INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH
2025, Vol. 6, No. 10, 5232 – 5249
http://dx.doi.org/10.11594/ijmaber.06.10.30

Research Article

Integrating Technological Advancements to Improve Pedagogical Quality in Drafting Technology

Aileen H. Abelgos, Dolly P. Maroma, Allen N. Maroma*

Graduate School, Bulacan State University, Philippines

Article history:
Submission 02 September 2025
Revised 31 September 2025
Accepted 23 October 2025

**Corresponding author:*
E-mail:
maromaallen15@gmail.com

ABSTRACT

The accelerating demands of the Fourth Industrial Revolution (4IR) highlight the need to integrate technological advancements in education, particularly in technical-vocational fields like Drafting Technology. This study employed a descriptive-survey design to assess the competencies, pedagogical practices, and institutional support mechanisms of 35 Drafting Technology faculty members. Results indicated that while faculty displayed strong teaching commitment, subject matter expertise, and capacity to promote independent learning, gaps remained in professional certifications, industry immersion, and access to adequate facilities. Respondents reported active engagement in curriculum review and affective support for students; however, challenges included outdated equipment, limited modern laboratory resources, and uneven credentialing. These findings suggest the importance of continuous faculty development programs to strengthen technological proficiency, pedagogical adaptability, and industry alignment. In response, a one-year Drafting Technology Faculty Development Program was proposed, emphasizing advanced software training, industry immersion, and capacity-building initiatives.

Keywords: *Drafting Technology, Teacher Professional Development, Technological Integration, Education 4.0, Technical-Vocational Education, Sustainable Development, Quality Education, Decent Work and Economic Growth, Industry, Innovation, and Infrastructure*

Introduction

The accelerating pace of the Fourth Industrial Revolution (4IR) is transforming industries, societies, and education systems globally. Characterized by rapid developments in artificial intelligence, automation, robotics, and digital technologies, this era calls for a reconfiguration of educational approaches to prepare learners for complex, technology-driven environments (Schwab, 2018). The emergence of

How to cite:
Abelgos, A. H., Maroma, D. P., & Maroma, A. N. (2025). Integrating Technological Advancements to Improve Pedagogical Quality in Drafting Technology. *International Journal of Multidisciplinary: Applied Business and Education Research*. *6*(10), 5232 – 5249. doi: 10.11594/ijmaber.06.10.30

Education 4.0, a model that aligns educational practices with the demands of 4IR, underscores the need for competency-based, learner-centered, and digitally integrated instruction (Liao et al., 2017).

Teachers are now expected to serve as facilitators of deep learning who leverage digital tools to personalize instruction and enhance student engagement. This shift is especially critical for Generation Z learners, who are inherently digital natives and prefer interactive, visual, and technology-mediated learning environments (Seemiller & Grace, 2016). Consequently, the ability to integrate technological advancements into pedagogy is increasingly viewed as a key determinant of instructional quality (Punie, 2017).

In the Philippines, the Commission on Higher Education (CHED) has institutionalized these changes through outcome-based educational reforms. CHED Memorandum Order No. 79, series of 2017, mandates competency-based curricula for teacher education programs, including the Bachelor of Technical-Vocational Teacher Education (BTVTEd). This framework places a strong emphasis on technological proficiency and pedagogical innovation as core competencies for future educators. Within this context, Drafting Technology stands out as a discipline that demands high-level technical skills and digital fluency, particularly in the use of Computer-Aided Drafting and Design (CADD), 3D modeling, and graphic visualization tools (Boholano, 2017).

However, despite these policy directives, numerous challenges remain. Many Drafting Technology instructors report limited familiarity with emerging digital tools or reluctance to transition from traditional drawing methods to more sophisticated software applications (Getenet, Cantle, Redmond, et al., 2024).

Teachers often hesitate to adopt new tools due to limited training, outdated facilities, and a lack of consistent professional development (Desimone, 2009). Such conditions hinder educators' ability to deliver industry-relevant instruction, ultimately affecting student preparedness for the workforce.

While existing studies underscore the importance of digital integration in technical-vocational education, they often fall short of addressing the specific institutional and pedagogical barriers that faculty encounter. Much of the literature has focused on student outcomes or broad curriculum reforms, overlooking the constraints teachers face in practice—such as limited certification opportunities, insufficient laboratory facilities, and uneven exposure to industry practices.

To address this gap, the present study centers on the competencies, pedagogical practices, and institutional support systems of Drafting Technology faculty. By examining both strengths and deficiencies in these areas, the research offers a grounded account of the challenges shaping classroom instruction. In doing so, it contributes practical insights and proposes a structured faculty development program that directly responds to the needs of educators and enhances alignment with industry expectations.

Moreover, universities and training institutions face mounting pressure to adapt their teaching systems to match the realities of digital learning environments. Effective integration of technology requires not only technical proficiency but also instructional design that supports active learning, critical thinking, and real-world application (Mishra & Koehler, 2006). The development of these skills demands institutional investment in digital infrastructure, capacity building, and a culture of innovation among faculty members (Komarraju, 2017).

Thus, the quality of teaching in Drafting Technology must be understood as a dynamic construct—one that encompasses digital competence, pedagogical adaptability, and continuous learning. This study aims to explore how integrating technological advancements can improve pedagogical quality among Drafting Technology educators. Specifically, it seeks to identify the opportunities, challenges, and strategic interventions necessary to enhance teaching effectiveness and ensure alignment with the demands of Education 4.0.

Methodology

A descriptive-survey design was applied to assess the Drafting Technology program at Bulacan State University, with specific attention to faculty competencies, pedagogical practices, and institutional support mechanisms. The

descriptive design was chosen for its ability to systematically capture prevailing conditions, practices, and challenges through quantitative data, which is particularly useful in educational research aiming to inform program development and policy (Creswell & Creswell, 2018; Fraenkel, Wallen, & Hyun, 2019).

Guided by a quantitative research approach, the investigation was structured around two principal objectives. The first was to assess the teaching competencies of faculty members based on the national standards outlined in CHED Memorandum Order No. 79, series of 2017, complemented by input from industry practitioners. The second aimed to identify current initiatives by teachers that promote quality instruction, alongside administrative support structures that facilitate or hinder these efforts. These objectives were intended to produce actionable insights into how technological integration and faculty development could be better aligned with the demands of Education 4.0.

The study population consisted of thirty-five (35) Drafting Technology faculty members from the College of Industrial Technology at Bulacan State University, spanning the main and external campuses, along with relevant department heads. A total population sampling technique was employed, given the relatively small and accessible size of the faculty cohort. This method ensured comprehensive data collection and minimized the risks associated with sampling bias (Etikan, Musa, & Alkassim, 2016).

Data were gathered using a structured and modified questionnaire, adapted from a previously validated instrument used in competency-based educational research (Komarraju et.al, 2011). The instrument was divided into two major parts. The first section collected demographic information, including age, gender, civil status, highest educational attainment, years of teaching and industry experience, and TESDA certifications. The second section focused on teaching competencies, covering five core areas: teaching commitment, subject matter expertise, promotion of independent learning, management of instruction and assessment, and learning environment management. These areas reflect essential domains of pedagogical practice in technical-vocational education. Responses were captured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), allowing for standardized evaluation of teacher perceptions and behaviors.

Prior to deployment, the instrument was subjected to expert validation by professionals in the fields of instructional design and technical-vocational education to ensure the relevance and clarity of the questionnaire items. The research team obtained formal authorization from university administrators, and ethical standards were strictly followed throughout the data collection process. Participants received informed consent forms, and confidentiality and voluntary participation were emphasized in line with best practices in ethical educational research (Babbie, 2020).

The data were processed using descriptive statistical techniques. Frequency and percentage distributions were used to analyze respondents' demographic characteristics, while weighted mean and standard deviation were employed to interpret perceptions of teaching competencies. To further clarify the degree of adequacy in specific competency areas, the study used the following interpretive scale: 4.20–5.00 as Very Adequate, 3.40–4.19 as Adequate, 2.60–3.39 as Moderately Adequate, 1.80–2.59 as Less Adequate, and 1.00–1.79 as Not Adequate. The findings generated from this analysis were used to inform the development of a targeted Drafting Technology Faculty Development Program, with the goal of promoting instructional excellence and technological integration aligned with industry and policy standards.

Results and Discussion

The data collected from Bulacan State University's Drafting Technology instructors, both on the Main and External Campuses, during the 2020–2021 academic year, is presented and interpreted in this chapter. The study's main goal is to identify strategies to improve the caliber of instruction in drafting technology. It starts by looking at the respondents' personal and professional profiles, which include their age, gender, civil status, highest level of education, industry immersion, seminars and training

they have attended, ratings from the Licensure Examination for Teachers (LET), and talents or skills they have identified. These traits are crucial for comprehending the teachers' professional backgrounds and areas in need of development.

Based on five indicators commitment to teaching, subject-matter expertise, encouragement of self-directed learning, learning management, and utilization of learning facilities and environments- the second section of the results examines the respondents' teaching competencies. The final section talks about the several efforts instructors have made to support high-quality instruction, such as creative approaches and ongoing professional development. The administration's support systems, including training, scholarships, and access to modern facilities, are highlighted in the fourth part. A suggested faculty development program designed to fill the deficiencies and raise overall teaching efficacy in the field of drafting technology is presented in the conclusion.

Table 1. Frequency Distribution and Percentage Distribution of the Personal and Professional Profile of the Teacher Respondents

Variable		Frequency	Percentage
Age (years)	23 – 32	9	26
	33 – 42	8	23
	43 – 52	8	23
	53 – 62	8	23
	63 and above	2	5
	Mean Age = 43.5		
Gender	Male	25	71
	Female	10	29
Civil Status	Single	9	26
	Married	26	74
Educational Attainment	Ph.D./Ed.D	4	11
	MA/MS with Doctoral units	4	11
	MA/MS	4	11
	BS with MA/MS units	19	56
	BS	4	11
Relevant Immersions/Seminars/Trainings Attended	Yes	18	51
	No	17	49
TESDA NC Holders	Yes	20	57
	No	15	43
PBET/LET Passers?	Yes	17	49
	No	18	51
Talent/Skills	Painting/ drawing	16	46
	Manual / mechanical drafting/ auto cad	7	20
	driving	1	3
	3D modeling	2	6
	Singing	3	8
	Diorama	1	3
	None	5	14

Table 1 shows the findings of the demographic and professional profiles of the Drafting Technology faculty at Bulacan State University reveal a competent yet unevenly qualified instructional workforce. The moderate level of experience, with a mean age of 43.5

years and the majority being married and male, suggests a relatively stable faculty base. However, significant disparities in professional credentials particularly in TESDA certification and licensure status highlight critical gaps in qualifications. With 49% of respondents lacking TESDA National Certificates and 51% not licensed via PBET/LET, the results point to a pressing need for targeted institutional interventions that prioritize professional credentialing and continuous upskilling (UNESCO-UNEVOC, 2020; Ogbuanya, & Shodipe, 2022)

These gaps in qualifications and certifications, while not unusual in technical-vocational contexts in developing nations, underscore the importance of aligning teacher capabilities with both national standards and industry demands (CHED, 2017; Fiel & Sermona, 2024). Although more than half of the faculty reported participation in relevant trainings and seminars, the data also show underutilization of faculty talents particularly among those with drawing, painting, and CAD skills. This variation in background and specialization presents a dual challenge and opportunity: it reflects a diverse foundation upon which to build, but also a fragmented professional landscape that could limit pedagogical consistency and curriculum delivery (Darling-Hammond et al., 2017).

The findings suggest that while the faculty possess essential core competencies and professional commitment, the inconsistency in certifications and training participation necessitates a systematic faculty development program. Such a program should be aimed at enhancing licensure attainment, expanding TESDA certification, reinforcing industry immersion, and leveraging individual talents for instructional innovation (Schleicher, 2018). This approach not only supports compliance with CHED standards but also contributes to the broader goal of improving the pedagogical quality and relevance of Drafting Technology education in the context of the Fourth Industrial Revolution.

Teaching Skills of the Drafting Technology Teachers

Commitment. The frequency and descriptive measures of the assessment of the teacher-respondents regarding the adequacy of their commitment are presented in Table 2.

Table 2 Frequency Distribution and Descriptive Measures of the Adequacy of Teachers' Commitment

No.	Indicators	1	2	3	4	5	Mean	Descriptive Interpretation
1	The teacher recognizes student strengths and weaknesses	0	0	0	6	29	4.83	Very Much Adequate
2	The teacher shows concern in a student as a person	0	0	0	6	29	4.83	Very Much Adequate
3	The teacher integrates learning objectives with the student's objectives in a collaborative process	0	0	3	9	23	4.31	Adequate
4	The teacher participates in collaborative efforts to address students' or class problems.	0	0	3	7	25	4.63	Very Much Adequate
5	The teacher makes himself/ herself available for consultation even beyond the official time	0	0	3	11	21	4.51	Very Much Adequate
6	The teacher show sensitivity to individual student's need	0	0	0	7	28	4.80	Very Much Adequate
7	The teacher begins and ends the class promptly and unless obstructed by highly valid reasons	0	0	3	13	19	4.46	Adequate

No.	Indicators	1	2	3	4	5	Mean	Descriptive Interpretation
8	The teacher assists in coordinating students' needs with a legitimate group inside and outside of the campus	0	0	5	12	18	4.37	Adequate
9	The teacher provides supplemental resources to facilitate teaching-learning activities	0	0	3	8	24	4.60	Very Much Adequate
10	The teacher displays continuous enthusiasm in the acquisition of knowledge and skills	0	0	0	10	25	4.71	Very Much Adequate
	Weighted Mean						**4.60**	**Very Much Adequate**

The results indicate that faculty members in the Drafting Technology program exhibit strong professional commitment, as evidenced by the overall mean score of 4.60, interpreted as "Agreed." The highest mean score (4.83) on teachers' awareness of students' strengths and their concern for students as individuals suggests a strong culture of care and personalized support. This finding aligns with the principles of learner-centered pedagogy, which highlight the importance of emotional intelligence, empathy, and responsiveness in enhancing student engagement and academic success (Darling-Hammond et al., 2005; Cornelius-White, 2007). In the context of Drafting Technology, integrating technological advancements not only improves technical instruction but also supports a more student-focused learning environment. For example, digital drafting tools and interactive software allow instructors to tailor feedback, encourage independent exploration, and adapt lessons to diverse student needs.

By linking emotional responsiveness with technological integration, the study underscores that effective pedagogy in Drafting Technology is not limited to technical proficiency alone. Rather, it requires a balance of technological competence and interpersonal sensitivity. This dual focus ensures that while students gain industry-relevant digital skills, they also benefit from an engaging and supportive classroom climate that promotes confidence, collaboration, and lifelong learning.

Teachers' willingness to provide support beyond formal instructional hours reflects a strong dedication to student development, reinforcing the role of affective commitment in teaching effectiveness (Yuan & Lee, 2016).

However, the lowest-rated item, teachers' integration of student objectives into the learning process (mean = 4.31), identifies a critical area for pedagogical enhancement. While still within the "Adequate" range, this score suggests that student agency and co-construction of learning goals are not fully embedded in current instructional practices. According to constructivist teaching frameworks, engaging students in shaping learning objectives is vital for deeper learning and higher-order thinking (Biggs & Tang, 2011; NRC, 2000). The relatively lower score in this area may imply a reliance on traditional instructional paradigms that prioritize teacher control over curriculum decisions.

Therefore, while the teaching cohort demonstrates strong affective engagement, professional development efforts must also focus on cultivating practices that integrate student voice and goal-setting in lesson planning and curriculum delivery. Empowering students to take an active role in their learning not only increases motivation but also enhances instructional alignment and relevance (OECD, 2020). Such a shift can elevate teaching from being merely adequate to genuinely transformative, fostering a more collaborative, adaptive, and student-centered learning environment.

Knowledge of the Subject Matter. Table 3 presents the frequency and weighted mean values of the assessment of the study respondents regarding their knowledge of the subject matter. As reflected by the overall mean of 4.61, the teachers assessed that they have a very much adequate knowledge of the subject matter.

Table 3 Frequency Distribution and Descriptive Measures of the Adequacy of the Teachers' Knowledge of the Subject Matter

No.	Indicators	1	2	3	4	5	Mean	Interpretation
1	The teacher explains the subject-matter without completely relying on the prescribed textbooks	0	0	0	13	22	4.63	Very Much Adequate
2	The teacher explains the lesson by citing examples and situations	0	0	0	13	22	4.63	Very Much Adequate
3	The teacher presents the lesson clearly and in an organized manner	0	0	0	11	24	4.68	Very Much Adequate
4	The teacher explains the subject matter with depth	0	0	3	7	25	4.37	Adequate
5	The teacher relates the subject matter to a previous topic and other related topics	0	0	0	9	26	4.74	Adequate
6	The teacher integrates the topics discussed in the lesson	0	0	3	8	24	4.60	Very Much Adequate
7	The teacher cites current or up-to-date information on the subject matter	0	0	3	7	25	4.63	Very Much Adequate
8	The teacher integrates current and relevant development to supplement the information in textbooks	2	1	3	8	21	4.28	Adequate
9	The teacher raises problems/issues relevant to the topics	0	0	4	7	24	4.68	Very Much Adequate
10	The teacher shows confidence in the delivery of lectures and conduct of discussions	0	0	0	6	29	4.83	Very Much Adequate
	Weighted Mean						**4.61**	**Very Much Adequate**

The findings affirm that Drafting Technology teachers possess solid content knowledge, particularly in terms of delivering lectures and discussions, as shown by the highest mean score of 4.83, rated as "Very Much Adequate." This confidence suggests that educators are well-prepared in conveying foundational concepts and skills, aligning with Shulman's (1987) concept of Pedagogical Content Knowledge (PCK), which emphasizes the integration of subject expertise and teaching strategies. Such a strong command of subject matter enhances instructional clarity, student comprehension, and classroom effectiveness (Ball, Thames, & Phelps, 2008).

Nonetheless, the relatively lower mean rating of 4.28 on integrating current developments beyond textbooks, while still interpreted as "More than Adequate," points to a critical gap in instructional relevance. This suggests a reliance on static and potentially outdated materials, which may hinder students' readiness for industry demands. In technology-related disciplines such as Drafting, continuous integration of industry advancements like Building Information Modeling (BIM), 3D rendering, and cloud-based collaborative tools is essential to ensure curriculum responsiveness and graduate employability (Mogos R.I.et al., 2022). Failure to embed such updates risks creating a disconnect between academic instruction and industry practice.

This gap underscores the necessity of promoting professional development that focuses not just on deepening subject matter expertise but also on staying abreast of emerging technologies and pedagogical innovations. Encouraging participation in industry immersion, training programs, and partnerships with technology providers can equip teachers to bring real-world developments into the classroom, enriching the learning experience and aligning instruction with 21st-century competencies (Garet et al., 2001; Mishra & Koehler, 2006).

Teaching for Independent Learning. Presented in Table 4 are the frequency and weighted mean values of the assessment of the teacher-respondents regarding their teaching for independent learning. The assessment of this parameter was done by the respondents using ten (10) benchmark statements. As reflected in the overall mean of 4.71, the respondents assessed that they had a "Very Much Adequate" knowledge in terms of teaching for independent learning needed for the effective delivery of quality education.

Table 4 Frequency Distribution and Descriptive Measures of the Adequacy of the Teachers' Teaching for Independent Learning

No.	Indicators	1	2	3	4	5	Mean	Interpretation
1	The teacher allows students to apply concept learned to demonstrate understanding of the lesson	0	0	3	6	26	4.66	Very Much Adequate
2	The teacher creates teaching strategies that allow students to learn concepts they need to understand	0	0	3	7	25	4.63	Very Much Adequate
3	The teacher encouraging students to raise problems and present solutions	0	0	3	6	26	4.66	Very Much Adequate
4	The teacher provides exercises that develop creative and critical thinking among student among students	0	0	0	6	29	4.83	Very Much Adequate
5	The teacher enhances students' self-esteem through proper recognition of the abilities	0	0	2	11	22	4.57	Very Much Adequate
6	The teacher motivates students to do their best	0	0	2	4	29	4.77	Very Much Adequate
7	The teacher accomplishes the objectives of the course through the lesson	0	0	1	4	30	4.83	Very Much Adequate
8	The teacher allows students to organize the academic-related activ-	0	0	1	12	22	4.60	Very Much Adequate

No.	Indicators	1	2	3	4	5	Mean	Interpretation
	ities along with well-defined objectives and acceptable student-teacher roles							
9	The teacher promotes self-reliance and self-discipline among students	0	0	0	5	30	4.86	Very Much Adequate
10	The teacher allows students to make their own decision and be accountable for their performance	0	0	1	10	24	4.66	Very Much Adequate
	Weighted Mean						**4.71**	**Very Much Adequate**

The results reveal that Drafting Technology educators exhibit high competency in promoting independent learning, as evidenced by the highest mean rating of 4.86 for encouraging students' self-reliance and self-discipline. This "Very Much Adequate" rating signifies a strong capacity among instructors to foster autonomous learning behaviors, which are critical attributes in technical education, where problem-solving, project execution, and innovation are often done independently (Zimmerman, 2002). Encouraging self-directed learning not only cultivates lifelong learning skills but also aligns with constructivist educational frameworks that emphasize learner agency and personal responsibility (Candy, 1991; Knowles, Holton, & Swanson, 2014).

However, the relatively lower but still "Very Much Adequate" mean rating of 4.57 related to enhancing students' self-esteem through appropriate recognition of their abilities indicates an area for subtle improvement. Although teachers demonstrate strong academic mentorship, the data suggest a minor gap in attending to students' emotional and motivational dimensions. This concern aligns with Deci and Ryan's Self-Determination Theory, which emphasizes the need for competence, autonomy, and relatedness to sustain learner motivation (Deci & Ryan, 2000). Recognition and affirmation play a critical role in fostering students' confidence, especially in skills-based programs like Drafting Technology, where tangible outputs and creativity are central.

Thus, while teachers are successful in nurturing independent learners, integrating strategies that affirm student achievement, such as personalized feedback, public recognition of work, and reflective activities, can further boost motivation and holistic growth. A balanced approach that combines technical skill development with socio-emotional support ensures students are not only competent but also confident and engaged learners, prepared for the demands of both the workplace and lifelong learning (Wentzel & Wigfield, 1998).

Learning Environment and Facilities. Presented in Table 5 are the frequency and weighted mean values of the assessment of the teacher-respondents regarding their respective learning environment and facilities. The assessment of the condition, availability, and adequacy of school facilities was done by the respondents using ten (10) indicators. As reflected in the overall mean of 4.00, the respondents deemed that their respective school facilities are "More than Adequate" for the effective delivery of quality education in Drafting Technology.

Table 5 Frequency Distribution and Descriptive Measures of the Evaluation of the Teachers' Learning Environment and Facilities

No.	Indicators	1	2	3	4	5	Mean	Interpretation
1	Laboratory layout conformed to acceptable standards	2	1	0	19	13	4.14	Adequate
2	Lighting and well-ventilated laboratories	0	0	4	17	14	4.28	Adequate

No.	Indicators	1	2	3	4	5	Mean	Interpretation
3	Sufficient exit doors for laboratories	0	0	4	13	18	4.40	Adequate
4	Furniture and equipment room where students can work comfortably	2	0	12	13	8	3.71	Adequate
5	Safety and precautionary measures are posted	0	3	5	17	10	3.97	Adequate
6	Computer laboratory with functional computer units	0	8	2	12	13	3.86	Adequate
7	Students access computer facilities	0	3	7	13	12	3.97	Adequate
8	Maintained multi-media center	0	6	5	14	10	3.80	Adequate
9	Well – ventilated facilities for professional education subjects	0	1	4	17	13	4.20	Adequate
10	Customized/specialized equipment for specific purposes	1	4	4	20	6	3.74	Adequate
	Weighted Mean						**4.00**	**Adequate**

The findings suggest that although Drafting Technology teachers generally rated their school facilities positively, concerns remain about whether these facilities truly support high-quality instruction. The highest-rated item, "Sufficient exit doors for laboratories," with a mean score of 4.40, indicates that safety and emergency protocols are well-established, aligning with the minimum standards for physical infrastructure in technical-vocational education (Gertler, Patrinos, & Rubio-Codina, 2011). Laboratories that are well-lit and ventilated also received favorable feedback (mean = 4.28), which is consistent with research suggesting that proper lighting and air quality are critical to student concentration and task performance (Earthman, 2004).

However, the lowest-rated item, "Comfortable furniture and equipment rooms" (mean = 3.71), underscores a tangible deficiency in physical resources crucial for hands-on drafting activities. This finding supports the work of Razali et.al. (2015), who observed that the lack of modern equipment and functional environments often hampers the learning process in technology-based subjects. When classrooms are not ergonomically designed or lack sufficient tools, the effectiveness of instruction is diminished, and student engagement may suffer (Uline & Tschannen-Moran, 2008).

This situation calls for proactive leadership strategies that go beyond passive reliance on governmental budget allocations. As UNESCO-UNEVOC (2013) notes, improving the quality of technical education requires active collaboration with community stakeholders, industry partners, and institutional administrators to modernize and equip learning environments. Thus, even with relatively favorable perceptions of current infrastructure, continuous efforts must be made to ensure that all facilities, especially those directly related to student comfort and usability, are adequately addressed to foster better educational outcomes in Drafting Technology.

Initiatives to Promote Quality Instruction in Drafting

The frequency and percentage values of the assessment of the teacher-respondents regarding their respective initiatives in promoting quality instruction in Drafting are presented in Table 6.

Table 7 Frequency Distribution and Percentage Distribution of the Evaluation of the Teachers' Initiatives to Promote Quality Instruction in Drafting

Question	Responses	Frequency	Percentage
How long have you been in the service (years)?	2-15	22	63
	16-25	6	17
	26-45	7	20
	46 and above	0	0
Are you pursuing graduate studies at the moment? If yes, how far have you gone in your graduate studies? If not, what are your reasons for not pursuing graduate education?	Yes	17	49
	No	13	37
	Done/Finished	5	14
Do teachers participate in curriculum review and change?	Yes	31	89
	No	1	3
	Sometimes	3	8
To what extent do you work collaboratively with management to solve problems and respond to the needs of students?	Coordinating with Teachers and Students and discuss matters to be complied	2	6
	To the best of my ability	4	11
	Share ideas	15	43
	To the point that I have to approach my superior, confide the problem and do the necessary steps to provide the needs of the students.	2	6
	frequently	4	11
	Telling them what the students need	3	9
	Give and receive feedback from management in order to perform the task.	5	14
In your opinion, what makes a teacher successful in educating his/her students?	Understanding the persons, environment and process to work on	2	6
	He or she must be committed and dedicated	7	20
	The Teacher must have updated their working knowledge in the industry to apply it to their teaching.	2	6
	by selflessly sharing her expertise to his/her students while integrating values at the same time.	2	6
	Effectiveness	13	37
	Open minded	9	25

Question	Responses	Frequency	Percentage
What facilities do you have in term of technology, library, laboratories, etc.? Are they adequate? Why? In your own way, how do you augment the facilities in your school?	Technical laboratories, and yes they are adequate	2	6
	Our campus has complete facility that can adapthe needs of the student	2	6
	Laboratories	3	8
	Yes	4	11
	No	2	6
	Computers and tables in laboratories are not enough for the number of students, mostly are non functional or broken.	2	6
	Internet connection	5	14
	Lacking	14	40
	The references must be developed and computers should update to higher performance unit	1	3

The data reveal that most Drafting Technology teacher-respondents (63%) have between 2 to 15 years of teaching experience, indicating a relatively youthful but seasoned teaching workforce. As highlighted by Clotfelter, Ladd, and Vigdor (2007), teaching experience contributes significantly to instructional effectiveness and student achievement, particularly in technical subjects. In terms of professional advancement, 49% of respondents are currently pursuing graduate studies, while 14% have already completed them, underscoring a strong culture of lifelong learning within the drafting education community. This trend is consistent with Day and Sachs' (2004) view that ongoing professional development is crucial for sustaining quality teaching practices.

A significant majority (89%) of teachers reported active participation in curriculum review processes, reflecting their direct involvement in refining and updating Drafting Technology curricula. This is in line with findings by Avalos (2011), who emphasized the importance of teacher engagement in curriculum development as a pathway to educational improvement. Moreover, 43% of teachers collaborate regularly with school administrators to address students' evolving academic and technical needs, reinforcing the principle articulated by Fullan (2001) that collaborative leadership enhances teaching effectiveness and organizational change.

When asked about key contributors to their teaching success, 37% of teachers cited instructional strategies, while others mentioned open-mindedness, professional dedication, and industry experience. These responses support the view of Stronge (2018), who argued that effective teaching is a multifaceted practice rooted in content knowledge, pedagogical skill, reflective decision-making, and ethical commitment.

Despite these strengths, facility-related concerns persist. About 40% of respondents noted inadequacies in laboratory spaces and instructional equipment, while others pointed out unreliable internet access and obsolete computers. Alarmingly, only 11% of teachers believed their facilities adequately supported teaching and learning. These findings echo the research of Uline and Tschannen-Moran

(2008), who found that the quality of school facilities is directly linked to instructional quality and student performance, especially in technical and vocational programs. Therefore, targeted improvements in physical resources and digital infrastructure are necessary to support high-impact teaching in Drafting Technology programs.

Type of Orientation and Training Offered.

In Table 8, the data show that 65% of the respondents agreed that relevant orientation and training are provided for new teachers. These trainings include technology integration, industry-related workshops, demo teaching, classroom observations by department heads, and webinars on emerging technologies.

Table 8 Frequency Distribution and Percentage Distribution of the Evaluation of the Teachers' in the Administrative Support Mechanisms for Drafting Technology

Question	Responses	Frequency	Percentage
What type of orientation/training process is provided for new teachers?	Relevant Online Training and Seminars	23	65
	Training workshops	2	6
	The way of teaching students in the form of technology	2	6
	New Software needed by the industry	2	6
	Webinar for new technologies	1	3
	Demo teaching before a real class, continues observation of head dept in class.	2	6
	None	3	8
Is there any support for you as a teacher from the school administration? Why?	Yes	29	83
	No	0	0
	Sometimes	6	17
If yes, please explain why. If no, please explain why			
Is your college or university offering drafting technology scholarships, training, seminars, or workshops?	Yes	22	63
	No	11	31
	Sometimes	2	6
What suggestions do you have for strengthening the skills and capabilities of Drafting Technology teachers at your school?	Continue to expand the numbers of laboratory facilities	8	23
	By giving more webinars and trainings	13	37
	Continue to support us to attend more seminar workshops to keep abreast with the fast changing technology nowadays.	8	23
	More exposure on technical drawing than computer related art works	1	3
	Anything	1	3
	None	4	11
	Seminars, Trainings and workshops	4	11

Question	Responses	Frequency	Percentage
What types of school activities do you have that promote parent-teacher-student interaction?	We have Parents and Teachers Association.	6	17
	Team Building	2	6
	Extension program	4	11
	Enhancing students' personal development	4	11
	Provide for meaningful teacher-student interactions. Learn students' names and demonstrate that you care about their lives.	2	6
	None	13	38
How do you rate the performance of your colleagues? As a head teacher, how often do you evaluate your staff?	The Teachers are Competent, each of the Teachers are evaluated each semester	2	6
	By semester	13	37
	Students, Area chairman and dean evaluation	5	14
	Through Classroom and Laboratory evaluation	1	3
	We have instruments in our school intended for evaluating our fellow teachers once every year	2	6
	By performance	2	6
	Plant tour, actual visits to construction sites, symposium to the different drafting, architectural and digital fields	4	11
	yes	2	6
	None	4	11

The study highlighted various dimensions of administrative support and professional development needs among Drafting Technology teachers. While 65% of respondents agreed that orientation and training were provided for new teachers, 8% reported a lack of such opportunities. Although 83% confirmed administrative support in adapting to new methodologies, 31% noted a lack of scholarships and training specific to Drafting Technology. Teachers suggested improving their skills through more webinars, expanded laboratory facilities, and support for seminar participation. However, 38% of respondents reported no activities promoting parent-teacher-student interaction, which is crucial for fostering a collaborative learning environment. Evaluation of teaching performance was regularly conducted, mostly by deans and department heads, which supports continuous improvement. Additionally, 65% of teachers did not utilize aides or volunteers, indicating strong teacher competence and classroom independence.

Based on these findings, a one-year faculty development program is proposed, focusing on enhancing the technical and pedagogical competencies of Drafting Technology teachers. The program emphasizes alignment with CHED Memorandum No. 79, s. 2017, and aims to distinguish higher-level technical competencies in tertiary education from those in basic and vocational levels. It includes regular training on advanced software, hands-on workshops, seminars, and industry immersion. The goal is to cultivate a pool of skilled, globally competitive instructors capable of delivering quality instruction through outcome-based, learner-centered approaches. This development initiative

addresses curriculum enrichment, aligns with K–12 transitions, and strengthens higher education goals by ensuring that teachers remain updated, competent, and responsive to evolving industry demands.

Strategies and training methods.

The faculty development plan employs varied instructional methods to enhance learning and engagement. Active lectures encourage interaction and clarification through participant questions, while modular self-paced learning promotes independent study using competency-based materials. Structural learning exercises and team project tasks simulate real-life scenarios, emphasizing group interaction and problem-solving. Demonstration techniques showcase proper equipment or software usage, mirroring industry practices. Online conferences or webinars, facilitated by trained teachers or industry experts, offer concise, impactful sessions in person or virtually using ICT tools.

Industrial immersion activities like tours or plant visits provide hands-on exposure to actual operations. To ensure effective implementation, Bulacan State University has allocated a budget for teacher development and designated a Program Director. The Director is responsible for identifying key issues, designing modules, establishing industry partnerships, and ensuring comprehensive oversight—from planning to evaluation. This strategic approach aligns with industry needs and promotes continuous professional growth for Drafting Technology instructors.

Conclusion, Limitations, and Recommendations

The personal and professional profile of the teacher-respondents revealed that their average age is 43.5 years old, with most being married and holding a bachelor's degree with master's units. About half are PBET/LET passers, have attended relevant trainings, and over half possess TESDA National Certificates (NCs). In terms of teaching skills, the respondents generally rated themselves as "Very Much Adequate" in commitment, knowledge of the subject matter, and teaching for independent learning, while the learning environment and facilities were rated as "More than Adequate." Regarding initiatives to promote quality instruction in Drafting Technology, the majority of the teachers had 2–15 years of teaching experience and were pursuing or had completed graduate studies. Most had participated in curriculum reviews and worked collaboratively with the school administration to address student needs. Their success in educating students was attributed to their effectiveness and open-mindedness, although many reported that school facilities and laboratories were inadequate. On administrative support, most teachers considered the training and seminars provided by the administration to be relevant and suggested that more webinars and training would improve their skills. However, many noted the lack of school activities promoting parent-teacher-student interaction. Teachers are regularly evaluated every semester using school-developed instruments. Lastly, the majority did not use teacher aides or parent volunteers, indicating a belief in their capacity to manage classrooms independently. These findings highlight the strengths and gaps in teaching practices, resources, and institutional support, underscoring the need for continued professional development, facility upgrades, and stakeholder engagement to ensure high-quality instruction in Drafting Technology.

To increase involvement and exposure among parents, students, and teachers, university colleges should offer yearly workshops, seminars, and symposiums on drafting technology. To stay up to date with the latest developments in drafting technology and better carry out their pedagogical responsibilities, educators are urged to constantly improve their professional credentials. Studies on the following topics are suggested for future research: the influence of teaching Drafting Technology on students' academic performance and attitudes; pathways to higher quality instruction in Drafting Technology within specific state universities and colleges in Region III; and comparable pathways in private higher education institutions.

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