this, the curriculum must be restructured to position research as a fundamental aspect of mastering their crafts and a necessity for effectively navigating and contributing to their respective fields. Such an approach would empower students to excel in their specializations and drive innovation and progress in their industries.

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This challenge is evident in technical vocational schools like the Bataan School of Fisheries in Orion, Bataan. Renowned as a pioneer in programs, facilities, and practices aimed at cultivating excellent professionals, the school offers diverse specializations across the four components of TLE, starting from Grade 7. These include fundamentals of Information and Communications Technology (ICT), aquaculture, fish capture, food and beverage processing under Agriculture and Fishery Arts (AFA), and garment-making under Family and Consumer Science (FCS) for junior high school students. The school offers programs such as Computer Systems Servicing, Aquaculture, Fish Capture, Food Preparation, and Garments for senior high school students. However, consistent

with the widespread misconception, these subjects—and the students specializing in them—are often taught with minimal emphasis on research. In extreme cases, senior high school research proposals and defenses showcase impressive products but fail significantly in the quality of the accompanying research papers. This disparity highlights a critical issue: while students demonstrate innovation through practical outputs, they struggle to articulate and document their ideas effectively due to an insufficient focus on developing research skills. This issue becomes a prevalent challenge when these students transition to academic career paths or pursue higher education, leaving them at a significant disadvantage due to the missed opportunity to develop essential research skills.

Teaching technical vocational skills and concepts presents diverse opportunities to integrate research and essential skills. These opportunities may include conducting research to address challenges in various fields, such as food or fish spoilage, the misuse of AI, issues in fish culture practices, or developing more sustainable solutions for managing garment scraps. Engaging in such endeavors not only enhances students' research abilities but also strengthens their practical skills and competencies as they apply their expertise to solve real-world problems. Additionally, pairing students who struggle with writing research papers with those in academic tracks excelling in this area can create a collaborative learning environment. This approach allows students to learn from each other's strengths while breaking down the barriers perpetuated by misconceptions. It fosters mutual growth and a deeper appreciation of the interplay between research and technical expertise.

Denying technical vocational students, the opportunity to master research knowledge and skills perpetuates a culture of misconception, suggesting that they should focus solely on what they are presumed to excel at. While it is understood that skill development is a priority, it is equally important to aim for the holistic development of

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individuals. Students should be empowered to contribute to their fields through service and generating knowledge and driving innovation.

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