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Class Struggles in Technology Education: A Marxist Analysis of Access and Equity in Philippine Higher Education

¹ Clegine V Madriaga, ² Avelina C Visaya
1, 2 College of Graduate Studies, Don Mariano Marcos Memorial State University, Mid La Union Campus, Philippines

Corresponding Author: **Clegine V Madriaga**

Abstract
Using a Marxist analytical lens, this study investigates class-based disparities that influence access to technology education in the Philippines. It uses a qualitative meta-synthesis of fifteen peer-reviewed research published between 2019 and 2025 to examine how economic, institutional, and ideological frameworks influence educational equity in higher education. The findings focus on four major themes: class and access, institutional inequity, ideological reinforcement, and digital alienation and resistance. The findings reveal that socioeconomic status has a major impact on technology access, with students at public universities experiencing bigger digital and material disadvantages than those at private institutions. Meritocratic narratives frequently justify inequality by attributing success to personal effort rather than institutional privilege. However, community-based digital literacy projects and collaborative learning techniques show new forms of resistance. The study concludes that technology education both reproduces and challenges class hierarchies, emphasizing the need for equitable funding, inclusive digital policies, and critical pedagogy.

1. Introduction
The advancement of technology education is an important component of modern educational institutions, with a significant impact on higher education around the world. Technology and education are frequently viewed in the Philippines as tools for national development and international competitiveness (Sharma *et al*., 2024) [17]. However, these perspectives tend to overlook ongoing disparities within the system. Access to high-quality technology education is unequal, primarily influenced by social class and economic condition. For example, digital resources and student participation varied significantly in Philippine universities. Students from affluent homes and metropolitan locations typically learn digital skills more quickly, allowing them to participate more actively in their schoolwork and school activities (Selwyn *et al*., 2023) [16]. Public universities and colleges frequently serve low-income students, but they confront problems such as tight finances, obsolete facilities, and fewer partnerships. Private and well-funded institutions, on the other hand, benefit from superior infrastructure and global networks, allowing them to be at the forefront of innovation and research. These situations demonstrate how socioeconomic differences continue to influence who gets access to technology education and who falls behind.

From a Marxist perspective, this predicament represents the larger capitalist system, in which education serves to maintain existing social structures rather than create genuine social change. Marx's concept of class conflict and Althusser's concept of the intellectual state apparatus demonstrate that schools and universities are not neutral spaces; rather, they play a role in maintaining dominant power dynamics. Similarly, Bourdieu's theory of cultural capital explains how students from higher socioeconomic backgrounds benefit from inherited resources such as language proficiency, digital competence, and social networks that are consistent with institutional standards. In contrast, students from underrepresented groups frequently struggle to satisfy these expectations because they lack the same types of wealth. In Philippine higher education, while technology education is often presented as a tool for national development and innovation, it also reproduces social inequalities by favoring those with greater access to economic and cultural resources.

This study looks at how class tensions influence access and fairness in technology education in the Philippines. It investigates how institutional, economic, and ideological factors shape the distribution of technical learning possibilities among students from various socioeconomic origins. The study, guided by Marxist theory, tries to identify the power dynamics that maintain

inequality in technological education, as well as to provide a critical perspective of how higher education operates in a capitalist setting.

The study focuses on four key areas: (1) how social class and economic disparities affect access to technology education; (2) the differences in resources, facilities, and opportunities between public and private higher education institutions; and (3) a Marxist analysis of existing research on access and fairness in technology education. The study's goal is to teach policymakers, educators, and administrators about how to address class-based impediments in education. It also correlates with the United Nations Sustainable Development Goals, including SDG 4 (Quality Education) and SDG 10 (Reduced Inequalities), by encouraging inclusive and equitable access to educational opportunities for all.

2. Methodologies
Research Design
This study used a qualitative meta-synthesis to examine and synthesize current research on access, equity, and class concerns in technology education. A meta-synthesis is appropriate because it goes beyond mere data collecting and seeks to reinterpret findings in a theoretical perspective (Thorne, 2022) [18]. This strategy allows for the detection of patterns, paradoxes, and deeper insights in diverse study findings, notably those concerning educational inequality in the Philippine higher education sector. Qualitative meta-syntheses have recently acquired popularity in education and social science research because they allow for higher-level interpretation and theory-based findings (Mantero *et al*., 2021) [13]. This approach aims to investigate how class structures and ideology systems influence fair access to technology education.

Theoretical Orientation
The study is based on the idea that qualitative meta-synthesis might provide valuable insights into how education institutions can perpetuate social inequality in capitalist nations. The research used Thorne's (2022) [18] and Moser and Korstjens' (2023) [15] frameworks to identify, assess, and integrate relevant qualitative studies in order to establish new theoretical interpretations. Rather of gathering raw data, the study analyzed previously published studies to identify patterns and linkages that could explain how ideological and socioeconomic pressures shape educational possibilities in technology education.

Data Sources and Search Strategy
The study examined peer-reviewed literature published between 2019 and 2025 to ensure that the findings were relevant and timely. The search used academic databases such as Google Scholar, Scopus, ERIC, Web of Science, and CHED-accredited periodicals including the Philippine Journal of Education and the Asia Pacific Journal of Education. In addition, policy documents from the Commission on Higher Education (CHED) and the Technical Education and Skills Development Authority (TESDA) were reviewed to contextualize institutional policies and ideological frameworks influencing technology education in the Philippines. Boolean operators (e.g., AND, OR) and truncation techniques (e.g., education, inequal) were used to find studies that specifically addressed access,

equality, and class concerns in higher or technological education.

Inclusion and Exclusion Criteria
To ensure relevance and scientific consistency, certain inclusion and exclusion criteria were used. Studies were included if they were: (a) qualitative or mixed-methods in design, (b) focused on socioeconomic disparities or access to education, (c) performed in the Philippines or comparable ASEAN countries, and (d) published between 2019 and 2025. Studies were eliminated if they were solely quantitative, had no connection to technology or higher education, or did not address concerns of fairness and socioeconomic class.

Quality Appraisal of Studies
To ensure methodological rigor, the selected papers were assessed using established appraisal methodologies. The researchers used checklists from the Critical Appraisal Skills Programme (CASP) and the Joanna Briggs Institute (JBI) to evaluate each study's credibility, validity, and transferability. Furthermore, the synthesis adhered to the reporting criteria stated in Enhancing Transparency in Reporting Qualitative Research Synthesis (ENTREQ), which enhances the transparency and reliability of qualitative synthesis procedures, as noted by Moser and Korstjens (2023) [15].

Data Extraction and Thematic Synthesis
The data extraction process entailed identifying key information from each selected study, such as the author, year of publication, research methods, participant characteristics, and main conclusions. The data were then analyzed using a thematic synthesis approach. The analysis was conducted in three stages: initial coding of research findings, grouping of codes into descriptive themes, and development of analytical themes that went beyond the original studies. This approach was based on the model proposed by Thomas and Harden, as cited in Moser and Korstjens (2023) [15]. This methodical approach enabled the study to yield deeper conceptual insights on the dynamics of access and inequality in technology education.

Analytical Framework
The coding and interpretation of themes were informed by Karl Marx's theoretical perspective on class relations, capitalism, and ideology. Using this lens, the analysis investigated how technology education might serve as both a vehicle for perpetuating social inequities and a possible location of resistance to dominant ideological frameworks. Reflexive meowing was used throughout the analysis to maintain transparency and awareness of the researcher's interpretive role in the synthesis process.

Trustworthiness and Ethical Considerations
To improve the credibility and dependability of the findings, multiple validation procedures were used. An audit trail chronicled every step of the research process, including study selection, coding decisions, and topic development. Peer review with academic colleagues was done at important stages to improve analytical interpretations. Furthermore, triangulation across research, locations, and participant groups ensured that the conclusions represented varied perspectives rather than isolated opinions. The use of

known assessment and reporting techniques (CASP, JBI, and ENTREQ) strengthened methodological rigor. Because the study was based exclusively on publicly available scholarly sources, official ethical approval was not required; however, careful adherence to correct citation, attribution, and academic integrity was maintained throughout the research process.

3. Results and Discussion
A meta-analysis of fifteen research published between 2019 and 2025 identified four significant themes that explain how class dynamics influence access to technology education in the Philippines. Using thematic coding and cross-study comparison, common topics such as financial hurdles, institutional resource inequities, meritocratic discourse, and digital exclusion were discovered. Interpreting these data from a Marxist viewpoint reveals how technology education mirrors broader socioeconomic processes and perpetuates class-based inequities.

The analysis was carried out in accordance with the methodology's five-phase Meta synthesis technique. Each study's findings were coded and organized into thematic groups using NVivo-assisted analysis. Financial restrictions, technological access disparities, digital capital inequalities, and meritocratic discourse were all understood using Marxist notions like class structure, ideological reproduction, and digital alienation. Table 1 highlights the studies that helped shape the topics.

Table 1: Distribution of Studies by Thematic Contribution

Author (Year)	Context	Main Focus	Thematic Contribution
De Guzman & Dela Cruz (2021) [7]	SUCs, North Luzon	Financial inequities in access	Class structure, economic inequality
Castro & Tumapon (2023) [5]	Philippine HEIs	Digital divide post-pandemic	Digital alienation
Selwyn et al. (2023) [16]	Urban universities	Digital capital and belonging	Class structure, ideological apparatus
Bernardo (2021) [2]	Psychology of meritocracy	Meritocratic ideology	Ideological apparatus
Deng & El Hag (2024) [8]	Underserved colleges	Two-level digital divide	Digital alienation
Gilpa (2025) [11]	Local governance	Educational resistance practices	Resistance and transformation

Class Structure and Access to Technology Education
According to the summary, socioeconomic status continues to play an important role in determining access to technology education. Students from economically disadvantaged backgrounds frequently face challenges such as the high cost of digital gadgets, unreliable internet connectivity, and insufficient institutional assistance. These issues are especially visible in state universities and colleges, where technical resources are frequently limited in comparison to private schools (De Guzman & Dela Cruz, 2021) [7]. From a Marxist standpoint, access to technology is a type of economic capital that influences participation in modern schooling. Students from better socioeconomic backgrounds often have more exposure to digital technology, which allows them to build stronger technological competences and academic achievement (Selwyn et al., 2023) [16]. As a result, technological

education may unintentionally perpetuate socioeconomic inequality if access to learning resources remains uneven.

Institutional Inequality in Resource Distribution
The analysis also found significant differences between public and private higher education schools. Many state universities and colleges are underfunded, have obsolete laboratories, and lack adequate digital infrastructure. In contrast, private colleges frequently benefit from business partnerships, international collaborations, and cutting-edge technological facilities that enable technology-based learning (Challenges and Dilemmas of Digitalization in Philippine Education, 2023) [6]. These disparities highlight how institutional resources impact educational quality and student opportunity. Institutions with more financial resources can provide sophisticated laboratories, digital learning platforms, and industry connections, helping students improve their technology abilities. In contrast, under-resourced institutions confront structural constraints that hinder their ability to keep up with technology advances.

Table 2: Illustrative Codes and Themes: Institutional Disparities

First-Level Codes	Descriptive Sub-Themes	Analytical Theme
"Outdated labs," "no Wi-Fi," "limited LMS"	Infrastructure gaps	Institutional inequality
"Corporate funding," "foreign partnerships"	Capital advantage	Institutional inequality
"Faculty shortage," "maintenance backlog"	Resource strain in SUCs	Reproduction of class advantage

Ideological Reproduction Through Meritocracy
The synthesis also identified the significance of meritocratic discourse in promoting attitudes toward educational justice. Narratives that emphasize hard work, dedication, and talent frequently depict academic success as the consequence of personal effort. However, such tales may hide underlying disparities affecting students from underserved communities. According to research, a strong belief in meritocracy is connected with increased acceptance of inequality (Bernardo, 2021) [2]. From a Marxist perspective, meritocracy serves as an ideological process that legitimizes unequal outcomes by attributing them to personal ability rather than structural factors. In technology education, this rhetoric may exacerbate inequality by ignoring gaps in access to technological resources.

Digital Alienation and Emerging Forms of Resistance
The digital divide is another significant source of inequality in technology education. During the COVID-19 pandemic, differences in device ownership, internet connectivity, and digital infrastructure hampered students' ability to engage in online learning (Castro & Tumapon, 2023; Deng & El Hag, 2024) [5, 8]. This phenomenon might be described as digital alienation, in which pupils are alienated from technological systems required for educational involvement. Technology education, which is frequently considered as a means to economic mobility, may promote marginalization if access to digital tools remains commodified. Despite these limitations, the synthesis found new kinds of resistance. Community-based digital literacy efforts, peer-learning networks, and local educational programs have all tried to overcome technological inequities (Gilpa, 2025) [11]. These

efforts demonstrate that collective action and community engagement can mitigate structural barriers and create alternative opportunities for technological learning.

Implications for Policy and Educational Practice
The findings emphasize the need for policies that encourage fair access to technology education. Improving digital infrastructure in public universities, improving access to cheap devices and internet connectivity, and increasing investment in technology facilities are all critical measures toward reducing educational inequality. Educational institutions should also develop inclusive digital transformation initiatives that benefit students from underserved communities. Faculty training in digital pedagogy, open-access learning platforms, and community partnerships may all contribute to further democratization of technology education. The findings imply that technology education in the Philippines is shaped by broader socioeconomic systems that influence access, opportunity, and engagement. To address these discrepancies, policymakers, educational institutions, and communities must work together to guarantee that technological learning promotes social inclusion rather than perpetuating class divisions.

4. Conclusion
The discussion demonstrates that technology education in the Philippines serves as both a means for maintaining existing social structures and a potential channel for opposition. It maintains class inequities through economic and ideological institutions, but it also provides potential for transformation when viewed critically. From a Marxist standpoint, the data imply that meaningful educational advancement necessitates attacking the structural causes of inequality rather than treating its symptoms. Technology education should not only prepare students for the labor market, but should also promote social justice, equity, and collective empowerment.

5. References

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