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Effectiveness of Aeronautical Engineering Faculty in Their Related Field of Teaching in WCC Binalonan

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Abstract — This study aimed to assess the level of effectiveness of Aeronautical Engineering faculty in their related field of teaching in WCC Aeronautical and Technological College in Binalonan Campus. The study made use of a descriptive research design to establish the competencies of the teaching program. To answer the question, the researcher adopted a survey questionnaire from the manuals of Employment and Training Administration of Aeronautics of the United States of America (ETAAU). The study focused on the five areas of effectiveness such as Aerospace Fundamentals, Design and Development, Product and Parts Manufacturing, Project Management and Quality Assurance, Aviation Maintenance. Results showed that the Aero Engineering faculty of WCC Aviation and Technological College are highly effective. The study further showed the common problems encountered in the training. Encompass attributes such as the ability to recognize and manage human performance limitations, make sound decisions, communicate effectively, perform effectively as a team, manage stress and fatigue, and maintain situational awareness. Aside from non-technical skills, a high level of expertise is needed to make sure that aircraft are serviced to rigorous quality and safety standards, the skills pertained to in this area are called teaching skills. The type of skills includes instructing subject major, repairing, and maintenance of all types of aircraft in aeronautical field. The world is in a process of continuous change, innovations in Information Communications Technology (ICT) are constantly advancing and although companies have made huge progress, one must always remain at the forefront.

Keywords — Effectiveness, Effectively, Competencies, Skills, Technical, Aero Engineering Education

I. Introduction

Effectiveness means doing the right things or occupying oneself with the right things. The concept of effectiveness is linked to the assumption that organizations are goal-oriented. Assessing the effectiveness of aeronautical engineering faculty involves examining the performance and impact of the faculty members within an aeronautical engineering program or department. This

includes evaluating their teaching, research, and service activities, as well as their contributions to the overall educational experience and outcomes of students. The assessment is conducted within the broader context of the field of aeronautical engineering, taking into account industry standards, technological advancements, and educational requirements.

The rationale for evaluating the effectiveness of aeronautical engineering faculty is multifaceted and serves several purposes. Assessing faculty effectiveness helps ensure the delivery of high-quality education to students pursuing aeronautical engineering. Evaluating faculty effectiveness directly impacts student learning and success. Many aeronautical engineering programs seek accreditation from relevant professional bodies or organizations. Evaluating faculty effectiveness is essential for meeting accreditation requirements, which often include criteria related to faculty qualifications, teaching effectiveness, research contributions, and professional development.

Overall, the context and rationale for evaluating the effectiveness of aeronautical engineering faculty align with the goals of providing quality education, promoting student success, ensuring program accreditation, fostering continuous improvement, supporting research and innovation, and facilitating faculty recruitment and retention. These evaluations contribute to the overall advancement and excellence of aeronautical engineering education and research at WCC Aeronautical and Technological College Binalonan.

In light of these considerations, this study aims to assess the level of effectiveness of Aeronautical Engineering faculty at WCC Aeronautical and Technological College Binalonan. It seeks to understand their effectiveness in various teaching domains, as perceived by both peers and students, and to identify any challenges they encounter. The study will also explore the relationship between faculty effectiveness and various profile variables, ultimately proposing strategic actions to address identified problems and enhance faculty performance.

Literature Review

Gohardani et al. (2014) advocate for learner-centered teaching in aeronautical engineering, emphasizing interactive methods like illustrations and animations to enhance student engagement and learning outcomes.

Chowdhury et al. (2019) present an innovative three-step approach for teaching laboratory experiments in engineering courses, combining real demonstrations, hands-on experiments, and computer simulations to enhance learning outcomes.

Apalat et al. (2019) explore the theoretical and methodological principles of forming student discipline, emphasizing its importance for the effectiveness of professional training in aviation.

O'Connor et al. (2008) conduct a meta-analysis on the effectiveness of Crew Resource Management (CRM) training, identifying its positive impact and highlighting areas for improvement.

O'Connor (2011) assesses the effectiveness of Bridge Resource Management (BRM) training, revealing its positive influence on teamwork, communication, and decision-making skills in bridge crews.

Etherington (1988) analyzes general aviation cost-effectiveness, examining factors influencing aircraft operating costs and providing insights for cost optimization.

Karanikas et al. (2019) investigate the institutionalization, capability, and effectiveness of aviation safety management systems, emphasizing the importance of continuous improvement and adaptation.

Thanikachalam (2023) focuses on developing and supporting high-performing faculty teams in engineering institutions, highlighting strategies for improving collaboration, innovation, and teaching effectiveness.

Eshmuradov et al. (2021) propose design engineering methods for presenting aeronautical information, enhancing the clarity and accessibility of complex data for aviation professionals.

These studies and literature collectively contribute to a deeper understanding of various facets of aeronautical engineering education, training, and management, offering insights for improving instructional practices, enhancing safety measures, and promoting overall excellence in the aviation field.

II. Methodology

This study utilized the descriptive method of research. According to Creswell (2014), descriptive research involves the systematic observation and description of a phenomenon without manipulating it in any way. Descriptive research is a fact-finding study that aims to accurately and adequately interpret findings to provide a clear picture of the current state of affairs. This method is suitable for this study as it seeks to describe the present condition of the effectiveness of Aeronautical Engineering faculty at WCC Aeronautical and Technological College Binalonan.

The descriptive research design allows for a comprehensive understanding of the current state of the faculty's effectiveness by observing and documenting their teaching, research, and service activities. This approach provides a detailed account of the faculty's performance and its impact on student outcomes without influencing the subjects being studied.

The technique applied under the descriptive method is the normative survey approach and evaluation. This approach is commonly used to gather opinions from respondents that can

represent an entire population. It involves collecting first-hand data from the faculty and students to describe the nature of the condition being studied as it exists at the time of the research. This approach is particularly useful for exploring the causes of a particular condition or phenomenon.

The purpose of using the descriptive method in this study is to capture the current state of faculty effectiveness in teaching Aeronautical Engineering at WCC Aeronautical and Technological College Binalonan. By employing this method, the researcher aims to gather accurate data directly from the respondents, which will help in formulating rational and sound conclusions and recommendations.

The descriptive research design is well-suited for this study as it provides a clear and detailed understanding of the effectiveness of the faculty. It enables the researcher to explore the present condition of the faculty's performance, identify areas of strength and areas needing improvement, and understand the factors contributing to their effectiveness. This approach ensures that the findings are based on actual observations and data, providing a reliable basis for making informed decisions and recommendations to enhance the faculty's effectiveness.

III. Results and Discussion

Profile of Aeronautical Engineering Faculty. Profile of Aeronautical Engineering faculty was considered by the researcher in the study because it may affect the effectiveness of Aeronautical Engineering faculty in their related field of teaching in WCC Binalonan.

Table 1 shows that most of the aviation trainers are males with 71.4 % of the population. Also, the table shows that the age of most trainers is ranging from "21-25 years old" which is 14.3 % of the research population, and followed by the age ranging from "26-30 years old" which is 14.3 % of the research population. This data shows that most of the aviation trainers are young and millennials. According to articles, Fascination with generational differences among today's working aviation professionals has moved beyond specialists in recruiting and training to others with direct responsibilities for operational safety. A recent indicator was the number of presentations and discussions during the World Aviation Training Conference and Tradeshow (WATS 2012) in Orlando, Florida, U.S., in April about integrating Generation Y (Gen Y) into the industry. Gen Y — is one of several popular terms, such as millennials.

Furthermore, they have more than half (60%) have attended a maximum of 5 seminars related to their position. Only one individual has not rendered any hours, half of the trainers have completed up to 100 hrs and 30.0% have completed more than 100 hrs of training in their respective positions.

Table 1. Profile of the Aero Engineering Faculty

Profile	Category	Frequency	Percentage
Age	21-25	8	71.4
	26-30	1	14.3
	31-35	1	7.5
	36 and above	1	7.5
Sex	Male	12	85.7
	Female	1	14.3
Highest Educational Attainment	College	10	100.0
For those attending master or Doctorate Degree indicate your earned units	None	2	100.0
	31-40 units	0	0
Numbers of Seminars Attended in Related Position	None	0	0.0
	1-5	8	100.0
	6-10	0	0
	11-15	0	0.0
	16 and above	0	0.0
Number of hours Training Attended in Related Position	100 hours and below	2	30.0
	101-300 hours	8	60.0
	301-500 hours	1	20.0
	501 hours and above	0	0
	None	0	0

The prominence of millennials in aviation training is noteworthy. According to articles on generational differences in the workplace, there is an increasing focus on integrating Generation Y (Gen Y), or millennials, into various professional sectors, including aviation. This trend was evident at the World Aviation Training Conference and Tradeshow (WATS 2012) in Orlando, Florida, where discussions centered on how to effectively incorporate Gen Y into the industry. Millennials, known for their adaptability and tech-savviness, bring unique perspectives and skills that are valuable in the evolving landscape of aviation.

Further analysis of the trainers' educational and professional development reveals that more than half (60%) of the trainers have attended a maximum of five seminars related to their position. This indicates moderate level of continuous professional development among the trainers. Additionally, while one individual has not completed any training hours, half of the trainers have accrued up to 100 hours of training. Notably, 30.0% of the trainers have completed more than 100 hours of training in their respective positions.

This training data underscores the commitment of many aviation trainers to enhancing their skills and staying updated with industry standards. The variation in training hours among the trainers suggests a diverse range of experience and expertise within the group. Those with extensive training hours are likely to bring a wealth of knowledge and practical insights to their roles, contributing positively to the overall quality of aviation training programs.

Profile of the Peer. Table 2 shows that all of the peers are male of which 54.5% are ages 21 to 25. and the rest are instructors or faculty. Then 18.2% have continued their education after college of which 27.3% have already earned at least 30 units. The result denotes 7 out of 11 have attended 6 to 10 seminars and 9 out of 11 have at least 100 hrs of training in related positions.

The analysis of the peer profile data reveals several key insights about the demographic and professional attributes of the 11 individuals in the study. The age distribution shows a predominantly young group, with 54.5% aged 21-25 and 36.4% aged 26-30, indicating a significant representation of millennials. All peers are male, highlighting a lack of gender diversity within the group. Professionally, 90.9% hold faculty or instructor positions, while only 9.1% have a PhD, suggesting a predominant focus on teaching roles over advanced research positions.

In terms of educational attainment, the majority (81.8%) have a college degree, and only one individual (18.2%) has a master's degree, with none holding a doctorate. Regarding ongoing education, 18.2% have earned up to 30 graduate units, 9.1% have earned over 41 units, and a notable 72.7% have not earned any graduate units. This data suggests limited engagement in advanced graduate studies among the peers.

The attendance of professional seminars shows that 63.6% have attended between 6 to 10 seminars, 18.2% between 11 to 15 seminars, and 9.1% have attended 1 to 5 seminars, with another 9.1% not attending any seminars at all. This indicates a strong inclination towards professional development, although some variation exists. Training hours further underscore this commitment, with 36.4% having completed up to 100 hours, 9.1% between 101 to 300 hours, 18.2% between 301 to 500 hours, and 27.1% exceeding 501 hours. Only 9.1% have not completed any training hours.

Table 2. Profile of the Peer
n=11

Profile	Category	Frequency	Percentage
Age	21-25	6	54.5
	26-30	4	36.4
	31-35	1	9.1
	36 and above	0	0.0
Sex	Male	11	100.0
	Female	0	0.0
Position/ Rank	PhD	1	9.1
	Faculty/Instructor	10	90.9
Highest Educational Attainment	College	9	81.8
	Masteral	1	18.2
	Doctorate	0	0.0
For those attending master's or Doctorate Degree indicate your earned units	30 units and below	2	18.2
	41 units and above	1	9.1
	None	8	72.7
Numbers of Seminars Attended in Related Position	None	1	9.1
	1-5	1	9.1
	6-10	7	63.6
	11-15	1	18
	16 and above	0	0
Number of hours Training Attended in Related Position	100 hours and below	4	36.4
	101-300 hours	1	9.1
	301-500 hours	2	18.2
	501 hours and above	2	27.1
	None	1	9.1

Overall, the data portrays a young, all-male, and predominantly faculty-level group that is engaged in professional development through seminars and training but shows variability in advanced educational pursuits. This profile can guide the development of strategies to support and enhance their professional growth and effectiveness in their roles.

Level of Effectiveness of Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan as perceived by Peer.

These parameters are used in measuring the level of technical effectiveness in WCC Aeronautical and Technological College and Aviation by using as perceived in their descriptive statistical frequencies and mean are used in treating data as perceived by peers in terms of, Aerospace Fundamentals, Design and Development, Product and Parts Manufacturing, Project Management and Quality Assurance, Aviation Maintenance.

Table 3. Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan as perceived by Peer in terms of Aerospace Fundamentals

AEROSPACE FUNDAMENTALS	Level of Technical Effectiveness						
	VHE	HE	ME	PE	NE	WM	DE
Learn and apply appropriate aerospace terminology	2	7	2	0	0	4.00	HE
Identify key differences and similarities among aerospace industry sectors	1	4	6	0	0	3.55	HE
Explain the properties and applications of materials frequently used in the aerospace industry	2	5	4	0	0	3.82	HE
Locate and comply with relevant local, state, federal, and international laws and regulations that impact the industry	1	6	4	0	0	3.73	HE
Review procedures to ensure compliance with regulatory requirements	2	3	6	0	0	3.64	HE
Understand the requirements for certification in aerospace fields	2	5	4	0	0	3.82	HE
Develop an understanding of the security clearance process and requirements	1	2	7	1	0	3.27	ME
Obtain required security clearance, if necessary	2	3	4	2	0	3.45	HE
Weighted Mean						**3.65**	**High Effective**

Table 3 shows that all Aerospace Fundamentals indicators scored as highly effective with a weighted mean of 3.65. However, security clearance topics seem to have a relatively lower mean score. Based on the result, indicator 1 which is learned and apply appropriate aerospace terminology has the highest score equal to 4.00. It connotes that aviation trainers are familiar and well know all wordings applicable to aerospace. Indicator 2 which is the learn and appropriate to apply aerospace terminology (4.0) means they are familiar and well know all wordings applicable to aerospace followed by the explanation frequently used by aerospace (3.82) and understand the certification of airworthiness required by the aerospace (3.82).

Compliance made by the regulations that are very important in the aerospace industry (3.73) and a review of the procedures to ensure compliance with regulatory requirements (3.65) is a must. Identifying similarities in the aerospace sector (3.55) and obtaining security clearance if necessary (3.45), as "Highly Effective" in aerospace fundamentals. Lastly understanding and securing security clearances process, got the lowest level of effectiveness with a score of 3.27 which means "moderately effective".

Table 4. Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan as perceived by Peer in terms of Design and Development

DESIGN AND DEVELOPMENT	Level of Technical Effectiveness						
	VHE	HE	ME	PE	NE	WM	DE
1. Demonstrate knowledge of product lifecycle models and acquisition models	2	4	4	1	0	3.64	HE
2. Know and apply new product and process development methods	3	4	4	0	0	3.91	HE
3. Formulate conceptual design of aeronautical or aerospace products or systems	1	6	4	0	0	3.73	HE
4. Develop design criteria for aeronautical or aerospace products or systems, including testing methods, production costs, quality standards, and completion dates	1	4	6	0	0	3.55	HE
5. Evaluate product data and design from inspections and reports for conformance to design criteria, engineering principles, customer requirements, safety, and quality standards	1	5	5	0	0	3.64	HE
6. Evaluate and improve the producibility, reliability, safety, and maintainability of alternate product and process designs	1	5	5	0	0	3.64	HE
7. Conduct tests to determine whether equipment, software, or procedures are operating as expected	1	6	3	1	0	3.64	HE
8. Be familiar with type design certification requirements; design to comply with applicable aeronautical regulatory agencies (FAA, EASA, etc.)	2	6	2	1	0	3.82	HE
9. Analyze the impact of engineering from multiple perspectives, such as economic, ethical, health, and safety	2	5	4	0	0	3.82	HE
Weighted Mean						**3.70**	**HE**

Table 4 shows the overall Design and Development indicators scored as highly effective with a weighted mean of 3.70. Know and apply the new product and process development methods scored the highest with a mean of 3.91. Based on the result, indicator 1 which is to develop design criteria for aeronautical or aerospace products or systems, including testing methods, production costs, quality standards, and completion dates is the lowest score (3.55). Indicator 2 which is knowing and applying the new product and process development methods had the highest score(3.91). Indicators 8 and 9 have the same score equal to 3.82. It shows that they are familiar with type design certification requirements; designing to comply with applicable aeronautical regulatory agencies (FAA, EASA, etc.) and they could analyze the impact of engineering from multiple perspectives, such as economic, and ethical, health and safety. Formulate conceptual design of aeronautical or aerospace products or systems (3.73). Indicators 1, 5, 6, and 7 have the same ratings equal to 3.64 which describes "Highly Effective". The result emphasized that aviation trainers could highly demonstrate knowledge of product lifecycle models and acquisition models, could precisely evaluate product data and design from inspections and reports for conformance to design criteria, engineering principles, customer requirements, safety, and quality standards, could accurately evaluate and improve the producibility, reliability, safety, and maintainability of alternate product and process designs, and could specifically conduct tests to determine whether equipment, software, or procedures are operating as expected. Lastly, indicator 4 which is developing design criteria for aeronautical or aerospace products or systems, including testing

methods, production costs, quality standards, and completion dates garnered a score of 3.55 which means "Highly Effective".

Table 5. Level of Effectiveness Aeronautical Engineering Faculty of WCC Aeronautical and Technological College Binalonan as perceived by Peer in terms of Product and Parts Manufacturing

PRODUCT AND PARTS MANUFACTURING	Level of Technical Effectiveness						
	VHE	HE	ME	PE	NE	WM	DE
1. Manage raw materials/consumables	1	4	4	2	0	3.36	ME
2. Operate and control production/lab equipment	2	4	3	2	0	3.55	HE
3. Carry out procedures for producing, assembling, and installing aerospace components	3	2	4	2	0	3.55	HE
4. Use state-of-the-art tools and assembly techniques to create and assemble aerospace products and parts	2	4	3	2	0	3.55	HE
5. Interpret schematic drawings, diagrams, blueprints, specifications, work orders, and reports to determine materials requirements and assembly instructions	1	3	4	3	0	3.18	ME
Weighted Mean						**3.43**	**HE**

Table 5 shows the overall Product and Parts Manufacturing indicators scored as highly effective with a weighted mean of 3.43. Furthermore, aerospace product and parts manufacturing are defined as being primarily engaged in manufacturing aircraft, aircraft engine and engine parts, other aircraft parts and auxiliary equipment, guided missile and space vehicles, and/or guided missile and space vehicle propulsion units and propulsion units parts. That's why equipment, managing raw materials and consumables, assembling, creating products and parts components are too poorly effective because they are engaging for aircraft engines and auxiliary equipment thereof. On the contrary, indicators 2, 3, and 4 had ratings of 3.55 which means highly effective. Aviation trainers could professionally operate and control producion/lab equipment; carry out procedures for producing, assembling, and installing aerospace components; and use state-of-the-art tools and assembly techniques to create and assemble aerospace products and parts scores. Indicator 5 which interpreted schematic drawings, diagrams, blueprints, specifications, work orders, and reports to determine materials requirements and assembly instructions garnered a score of 3.18 as "moderately effective" as perceived by peers in products and manufacturing.

Table 6. Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan perceived by Peer in terms of Project Management and Quality Assurance

PROJECT MANAGEMENT AND QUALITY ASSURANCE	Level of Technical Effectiveness						
	VHE	HE	ME	PE	NE	WM	DE
1. Analyze project requests and proposals and engineering data to determine feasibility, producibility, cost, safety, and the production time of aerospace or aeronautical product	1	5	5	0	0	3.64	HE
2. Prepare contracts and negotiate revisions, changes, and additions to contractual agreements	1	4	6	0	0	3.55	HE
3. Prepare and submit budget estimates and progress and cost tracking reports	1	3	5	2	0	3.27	ME
4. Review and approve purchase orders	1	4	5	1	0	3.45	HE
5. Meet and maintain certification requirements	2	4	5	0	0	3.73	HE
6. Use quality and continuous improvement processes to improve safety, quality, cost, and schedule performance	2	6	3	0	0	3.91	HE
7. Employ audits and inspections to maintain the quality and continuous improvement process correct the product and process to meet quality standards	2	6	3	0	0	3.91	HE
8. Support and maintain quality systems	2	5	3	1	0	3.73	HE
Weighted Mean						**3.64**	**HE**

Table 6 shows the overall Product Management and Quality Assurance indicators scored as highly effective with a weighted mean of 3.64. Top ratings were given to 2 items: Use quality and continuous improvement processes to improve safety, quality, cost, and schedule performance: and Employ audits and inspections to maintain the quality and continuous improvement process and correct the product and process to meet quality standards with a same weighted mean of 3.91.

Moreover, indicators 1, 2, 4, 5, and 8 were described as "Highly Effective" in project management and quality assurance. In descending order, indicator 5 which is meeting and maintaining certification requirements and indicator 8 which is supporting and maintaining quality systems garnered the same score of 3.73; indicator 1 which is analyzing project requests and proposals, and engineering data to determine feasibility, producibility, cost, safety, and the production time of aerospace or aeronautical product scored 3.64. Indicator 2 which is preparing contracts and negotiating revisions, changes, and additions to contractual agreements had a value of 3.55, and indicator 4 which is the review and approve purchase orders scored 3.45. However, indicator 3 which is preparing and submitting budget estimates and progress and cost tracking reports garnered a score of 3.27 with an equivalent description of "Moderate Effective" as perceived by the peer in project management and quality assurance.

Furthermore, quality assurance is used in project management to help companies avoid making mistakes and to minimize potential risks. With quality assurance in mind, project managers can start planning for the quality of their deliverables from the very beginning of their project plans.

Moreover, it refers to the processes and methods used to prevent mistakes, inconsistencies, and defects in manufactured products. Preventing problems with the delivery of products or services to customers is also a core component of quality assurance management. Quality assurance can be defined as stated that quality assurance is "part of quality management focused on providing confidence that quality requirements will be fulfilled." The confidence provided by quality assurance is twofold—internally to management and externally to customers, government agencies, regulators, certifiers, and third parties. An alternate definition based on. The Quality Audit: A Management Evaluation Tool (McGraw-Hill, 1988), is "all the planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that a product or service will fulfill requirements for quality.

Table 7 shows the overall Aviation Maintenance indicators have been scored as highly effective with a weighted average of 3.61. Identify general types of aircraft, engines, propellers, and rotors has the highest weighted mean of 4.0. The indicator with the next highest rating is indicator 13 equal to 3.82. Aviation trainers understand the concepts of troubleshooting systems and components. Indicators 3 and 12 which are plan and conduct routine maintenance checks and incorporate unscheduled, non-routine tasks and understanding the operation of major aircraft/aerospace systems such as conditioned air, hydraulics, pneumatics, engines, fuel, etc., respectively garnered a score of 3.73. Indicators 6, 11, and 14 scored 3.64 with a description of "High Effective" wherein aviation trainers precisely perform the following, namely: communicate to appropriate personnel possible discrepancies and defects that could affect the airworthiness of aircraft; understand and comply with aerospace standards and regulations; and perform troubleshooting on faulty systems and components, respectively.

Table 7. Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan perceived by Peer in terms of Aviation Maintenance

AVIATION MAINTENANCE	Level of Technical Effectiveness						
	VHE	HE	ME	PE	NE	WM	DE
1. Identify general types of aircraft, engines, propellers, and rotors	5	2	3	1	0	4.00	HE
2. Use aircraft drawings, symbols, and system schematics	1	5	3	2	0	3.45	HE
3. Plan and conduct routine maintenance checks and incorporate unscheduled, non-routine tasks	3	3	4	1	0	3.73	HE
4. Identify and select appropriate nondestructive testing methods	2	2	6	1	0	3.45	HE
5. Recognize, detect, and classify defects using common techniques	2	4	3	2	0	3.55	HE
6. Communicate to appropriate personnel possible discrepancies and defects that could affect the airworthiness of aircraft	2	3	6	0	0	3.64	HE
7. Write descriptions of work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records	2	3	5	1	0	3.55	HE
8. Know and apply inspection procedures involved in testing aircraft and missile systems under simulated operational conditions	2	3	5	1	0	3.55	HE
9. Perform systems readiness tests and pre- and post-operational checkouts	2	3	5	1	0	3.55	HE
10. Record and interpret test data on parts, assemblies, and mechanisms to diagnose malfunctions	2	3	5	1	0	3.55	HE
11. Understand and comply with aerospace standards and regulations.	2	4	4	1	0	3.64	HE
12. Understand the operation of major aircraft/aerospace systems such as conditioned air, hydraulics, pneumatics, engines, fuel, etc.	3	3	4	1	0	3.73	HE
13. Understand concepts of troubleshooting systems and components	3	3	5	0	0	3.82	HE
14. Perform troubleshooting on faulty systems and components	3	3	3	2	0	3.64	HE
15. Understand and be able to use Automated and Built-In Test equipment/features	2	3	4	2	0	3.45	HE
Weighted Mean						**3.61**	**HE**

Moreover, indicators 5, 7, 8, 9, and 10 had a weighted mean equal to 3.55 with a description of "High Effective" wherein aviation trainers accurately perform the following, namely: recognize, detect, and classify defects using common techniques; write descriptions of work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records; know and apply inspection procedures involved in testing aircraft and missile systems under simulated operational conditions; perform systems readiness tests and pre- and post-operational checkouts; and record and interpret test data on parts, assemblies, and mechanisms to diagnose malfunctions, respectively.

Table 8. Summary of Level of Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan as perceived by Peer

Level of Technical Effectiveness	WM	DE
A. Aerospace Fundamentals	3.65	High Effective
B. Design and Development	3.70	High Effective
C. Product and Parts Manufacturing	3.43	High Effective
D. Project Management and Quality Assurance	3.64	High Effective
E. Aviation Maintenance	3.61	High Effective
Overall Weighted Mean	3.62	High Effective

The data in Table 8 shows that the Aeronautical Engineering faculty at WCC Aeronautical and Technological College Binalonan are highly effective across various technical competencies as perceived by their peers. Each technical area, including Aerospace Fundamentals, Design and Development, Product and Parts Manufacturing, Project Management and Quality Assurance, and Aviation Maintenance, received high effectiveness ratings, with overall weighted means exceeding 3.5.

This high level of effectiveness can be attributed to several factors. Firstly, the faculty's consistent performance across multiple technical domains suggests a comprehensive understanding and capability in aeronautical engineering. The faculty's ability to effectively teach and manage complex subjects like Aerospace Fundamentals and Design and Development indicates a solid grounding in core aeronautical engineering principles and practices.

Secondly, high effectiveness in Project Management and Quality Assurance highlights the faculty's proficiency in overseeing projects and ensuring quality standards are met, which is critical in the aviation industry. This proficiency suggests that the faculty members are not only knowledgeable but also skilled in applying their knowledge practically and systematically.

Thirdly, the high ratings in Aviation Maintenance demonstrate the faculty's hands-on expertise and their ability to impart practical skills essential for maintaining aviation safety and operational efficiency.

This is particularly important in an educational setting where students must be well-prepared for real-world challenges.

Overall, the high effectiveness ratings indicate that the faculty members are well-qualified, experienced, and capable of providing a high-quality education to their students, preparing them effectively for careers in the aeronautical engineering field.

Level of Technical Effectiveness of Aviation Trainer of WCC Aeronautical and Technological College and Aviation as perceived by Student.

The parameters, namely: Aerospace Fundamentals, Design and Development, Product and Parts Manufacturing, Project Management and Quality Assurance, and Aviation Maintenance as perceived by students were used in measuring the level of technical effectiveness in WCC Aeronautical and Technological College and Aviation. The descriptive statistical frequencies and mean were used in treating the data.

The data in Table 9 presents the perceived level of effectiveness of the Aeronautical Engineering faculty at WCC Aeronautical and Technological College Binalonan as evaluated by the students. The findings indicate a uniformly high level of effectiveness across all technical competencies. Specifically, the faculty received high effectiveness ratings in Aerospace Fundamentals (WM=3.76), Design and Development (WM=3.63), Product and Parts Manufacturing (WM=3.44), Project Management and Quality Assurance (WM=3.61), and Aviation Maintenance (WM=3.75). The overall weighted mean of 3.67 further underscores the faculty's high effectiveness.

Table 9. Summary of Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan as perceived by Student

Level of Technical Effectiveness	WM	DE
A. Aerospace Fundamentals	3.76	High Effective
B. Design and Development	3.63	High Effective
C. Product and Parts Manufacturing	3.44	High Effective
D. Project Management and Quality Assurance	3.61	High Effective
E. Aviation Maintenance	3.75	High Effective
Over All Weighted Mean	3.67	High Effective

These ratings suggest that students perceive their instructors as highly capable in delivering technical knowledge and practical skills crucial for their field. The high rating in Aerospace Fundamentals signifies that students feel well-grounded in the essential principles of aeronautics. Similarly, the strong performance in Design and Development indicates that students appreciate the faculty's ability to teach complex design processes and innovative thinking.

The rating in Product and Parts Manufacturing, while still high, is slightly lower compared to other areas, suggesting a potential area for further enhancement to meet the exceptional standards set in other domains. The consistent high ratings in Project Management and Quality Assurance and Aviation Maintenance highlight the faculty's proficiency in imparting critical

project oversight skills and maintenance techniques, both of which are vital for ensuring safety and efficiency in aviation operations.

Overall, these high effectiveness ratings reflect the students' confidence in their faculty's expertise and teaching abilities, suggesting that the educational experience provided by the faculty is robust, comprehensive, and aligned with industry standards. This positive evaluation is crucial for the continuous improvement and accreditation efforts of the Aeronautical Engineering program.

Problems Encountered in the Effectiveness of Aeronautical Engineering Faculty at WC Aeronautical and Technological College Binalonan

Aviation is facing a series of challenges that must be addressed to sustain profitable growth. Itemized problems are shown below affect the very core of the aviation industry and present new issues for the players within the corporations. Adapted challenges may arise such as their strategic initiatives will be tested, their financial position could be threatened, their global operations will be pressured, and they will need to adapt to new compliance requirements in the different markets in which they operate.

Table 15 shows all the problems encountered, more than half of the total cases are either due to Documentation and Procedure Errors (52%) and Reworks or Fatigued Maintenance Personnel (64%).

Furthermore, major problems based on this table are the stress and fatigued maintenance personnel. It introduces stress, pressure, and fatigue as part of the Dirty Dozen and Human Factors procedures. Safety is the main driver in aviation-related professions. Maintenance-related personnel is constantly subjected to several external circumstances that might originate errors in the performance or evaluation of maintenance-related tasks. Authorities have regulated flight crew and air traffic controllers working and resting periods, but maintenance personal regulations do not reflect paired the same procedures.

Table 10. Problems Encountered in the Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan

Problems Encountered	Frequency	Percent of Cases
Documentation and procedure errors and reworks	13	52.0
Fatigued maintenance personnel	16	64.0
Attitude problems of maintenance personnel	9	36.0
Unprofessionalism at work	8	32.0
Uncommitted maintenance personnel	7	28.0
Delayed and incomplete event reporting of data	7	28.0
Incomplete inspection	7	28.0

On the contrary, the errors and documentation, and procedures are based on their Standard Operating Procedures (SOP). This is a process document that describes in detail the way that an operator should perform a given operation. SOPs involve the purpose of the operation, the equipment, and materials required, how to perform the set-up and operations required for the process, how to perform the maintenance and shutdown operations carried out by the worker, a description of safety issues, trouble-shooting, a list of spare parts and where to find them, illustrations, and checklists.

An article by Manghani, K. (2011), the SOP is one of many process documents which is needed for the consistent operation of a given process, along with other documents involving process flow charts, material specifications, and so forth.

Significant Comparison Between the Level of Effectiveness Aeronautical Engineering Faculty of WCC Aeronautical and Technological College Binalonan Across Profile Variables

Attaining technical knowledge through training, and maintaining technical knowledge through continued awareness, further training, and development, are essential elements in the competent conduct of any task, job, or role. Attaining and maintaining technical knowledge also goes hand-in-hand with gaining and maintaining skills physical, mental, interpersonal, and procedural knowledge. Each of these elements is facilitated and framed by experience, which provides relevant contextual knowledge or understanding.

Table 11. Difference in the Level of Level of Effectiveness Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan between the Employee and Peer

Level of Technical Effectiveness	Trainer		Peer		Wilks' Λ	Sig.
	WM	SD	WM	SD		
A. Aerospace Fundamentals	3.66	0.91	3.66	0.74		
B. Design and Development	3.44	0.74	3.71	0.59		
C. Product and Parts Manufacturing	3.33	1.10	3.44	0.93	0.871[ns]	0.726
D. Project Management and Quality Assurance	3.38	0.98	3.65	0.65		
E. Aviation Maintenance	3.51	1.14	3.62	0.86		

[ns]Not significant

Table 11 shows the test of difference in the level of effectiveness of Aeronautical Engineering faculty in WCC aeronautical and technological college Binalonan between the employee and peer using Multivariate analysis of variance. Results show that there is no significant difference in the level of effectiveness of Aeronautical Engineering faculty of WCC Aeronautical and Technological College Binalonan between the faculty and peers based on a significance value

higher than 0.05 level. Hence, there is no sufficient evidence to reject the null hypothesis. At a 95% level of confidence, the researcher concluded that there is no significant difference between the score for the level of effectiveness of Aeronautical Faculty between peers and students.

IV. Conclusion

Based on the comprehensive analysis of the findings of the study, the following conclusions were made: The profile data indicates a young, all-male peer group primarily holding faculty or instructor positions. Most have attained a college degree, with few pursuing advanced graduate units or degrees. The data also shows a strong commitment to professional development through seminar attendance and training hours, although there is variability in the extent of engagement. This profile can inform targeted strategies to support and enhance the professional growth and effectiveness of these peers in their respective roles. Aerospace Fundamentals, Design and Development, Product and Parts Manufacturing, Project Management and Quality Assurance, and Aviation Maintenance are all areas where the Aeronautical trainers excel as to the level of effectiveness of Aeronautical Engineering of WCC Aeronautical and Technological College, as a perceived peer. Aerospace Fundamentals, Design and Development, Product and Parts Manufacturing, Project Management and Quality Assurance, and Aviation Maintenance are all areas where the technical trainers excel as to the level of effectiveness of Aeronautical Engineering in related field of teaching in WCC Aeronautical and Technological College, as perceived students.

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