Cleared for Learning: The Impact of Having a Designated Area and Equipment for the Meteorology and Aircraft Instrument Subjects for BS Air Transportation Students

Aliyah P. Bermejo[1], Czarina Mhae I. Lic-o[2], Kian D. Canlas[3], Denise Dorothy P. Canlas[4], Rufino Gabriel B. De Vera[5], Joseph Varrick D.C. Red[6], Dr. Marianne Shalimar G. Del Rosario[7]

[1,2,3,4,5,6,7]BS Air Transportation, PATTS College of Aeronautics Lombos Avenue, Brgy. San Isidro, Parañaque CityATRN 417 - 1A Group 1

DOI: https://dx.doi.org/10.51244/IJRSI.2026.130200180

Received: 28 February 2026; Accepted: 05 March 2026; Published: 20 March 2026

ABSTRACT

This study aimed to determine the impact of having a designated area and equipment for the Air Transportation students' learning and skills development, and preparedness in the aviation industry. Facilities and equipment provide students the opportunity to have hands-on experience and to better grasp the concepts of the technical subjects, such as meteorology and aircraft instruments. The researchers use qualitative and quantitative approaches, descriptive and correlational research designs to determine the importance and relationship of facilities and equipment to the students' overall development. Using Slovins' Formula and stratified sampling, the researchers determined the respondents with an acceptable rate of 30% to 40%, which resulted in a number of 85 respondents. The researchers conducted the online survey with eighty five(85) respondents, aside from that, the researchers interviewed one (1) fourth-year student, one (1) Air Transportation Instructor, and one(1) third-year student to ensure reliability of the findings. To analyze and organize data, the researchers used ANOVA, Weighted mean percentage, and Thematic Analysis. The results suggest that the implementation of facilities and equipment for the subjects of meteorology and aircraft instruments is very significant in the students' overall performance if the said facility is accessible and large enough to accommodate students, essential equipment is provided, instructors were expert in the subject's concepts and equipment, and the implementation is integrated into the institution's curriculum. In conclusion, having a designated area and equipment for the Air Transportation students will make a huge contribution to the students' skills, learning development, and preparedness for their future occupation.

Keywords: Equipment, Designated Area, Air Transportation, Experience, Learners

INTRODUCTION

Aviation education courses have a wide range of lessons that train and prepare learners for possible demand in the industry. The institution where the air transportation students are tasked with training in safety and efficient flight techniques, including forecasting and aircraft selection, which influence the study of meteorology and aircraft instruments. Having a designated area with instruments or resources provides training and hands-on learning for the student, which bridges the classroom to real-world application. Student engagement with tools for meteorology, flight planning, and models in aircraft instruments would improve their ability to interpret real-world scenarios. Even though the Aircraft Instruments course is mostly theoretical, the students can benefit a lot while attending lectures if they have the opportunity to manipulate real models, mock-up panels, or simulators. Having a well-equipped lab is not a must, but there is no doubt that access to props and a small area set aside exclusively for demonstrations would greatly improve the quality of teaching. The continuous practice of equipment and instruments would enhance students' skills and knowledge about efficient flight. The lack of area and equipment might limit the opportunities for the student to enhance their skills and knowledge to develop their readiness in real-life scenarios. Providing specific areas or facilities would encourage students to deepen their knowledge, understanding, critical thinking, and confidence to perform well in academics and in industry, fostering active learning and motivation to strive hard in performance.

Instrument-focused areas benefit the students by enhancing and developing their competencies. Exposing students to proper techniques improves aviation safety. Visual aids and equipment assist students in thinking critically, recognizing situations, and responding effectively to accidents and incidents in the industry. Additionally, these tools enable instructors to evaluate whether students are correctly applying techniques relevant to real-world scenarios. Students gain skills positively when they practice instrument scans and sim procedures. The study by Chen et al. (2025) states that learners' continuous practice in simulators or instrument panels lets them gain knowledge in patterns, and practicing safety checklists can boost the performance and skills of the students. Müller et al (2025) study mentioned that simulation and training equipment can boost learners' engagement and hands-on skills. For aviation students, dedicated equipment or models allow the student to have interactive learning. This helps the student to develop preparedness in future aviation work by allowing the learners to have repeated practice in a dedicated area for the course, and this might build the confidence of the learners' ability. Virtual simulation in the learning experience has a positive outcome to prepare students for the future workplace. Having a dedicated resource center for air transportation students, like in meteorology or instrument tools training, would encourage students to explore and learn to use instruments, deepening their understanding of aviation industry work (Armitage et al. 2022). Hands-on experience with the equipment can introduce students to the equipment and its techniques, which they will use in their future fields. Quality education is achieved not just through teaching but also with the help of instructional materials and equipment, and classroom facilities that lead to student satisfaction. If a student is satisfied with the physical resources and the way of teaching, the private higher institutions will grow and succeed. The purpose of developing a setting where physical resources are available is to be employed effectively to engage the students in the learning process. Having a dedicated setting equipped with physical resources creates a favorable environment for active learning and motivates the students to perform better. A classroom should be used as a space for learning, so resources such as equipment and other learning objects should be arranged and maintained in order for the students to use them for their subjects. Having an organized learning setting helps a student focus on a specific task and topic. By embodying these adaptable concepts, a designated resource area transforms from a support center to a vital facilitator of learning outcomes and operational readiness. Such a venue gives students discretion over how they perform simulations, access emergency materials, and engage with peers by integrating elements like integrated technologies, modular layouts, and blended-access resources. This fits with an educational approach that emphasizes readiness, where students must develop the ability to quickly adjust, take charge, and participate successfully in a variety of situations, exactly like they would in an emergency or operational situation. Appropriate materials and equipment for a task help the students to improve their skills in analyzing real-life scenarios. Therefore, creating structured lab environments would mirror this positive effect, ensuring that Air Transportation students not only absorb theory but also practice applied skills. The study by Anari et al. (2023) mentioned that well-designed physical learning spaces can enhance motivation, collaboration, and have a greater effect on the academic performance of students. This insight aligns strongly with the advantages of having a dedicated resource area in a structured manner. The space for learning is a dynamic setting that builds to encourage active learning. The area of learning promotes more in-depth interaction between students and instructors that gives access to tools and resources which improve student learning (Pernod, 2021). By distributing specific spaces equipped with the right materials, tools, and technologies, students are given an opportunity to access the resources quickly and engage in hands-on activities that have the advantage of enhancing students' learning performance and operational preparedness. Having new training methods and tools in the course has significantly enhanced student learning. Having space for the course emphasizes a practical approach, which enables students to digest the course material. In that, the absence of the space and equipment might reduce the ability of the students to interpret real-life weather conditions accurately. The study of Shamsiev (2022) states how organizational factors affect learners' abilities. The absence of space for training and equipment impedes how the learners build their skills and performance. For air transportation students, the lack of area in their specialized field would limit their practice for gaining opportunities and limit their practical skills and knowledge. Students' ability to gain real-world skills is hindered when specialized areas for meteorology and aircraft instruments are absent; students risk losing opportunities to develop and maintain practical skills in real-life scenarios. This underscores why continuous access to training resources is critical to readiness. If students don't have access to essential equipment, their academic performance suffers along with their safety. The study of Asiimwe (2024) states that having laboratories would engage physical activities, allowing students to have safe and repeated practice of different scenarios that could visualize their complex concepts. The study highlights the importance of having a designated resource area; in doing so, the availability of a designated resource area enhances both operational preparedness and the learning outcomes of students. If a school has a

dedicated simulator and resource areas, it would enhance the operational preparedness of the learners. Students could practice complex scenarios in meteorology, instruments, and planning safely and efficiently, ensuring stronger overall learning outcomes. This supports designated areas for meteorology and aircraft instruments, enhancing student learning and performance. Simulation-based teaching effectively bridges classroom theory and real-world practice by boosting students' knowledge, skills, and confidence. It also reinforces their career choice, which can improve retention rates and produce a more prepared workforce. This study means that designated simulator and instrument practice areas would directly contribute to improving motivation and measurable performance outcomes. Students gain better comprehension in aircraft instrument training and meteorology exercises.

This situation could restrict students' acquisition of vital operational skills. However, Aircraft Instruments might not make use of an entire laboratory setup, but the presence of extra equipment or demonstration areas might still enhance the learning process. On the other hand, Meteorology is almost entirely dependent on tools and simulations, which enable the students to decipher the real-time weather phenomena.

So consequently, the present research intends to look into the effects of the setup of special zones and provision of tools for both Meteorology and Aircraft Instruments, underlining the impact of such amenities on the students' learning, skills obtaining, and Air Transportation preparedness. The findings highlight the necessity of upgrading the facilities in order to be in line with the modern aviation training standards.

Background of the Study

The Air Transportation program was already included in the programs offered when an aeronautical school was founded in 1969. As the researchers interviewed one of the instructors who had experienced teaching in the previous location of the school, which was in Pasay City, the researchers discovered that the previous school did not have enough space for multiple laboratories. The subjects, including the major or technical subjects, were taught only through books and lectures because of the limited resources, such as facilities, physical models, equipment, and materials needed for hands-on learning, especially for technical subjects. After many years of staying in Pasay, the school decided to move to a better location that has a better facility, so the institution provided multiple laboratories, such as the Heatcinon laboratory, powerplant laboratory, physics and chemistry laboratory, for the betterment and development of the students' education. Also, to accommodate the increasing number of aviation students in 2005. The Visual Vectoring Enroute Training Laboratory was then provided. Recently, through a partnership between the institution and an aviation academy, the flight simulator was made possible for the Air Transportation Students. According to the instructors, Hands-on learning is essential for technical subjects, and the Air Transportation Program is included in technical programs, which have technical subjects; the Air Transportation program syllabus includes hands-on learning.

Despite these advances, certain topics in Air Transportation that need practical knowledge, particularly in Meteorology still have no specific areas or resources for learning. Although Aircraft Instruments is mostly theoretical and does not necessitate a complete laboratory, visual aids, mock-up panels, or instrument models can greatly improve the comprehension level of students. In contrast, Meteorology does not only involve weather interpretation but also affects the use of physical materials, weather charts, and demonstration tools, which are vital for learning that is effective. If specialized areas are not implemented, the delivery of theoretical knowledge and its application may be affected. Research by Anari et al. (2023) highlights that the learning environment is a crucial factor that can significantly affect the level of motivation, collaboration, and academic results. In this setting, the researchers pointed out an opportunity to improve the learning space by giving Meteorology a dedicated area and assigning different teaching materials for Aircraft Instruments. The institution has some pertinent resources on-site, and others, such as the models of the instruments, may be borrowed from the students' projects with the students' consent.

The significance of this research is due to the fact that establishing learning spaces provides students with better comprehension, more opportunities for their practical applications, and also support in their skill development. The construction of a specific area for Meteorology, along with the acquisition of instructional aids for Aircraft Instruments, could be an asset in the academic field for the institution, thereby attracting more students and improving the school's reputation. Such changes create a learning environment where the theoretical and the

practical meet, hence boosting students' self-esteem and equipping them with the needed entrepreneurial skills for the different careers in the aviation industry.

Scope and Limitations

This study focuses solely on students from the second to fourth year levels, as the subject Meteorology and Aircraft Instruments is offered only to these year levels in the participating institutions. Therefore, the findings will reflect only the perceptions and experiences of students who have formally taken or are currently enrolled in the Meteorology and Aircraft Instruments course.

THEORETICAL FRAMEWORK

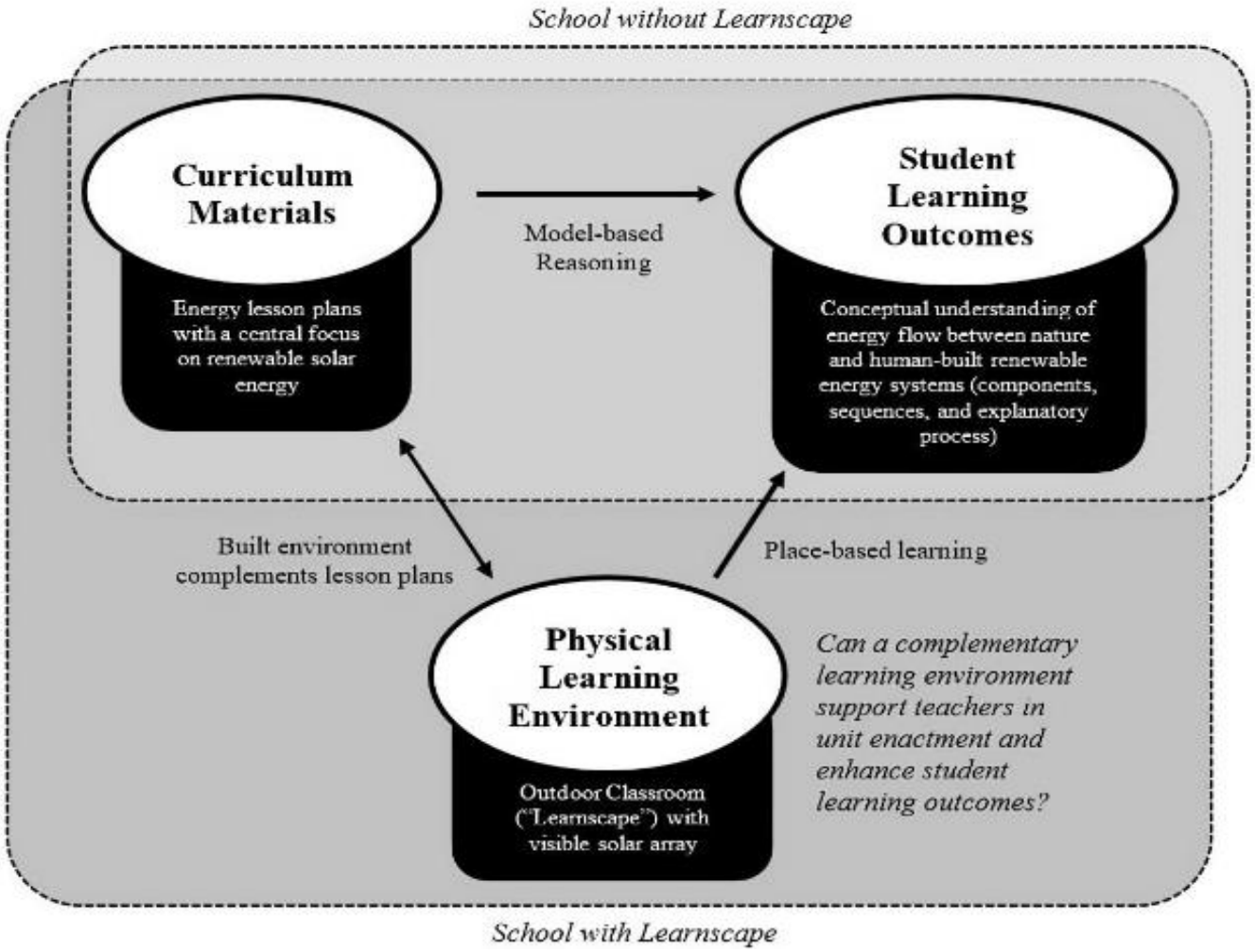

Fig. 1: Theoretical framework linking physical learning environment, curriculum materials, and student learning outcomes(Cole et al. [2023])

The diagram illustrates the relationship between the presence of physical learning environments, student learning outcomes, and curriculum materials. The framework emphasized that when curriculum materials are combined with a physical learning environment, students will have better performance through model-based and place-based learning. The result improved performance and practical application of knowledge by enabling students to actively interact with real-world representations.

This study focuses on how the physical resources, facilities, equipment, meteorological tools, and instructional resources determine the academic performance of Air Transportation students. The Aircraft Instruments course mainly consists of theory, but the use of extra materials like mock-ups or visual aids can greatly improve the understanding of the concepts. Meteorology, on the other hand, requires more physically controlled learning spaces where weather observations and interpretations, as well as analysis, can be vividly demonstrated.

The theoretical framework offers support for the view that through practical experience and physical interaction with teaching materials, theoretical learning can be transferred to real-world aviation situations.

Conceptual Framework

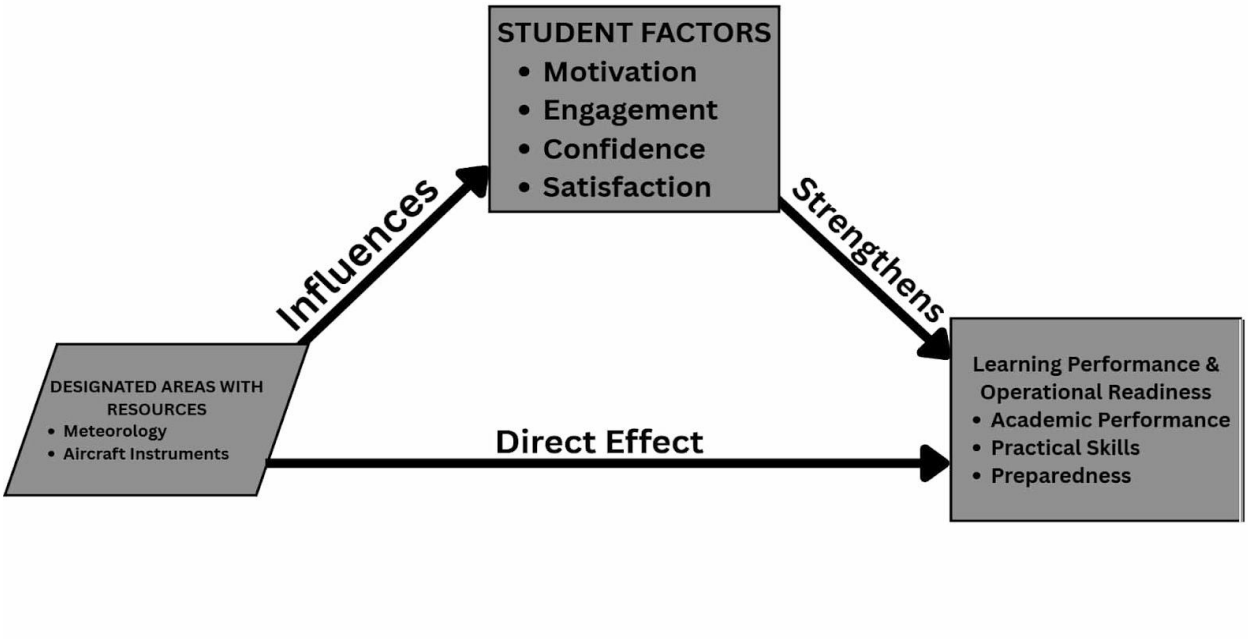

Fig. 2: The effect and influence of area and resources on Air Transportation students' knowledge, skills, and preparedness.

This study assumes resources such as facilities, equipment, physical models, and other learning materials may have a significant impact on Air Transportation students' knowledge, skills development, confidence, and readiness in the general aviation workforce. Resources like these are significant as it gives the students hands-on experience in areas of meteorology and aircraft instruments, observing weather conditions using tools, and mastering aircraft instruments through a physical model – all in one area.

If students are not provided with the required resources, then they will find it hard to attain the necessary depth of understanding for the aviation tasks. Also, if there are no practical learning opportunities, they will not be able to relate the theories to the operations. Eventually, their ability to solve problems and knowledge of difficult aviation processes will be affected. To conclude, the availability of specialized resources and structured learning environments is not only a crucial factor in the enhancement of academic performance of Air Transportation students but also in their professional readiness, not only for the flight roles but also for the various operational and technical areas in the aviation industry.

Statement of the Problem

This study aimed to determine the effect of resources and learning spaces on the academic performance and readiness of Air Transportation students in the general aviation workforce.

Specifically, this study sought to answer the following:

How do Air Transportation students in the aeronautical institution affect their learning and performance in having designated areas, physical models, and equipment in:

a. Meteorology

b. Aircraft instruments

In what ways does the lack of specialized areas and resources influence the development of students' practical skills and performance?

What are the benefits can students gain from having a dedicated area and resources that support their operational readiness and overall learning?

Is there a significant difference between having accessible areas and equipment for meteorology and Aircraft Instruments in the learning, skills development, and preparedness of Air Transportation Students in terms of:

A. Year

B. Section

Is there a significant relationship between having accessible areas and equipment within the institution on the development of students' practical skills, learnings and readiness in the areas of:

a. Year

b. Section

How does Hands-on Experience aid the students in improving their learning, skills, and preparedness in their future field?

Based on the collected information, how can the institution implement facilities and equipment for meteorology and aircraft instruments effectively?

Hypothesis

There is no significant difference between having an accessible area and equipment for meteorology and Aircraft Instruments in the learning, skills development, and preparedness of Air Transportation Students in the Institution.

There is no significant relationship between having a designated area and equipment for meteorology and aircraft instruments in the learning development and practical skills, and preparedness of Air Transportation students in the institution.

Significance of the Study

Air Transportation Students and other aviation students- The study aims to benefit the Air Transportation students, as they will have the opportunity to use these resources to hone their skills and knowledge for their future jobs in the industry. And also, other programs such as AMT and Aeronautical Engineering, as their projects can be displayed in the area and be credited as well.

Instructors- The study could guide instructors in providing a more practical and skills-based approach to teaching. This would encourage instructors to promote a deeper understanding, preparedness, and critical thinking in real-world scenarios for the student.

Institution- The study will benefit the institution in the way that their students' learning will improve, which leads to students' satisfaction once the study is carried out. This will also attract new students.

Other Aviation School- This study may be used for reference or as the basis for putting up their own area or laboratory for their technical subjects. As it is critical that students have a high level of knowledge and skills once they are in the field.

Future researchers- This study may serve as a reference in developing a similar study that could impact student performance. This could guide future researchers on the effectiveness of having a teaching environment that allows them to recommend improvements in enhancing student knowledge and skills.

METHODOLOGY

Research Design

The study is a combination of qualitative and quantitative methods. With the combination, the researcher used a descriptive and correlational research design to look at how available areas and equipment affect the knowledge, skills, and preparedness of Air Transportation students. This design was chosen because it gives a clear view of the current conditions in the aviation school and examines possible links between resources and student outcomes. With this approach, the researchers described the existing resources and facilities and determined whether these factors are related to students' academic preparedness and skill development. As this study is also qualitative, the design used is narrative to deepen the understanding of how the learners improve their learning skills and preparedness in their future field. By combining all the methods, the study presented the current situation and explored connections that could help improve aviation education.

Respondents

The study's respondents are composed of three validators who are professionals in the aviation industry, including a pilot, an aviation instructor, alumni who currently work in the field, and students from the Air Transportation program. Their role is to provide a deeper insight and evaluate the questionnaires for having areas and equipment for the subject's meteorology and aircraft instruments. These combinations of validators and responses from students provide both professional and educational perspectives, strengthening the validity and reliability of the study.

The study limited its respondents to second to fourth year Air Transportation students. This choice conforms to the curriculum where Meteorology and Aircraft Instruments are taught in the second year. The students' responses are informed, reliable, and based on actual academic exposure since they have either taken or are still taking the subjects under investigation. First-year students were excluded since they had not been taught these subjects yet. Choosing students without sufficient background knowledge might lead to wrong or uneducated perceptions, thereby lowering the study's validity. By concentrating on the students with the requisite course experience, the researchers were able to guarantee that the results truly mirror the students' learning needs and insights. From the total. The sample consists of 85 student where 24 students are from the 2nd year, 42 from the third year and 19 from the fourth year. It is determined by applying Slovin's formula to ensure that the chosen sample accurately represents the views and experiences of the entire population of students in Air Transportation. However, due to the limited time, the researchers used an acceptable rate of 30% to 40% from the total population. Also, the researchers gathered a section of respondents. The researcher gathered 85 respondents. After surveying, the researchers conducted an interview for qualitative questions. There are three interviewed respondents, consisting of one validator who is an instructor from the institution and two students who also answered the survey form.

Year Level	Frequency	Percentage
2nd	24	28.2%
3rd	42	49.4%
4th	19	22.4%
Total	85	100%

Table 1: Frequency and Percentage of Respondents based on their Year Level

Based on the survey findings, the researchers gathered 42 respondents from third-year students, who gathered 49.4% of the respondents. Next to this is second year students who gathered 28.2% of respondents, while the fourth-year students had the least number of respondents with only 22.4%. These results show that most of the participants are in the lower level of the program, which may indicate that students are still in the phase of

developing their foundation in understanding aviation lessons. The responses in different year levels are beneficial for having a designated area and access to equipment for meteorology and aircraft instruments. Though this subject is mostly theoretical, the students can benefit a lot while attending lectures if they have the opportunity to manipulate real models, mock-up panels, or simulators. Having facilities can provide wider interactive experiences and hands-on learning, which allow students to understand technical subjects that are essential to studying program lessons. Furthermore, the least participation from fourth-year-level students may be due to limited availability, but their small contribution as senior students shows how they perceive that learning equipment and hands-on learning could enhance students' preparedness in professional environments in the aviation industry.

Sections	**Frequency**	**Percentage**
1A	9	10.6%
2A	4	4.7%
3A	5	5.9%
4A	8	9.4%
5A	59	69.4%
Total	85	100%

Table 2: Frequency and Percentage of Respondents based on their Section

Based on the survey results, the researchers gathered 69.4% responses from students in section 5A, making them the majority of the total respondents. This is followed by students in 1A, who have 10.6% of respondents. Next to this, the students in section 4A make up 9.4% of respondents, while students in section 3A have the least number of respondents, with only 5.9%. The findings show that most respondents came from section 5A, indicating that these students engage more with learning equipment and space for the subjects. The active participation of the students reflects their awareness of the challenges related to the designated learning space and learning equipment. The lower participation in section 3A is due to a different schedule of students in that section during the survey period, and the researcher gathered some students from section 3A for pilot testing. Furthermore, each student's responses provide valuable insight into how the learning space and resources influence student performance.

Settings

The study was conducted in an aviation school in Paranaque City. Survey participants were recruited using simple random sampling and stratified random sampling. To ensure that the perspectives of students from various phases of the Air Transportation program were fairly represented, the classification was based on year level. This approach contributed to a fair assessment of the experiences of all students, from those in the first year level to graduating students.

The total population of Air Transportation students was considered the sampling frame. Using simple random sampling, participants within each stratum were randomly selected to minimize bias and give equal opportunities. The researchers selected this method to ensure fairness and proportionality across academic levels. In terms of student composition, the Air Transportation program includes learners from various socioeconomic backgrounds and provinces, offering a diverse range of perspectives, as it shows different levels of access to learning materials, motivation, and ability to adapt to aviation education. The presence of students from multiple academic standings, ranging from first-year to graduating students, enabled the researchers to explore differences in experiences, attitudes, and preparedness levels within the program.

The study also conducted an interview since this study is a mix method of qualitative and quantitative research. The interview was designed to gather deeper insight for the study. The participants of the interview include both

professionals and students that allows researchers to obtain perspectives from different levels of experience. The participants were selected according to their availability and their responses to the survey questionnaire, which ensured relevant information to support the study.

The aviation school in Paranaque City provided relevant context because of its specialized resource area. This highlights the importance of assessing resource availability and its effect on students' performance. The institution's educational environments are backed by a well-organized academic framework that focuses on discipline, technical skills, and safety awareness as key values in aviation education.

Their expertise ensures that students are taught by individuals who have direct experience in the aviation industry. The institution emphasized academic excellence through strict academic policies, standardized tests, and ongoing curriculum development. It also provides student support systems like academic advising and aviation-related programs. These resources help promote both intellectual and professional growth. The school's structured learning environment focuses on technical knowledge and also encourages the development of ethical behavior, leadership, and communication skills.

Instrumentation

The survey and interview questionnaire that was formulated by the researchers has four parts, which contain one to eight questions. The researchers formulated the research questions based on the Related Review of Literature and categorized them based on their suitable Statement of the Problem.

After creating the questions, it was then validated by three professionals who have related experience in the aviation field. They are to assess each statement. The first validator, who is an Air Transportation Instructor, suggested that the researchers be specific in some parts of the questions. The second validator is an alumnus who recommended proper terms. Lastly, the third validator, a professional who works in the aviation industry, suggested changing the negative phrases into positive ones in order for the questionnaire to be uniform.

The researchers applied all the recommendations from the validators and prepared it for pilot testing. It was administered through Google Forms and was open to all Air Transportation students only. The pilot testing was conducted to improve the quality of the survey in general.

The final version will reveal the impact of having a designated area and equipment for the meteorology and aircraft instrument subjects for Air Transportation students. Even though the Aircraft Instruments subject is mostly theoretical, the students can benefit a lot while attending lectures if they have the opportunity to manipulate real models, mock-up panels, or simulators.

Having a well-equipped lab is not a must, but there is no doubt that access to props and a small area set aside exclusively for demonstrations would greatly improve the quality of teaching. The survey was disseminated by the researchers to Air Transportation students in the Aeronautical School.

After finalizing the survey results, the researchers developed an interview questionnaire based on the key findings obtained from the survey. The purpose of the interview was to gain deeper insights and clarification regarding the responses gathered from the respondents. The researchers selected one student from fourth year and third year levels to represent varying academic experiences and perspectives within the institution. In addition, one Air Transportation instructor was included in the interview process to provide expert insight and to ensure the reliability and credibility of the gathered information.

The number of interview participants was intentionally limited to three because the interview served as a supplementary method to support and validate the data collected from the survey. This approach allowed the researchers to conduct a more in-depth analysis of the participants' responses.

Furthermore, the limited number of interview participants ensured that the researchers could carefully document, transcribe, and analyze the responses accurately. The interview was conducted within the school premises to provide a convenient and comfortable environment for the participants.

Data Analysis

This research investigates the effectiveness of having designated areas and equipment for the subjects, meteorology, and aircraft instruments, so the researchers conducted both qualitative and quantitative research methods. The researchers conduct a pilot test using Cronbach's alpha to ensure that questionnaires are reliable and appropriate. To define the number of respondents, the researcher used Slovin's formula that helps to compute the sample size of students in Air Transportation for the survey. After the survey, the weighted mean was applied to interpret the answers of respondents and determine the perception of students on each year level and section. Therefore, the frequency table was calculated to examine the distribution of responses at each point. Also, the use of quantitative analysis involves the use of ANOVA to assess the effect or impact of this in each year level. The scale categories provide insights into the effectiveness of having designated areas and equipment for the students. Researchers use thematic analysis and cross-tabulation to identify the effectiveness of having designated areas and llllequipment for the subjects and meteorology and aircraft instruments for air transportation students. It was used to further interpret the interview information. This is also used to uncover the fundamental implications of interview answers and to explore more detailed information about the data gathered from respondents. In this, the research would find valuable insights from respondents' experiences and views.

Ethical Considerations

All ethical guidelines for conducting the study were adhered to. Information and responses were kept confidentially anonymou,s and all personal information was stored on password-protected and digitally encrypted files. No risk of harm to health or personal safety was posed to participants in this study, and data were managed to minimize the risk of unauthorized access to and misuse of data. The research was reviewed and approved by the institution.

All research was conducted in safe, adequately illuminated, and reasonably clean and organized spaces. Spaces with marked emergency exits hosted interviews and research meetings. The researchers did not conduct the study at sites near where participants could have been exposed to environmental hazards or industrial accidents. Researchers contacted one another during the activity and kept participants safe when traveling toward and from the research site.

The researchers note that all IRB approvals and permissions have been obtained and verified prior to the study. An institution representative was present to ensure that safety and ethical protocols were followed. Participation was entirely voluntary, and consent was informed. The study did not ask questions that could be considered sensitive or intrusive and it did not harm the company or institution's operations or reputation in any way. Providing food has been marked N/A for those whose research period takes place between normal working hours, as meal provision is unnecessary.

A number of measures were taken to protect the safety of both researchers and participants. All foreseeable emergencies had plans prepared to cope with them, and advice on safety in such studies from the researchers' institution was followed. Research did not in any way interrupt the normal functioning of the institutions. At every stage, the research maintained confidentiality, safety, respect, and ethical responsibility.

RESULT AND ANALYSIS

The Effect of having a dedicated area and equipment in Meteorology on the students' overall performance.

Statement	Standard Deviation	Weighted Mean	Remarks
A designated area and equipment for meteorology subject significantly improve the performance and learning of Air Transportation students	0.52447	3.66	Strongly Agree

Simulation-based activities enhance students' ability to interpret and apply weather data	0.5467	3.66	Strongly Agree
Modern teaching techniques foster stronger critical thinking skills in weather analysis	0.49309	3.68	Strongly Agree

Legend: 3.25-4.00 - Strongly Agree, 2.50 - 3.24 - Agree 1.74 - 2.49 - Disagree, 1.00 - 1.74 - Strongly Disagree

Table 3: Effects of having a dedicated area and equipment in Meteorology on the students' overall performance. The table shown above examined the importance of having a designated area and equipment for the Air Transportation students' subjects, specifically in meteorology, and its overall impact on the students' improvement in their academic performance and skills regarding the interpretation of weather data and their critical thinking skills. Having space for the course would enhance students' learning and improve real-life weather conditions accurately (Benedict, 2022). The given numerical result will be interpreted based on the legends provided below the table, wherein each statement in this table was given a weighted mean higher than 3.50, which means the respondents strongly agreed with each statement in this table. With the highest weighted mean of 3.6692, the respondents agreed that modern teaching techniques foster stronger critical thinking skills in weather analysis. And having the particular statement "Simulation-based activities enhance students' ability to interpret and apply weather data" has the second-highest weighted mean of 3.6466. Lastly, with the weighted mean of 3.5865, the respondents agreed that having a dedicated area and equipment affects the overall performance of the students. As a result, the average weighted mean is 3.634,1 which means the respondents strongly agreed in general.

The Effect of having a dedicated area and equipment in the Aircraft Instrument on the students' overall performance.

Statement	**Standard Deviation**	**Weighted Mean**	**Decision**
The involvement of hands-on practices with aircraft instruments boost the performance and learning outcomes of Air Transportation students	0.49167	3.74	Strongly agree
Utilizing physical models in aircraft instruments improve students ability to perform the instrument accurately.	0.47279	3.73	Strongly agree
Incorporating advanced technologies make pilot training more engaging and effective.	0.50764	3.71	Strongly agree
The government encourages wider integration of advanced training technologies.	0.78412	3.29	Agree
Interactive website aviation learning system increases students' aviation literacy.	0.62286	3.59	Strongly agree
Interactive website aviation learning system improve students' ability to apply knowledge.	0.60159	3.6	Strongly agree
Simulator-based training improves students' understanding of instruments and flight planning.	0.43095	3.8	Strongly agree

Legend: 3.25-4.00 - Strongly Agree, 2.50 - 3.24 - Agree, 1.74 - 2.49 - Disagree, 1.00 - 1.74 - Strongly Disagree

Table 4: Effects of having a dedicated area and equipment in the Aircraft Instrument on the students' overall performance. It shows that in Air Transportation, students agree that facilities, practice, and training have a great impact on their learning and performance, with a range of weighted means from 3.63 to 3.75. The presence of learning areas and the availability of equipment and devices allow them to apply their aviation knowledge into practice. As has been noted elsewhere (Shamsiev 2022, Armitage et al. 2022), the influence of specialized training environments, simulation education, and instructional materials on students' skills, operational readiness, quality of work, educational outcomes, and academic achievements is meaningful. In atmospheric science and pilot training, studies have noted that a lack of training space, equipment, and facilities obstructs practical learning, while continuing practice and advanced training systems can deepen understanding and improve flight safety. The evidence collectively suggests that continual access to physical resources and designated learning spaces are essential to the production of capable and capable aviation students.

Impact of specialized area and equipment on student development, skill and development

Statement	Standard Deviation	Weighted Mean	Decision
The regular practice with equipment for meteorology and aircraft instrument subjects improve the student ability to apply real-world knowledge effectively	0.49309	3.68	Strongly Agree,
The designated learning areas and resources provide students with greater opportunities to enhance their practical skills in their future field	0.52072	3.67	Strongly Agree,
The specialized facilities strengthen the ability of air transportation students to gain practical knowledge and skills	0.534	3.62	Strongly Agree,
The presence of appropriate tools along with hands-on experience develop your skills needed that prepares you in your future job	0.52072	3.73	Strongly Agree,
Alternative training strengthen students' preparedness for emergency scenarios	0.55002	3.65	Strongly Agree,
Consistent proficiency checks reduce the chances of human error in flight operations	0.50957	3.75	Strongly Agree,
Continuous training help students maintain their skills	0.46683	3.74	Strongly Agree,
Meteorology and aircraft instruments practice areas support students in improving their readiness	0.48363	3.71	Strongly Agree,
A designated area for meteorology and aircraft instruments help you apply theoretical knowledge in practical situations	0.49733	3.73	Strongly Agree,
Access to these resources for meteorology and aircraft instruments enhance student academic performance	0.53058	3.71	Strongly Agree,
Access to these resources for meteorology and aircraft instruments encourage you to engage more in learning activities	0.47838	3.72	Strongly Agree,

Legend: 3.25-4.00 - Strongly Agree, 2.50 - 3.24 - Agree, 1.74 - 2.49 - Disagree, 1.00 - 1.74 - Strongly Disagree

Table 5 : Impact of specialized area and equipment on student development, skill and development Table 5 shows how the lack of specialized areas and resources makes it harder for Air Transportation to learn and improve their operational readiness, improve their practical skills, and performance. It evaluates how the students of Air Transportation view the value of ongoing practice, access to specialized areas, tool availability, and resources in learning environments, improving their academic performance and operational readiness. The findings reveal weighted averages between 3.62 and 3.72, which all represent "Strongly Agree". This suggests that students really understand how important specialized facilities, regular training, and the right equipment are for improving their practical skills. According to the respondents, having access to these specialized areas for meteorology and aviation instruments allows them to successfully use theoretical knowledge in both real-world situations and simulations. Furthermore, the results show that students believe that the presence of appropriate

tools are crucial for reducing mistakes and enhancing their overall performance. Thus, certain specialized areas support them in maintaining their self-assurance, maintaining abilities, and their interest throughout their performance. The overall interpretation is that specialized areas and resources are essential for enhancing students' skills and readiness for professional activities. Lack of such facilities can be a hindrance to opportunities for students in Air Transportation. On the other hand, constant access to well-equipped tools for meteorology and aircraft instruments fosters academic achievement, operational readiness, and overall academic performance.

Benefits of having a dedicated area and resources for student learning and readiness

Statement	Standard Deviation	Weighted Mean	Decision
Dedicated resources positively affect the learning and performance of air transportation students	0.46683	3.74	Strongly Agree,
Hands-on experience deepen the understanding of air transportation students in their future field	0.48565	3.75	Strongly Agree,
The availability of materials and equipment in meteorology help you to grasp the concept immediately	0.56061	3.60	Strongly Agree,
The availability of physical models of aircraft instruments help you determine and understand their concept	0.56806	3.66	Strongly Agree,
The student feels more motivated if there were designated rooms and proper resources for your meteorology and aircraft instrument classes?	0.49309	3.68	Strongly Agree,
Physical model and materials for aircraft instruments and meteorology aid you in accomplishing our tasks	0.57419	3.64	Strongly Agree,
Flight simulators help students train more safely and effectively	0.50764	3.71	Strongly Agree,
Simulators improve students' ability to handle complex scenarios?	0.55002	3.65	Strongly Agree,
A dedicated area for meteorology and aircraft instruments encourage you to take initiative and actively participate in class activities and peer collaborations	0.55307	3.64	Strongly Agree,
Access to proper facilities help you adapt quickly during hands-on learning activities	0.53922	3.68	Strongly Agree,
Access to a designated area for meteorology and aircraft instruments improve your confidence in handling aviation-related tasks under operational conditions?*	0.57125	3.65	Strongly Agree,
The proper resources area for meteorology and aircraft instruments enhance your preparedness for practical assessments and real-world applications ?*	0.50764	3.71	Strongly Agree,

Legend: 3.25-4.00 - Strongly Agree, 2.50 - 3.24 - Agree, 1.74 - 2.49 - Disagree, 1.00 - 1.74 - Strongly Disagree

Table 6: Benefits of having a dedicated area and resources for student learning and readiness The table shown above shows the perspectives of students in Air Transportation on the advantages of having a designated resource area to enhance their operational readiness and overall learning performance. The findings highlight the importance of specialized facilities like meteorology and aircraft instruments. Though this subject is mostly theoretical, the students can benefit a lot while attending lectures if they have the opportunity to manipulate real models, mock-up panels, or simulators. The researchers analyzed the degree to which each student in the Air Transportation programs agreed with each statement using weighted means and standard deviation, which found that students in the Air Transportation program agreed with the statements in the 3.60 to 3.76 range, with most students holding the belief that resources and specialized areas are beneficial. These students believe that having experience and tools like meteorology and aircraft instruments are necessary to make learning more effective, as well as better operational readiness. more learning overall. Students also feel that enhanced focus is a product of having a dedicated space that promotes teamwork and provides a hands-on training environment for real challenges. This emphasizes how, in aviation education, well-equipped learning spaces serve as stimulants for increased comprehension, real-world application, and overall performance. Armitage et al. (2022) emphasized that simulation-based education positively prepares students for real-world applications, supporting the idea that

designated training areas enhance readiness. The study by River State University highlighted that the effective use of physical resources encourages active learning and motivation. Similarly, research in Pakistan underscored that quality education depends on instructional materials and facilities that increase student satisfaction. Research on learning environments shows that well-equipped and structured areas support students' concentration and collaborative learning. Furthermore, research on flight simulators confirms that specialized simulation spaces enhance scenario-based performance and operational readiness. All things considered, such studies support the recent discoveries that specialized learning environments improve student preparedness for the aviation industry as well as the quality of education.

Significant Difference between Facilities and Equipments, and Development of the students' learning, skills, and preparedness in terms of :

In this variable, all the null hypotheses were accepted based on the legends or the criteria below, wherein if the significance level is ≤ 0.05, the null hypothesis is rejected. However, in the table of year level that is present in the Appendix, the significance level of each statement is higher than 0.05, and the null hypothesis is accepted.

Statement	Category	Sum of squares	Mean square	F	Sig.	Decision
Does the involvement of hands-on practices with aircraft instruments boost the performance and learning outcomes of Air Transportation students?	Between Groups	2.428	0.607	2.716	0.035	Rejected
	Within Groups	17.878	0.223			
	Total	20.306				

Table 7: Significant Difference between (Section)

Statement	Category	Sum of squares	Mean square	F	Sig.	Decision
Hands-on experience deepen the understanding of air transportation students in their future field	Between Groups	3.072	0.768	3.67	0.009	Rejected
	Within Groups	16.74	0.209			
	Total	19.812				

Legend: ≤ 0.05 Reject, > 0.05 Accept, ≤ 0.01 Very significant

Table 8: Significant Difference between (Section)

The table shows the results of the analysis of variance (ANOVA) done to see if there is a big difference in how students feel about how hands-on practice with aircraft instruments can help Air Transportation students do better in school and on the job when they are grouped by section. The outcome has a significance level (Sig.) of 0.034 and an F-value of 2.694, both of which are higher than 0.05. The null hypothesis is thus rejected. This suggests that students' perceptions of the impact of practical experiences with aviation equipment on their performance and learning outcomes varied significantly between sections. The finding implies that students from different sections might have different opportunities or access to hands-on experiences. This can lead to

variations in their skill development and understanding of operations. The disparity in the presence and usage of practical resources and instruments across different sections is a factor that affects students' readiness and learning development overall. It is possible that equal access to lab equipment and practice areas will lead to a more uniform learning outcome and that all students will acquire the same level of skill and operational readiness.

Table 9*:* Significant Difference (Section)

Statement	Significant	Decision
Hands-on experience deepen the understanding of air transportation students in their future field 1A,5A	0.009	Rejected

Legend: ≤ 0.05 Reject, > 0.05 Accept, ≤ 0.01 Very significant

Table 10*:* Significant Difference (Section)

The ANOVA result that is presented in the table checks whether there is a significant difference between the impact of hands-on experience on the understanding of Air Transportation students in their future field. The result presented a significance level (Sig.) of 0.035 and an F-value of 2.678, which are both over the risk limit of 0.05. Hence, the null hypothesis is nullified. It means that the students' experiences and understanding gained from the practical exercises were significantly different among groups. The said reasons could be a lack of access to the facilities, the use of different teaching methods, or the number of practical activities in each subject was different. The results suggest that student learning is greatly improved by the consistent availability of practical training and the correct usage of aviation instruments. The disparity seen between groups points out the necessity for uniform application of hands-on activities so that every student acquires the same skills and knowledge in their area of interest.

Relationship between Facilities and Equipment in the students' learning, skills development, and preparedness in terms of:

Group Compared	Significant Relationship	Decision
Facilities and Equipment & Learning, skills development, and Preparedness	0.000	Reject

Legend: ≤ 0.05 Reject, > 0.05 Accept*, ≤ 0.01 Very significant**

Table 11: Significant Relationship (Year Level)

There is a very important relationship between facilities and equipment and students' learning, skills, and readiness, which indicates that students in Air Transportation can successfully attain their academic goals and exhibit operational readiness when exposed to adequate facilities, simulation machines for experiential learning, and designated training areas and fields for practice activities. Through constant exposure to various facilities, students are able to test out and apply what they learned in the classroom in the field of aviation. Additionally, students in these institutions have continuous exposure to modern laboratories and equipment, improving the availability of training, leveling the playing field, and uniformizing aviation-related skills. For example, Admane and Mondhe (2021) found that workshop exposure and the development of practical skills lead to improvement in analytical and technical skills. According to Anari and Olaganathan (2021), continuous practice on simulators is necessary for effective flight operation and aviation safety. The impact of facilities on students' performance and skills utilization in relation to organizational support was likewise found by Shamsiev (2022). Furthermore, Amanda Edgar et al. (2022) concluded that simulation-based environments and resource centers prepare students for real aviation work situations. In conjunction with the findings, the literature identifies the critical role of

appropriate facilities, specialist equipment, and recurrent hands-on training in the development of safe, capable, confiden,t and globally competitive aviation professionals.

Group Compared	Significant Relationship	Remarks
Facilities and Equipment & Learning, skills development, and Preparedness	0.000**	Very Significant

Legend: ≤ 0.05 Reject, > 0.05 Accept*, ≤ 0.01 Very significant**

Table 12: Significant Relationship (Section)

The very important relationship between the facilities and equipment and the students' academic performance generally suggests that the availability of quality educational settings and training aids has an important impact on the academic performance of Air Transportation students.

This aligns with the idea that if students have access to updated facilities such as simulation laboratories, standard flight planning rooms, and fully functioning aviation equipment, their understanding of theoretical concepts will increase, and their academic performance will reflect this improvement. Additional equipment and specialist facilities make learning more meaningful, as students may be able to better understand meteorology, aircraft operation,s and navigation by seeing simulation displays and models.

Additionally, access to up-to-date teaching resources encourages participation, helps students focus, and promotes the higher order thinking skills critical to the study of aviation (Shamsiev, 2022), while the provision of workshops improves students' technical and analytical skills (Admane & Mondhe, 2021), and simulation-based training environments improve comprehension, retention, and illustrate the application of theoretical knowledge into practical situations (Amanda Edgar et al., 2022). These study results, along with similar results, indicate that not only does technology improve academic performance in flight training, but that institutions using updated equipment and with more exposure to resources are better prepared to provide students with the best academic potential and any future employment opportunities in aviation fields.

Hands-on Experience and Student Skill Development

Master Theme	**Superordinate Theme**
Impact of facilities and equipment for meteorology and Aircraft Instrument	● Learning and Skills Development
	● Master Complex concepts
Advantages of Hands-on Learning	● Equipment and Procedure Familiarization
	● Preparedness

Table 13: Hands on Experience and student Skill Development

Master Theme 1: Impact of Facilities and Equipment for Meteorology and Aircraft Instrument

Superordinate Theme 1.1: Learning and Skills Development

Informant 1: “Proper facilities and equipment are crucial for developing students’ skills…. This practical application also encourages active learning, critical thinking, and helps students build confidence in performing real-world tasks.”

Informant 2: “This is the preparation ground for aviation students… It’s the place where Superordinate Theme 1.2: Master Complex Concepts

Informant 1: “Students often doubt the value of hands-on aviation practice because they prioritize theoretical knowledge for passing written exams… the key to truly mastering complex concepts like instrument navigation and meteorology.”

Informant 2: “The thinking of the students nowadays is that lectures are enough for them, not thinking of the importance of having both practice and actual learning. Most of the students prefer just studying theories because they are nervous using real equipment.”

Informant 3: “Having specialized equipment and designated spaces enhance students’ understanding and skills, especially in technical subjects like Meteorology and Aircraft Instruments. These resources bridge the critical gap between theoretical knowledge and practical application.”

The informants’ insights that hands-on equipment is essential for understanding complex aviation concepts align with Ng (2023), who found that structured laboratory environments for meteorology and aircraft instruments enhance comprehension. Their emphasis on simulator use also supports Farquerabao-Dimaano (2023), who concluded that designated simulator and instrument practice areas increase motivation and improve performance outcomes. The repeated need for practical familiarization mentioned by the informants is further supported by Chen et al. (2025), who reported that continuous simulator practice strengthens procedural understanding, and they learn how to perform once they are in the actual field. When they get there, they’ll only need a bit of instruction and guidance because they already have some knowledge of the equipment and procedures used in the actual workplace.”

Informant 3: “I agree because it will help them improve their skills on using real equipment and how they will apply it in the future.”

The informants’ emphasis on hands-on experience improving student skill development aligns with Admane and Mondhe (2021), who stressed that appropriate materials and equipment help learners interpret real-life scenarios and build practical competence. Their views also reflect those of Flynn et al. (2022), who found that limited tools restrict students’ ability to develop real-world skills, reinforcing the participants’ concerns about insufficient practice facilities. Shamsiev (2022) similarly argued that the absence of proper training spaces limits learners’ performance in technical fields, which mirrors the informants’ statements about inadequate equipment and space hindering effective learning. Consistent with the informants’ belief that facilities improve confidence and mastery, Ikram and Kenayathulla (2023) explained that instructional materials and proper facilities are crucial for student satisfaction and overall educational quality.

Handling and mastery of technical concepts. Additionally, Asiimwe (2024) emphasized that the absence of designated resource areas and essential equipment negatively affects academic performance, directly reflecting the informants’ concerns that, without practice spaces, students struggle to fully grasp complex aviation systems.

Master Theme 2: Advantages of Hands-on Learning

Superordinate Theme 2.1: Equipment and procedure

Informant 1: “I think most students didn't believe in it because of the lack of hands-on activities.”

Informant 2: “I think schools should provide aircraft instruments, flight instruments panels, nav tools to improve the learning of the students and to help them understand how it works in real life.”

Informant 3: "I agree because it will help them improve their skills on using real equipment and how they will apply it in the future.”

Hands-on learning gives aviation students real-world experience with real instruments and equipment, which helps them understand how what they learn can be used in the real world. Students get to know the equipment, procedures, and safety checklists better by using simulators and training tools over again. This improves their performance and preparedness (Chen et al., 2025; Muller et al., 2025). Furthermore, access to specialized

training facilities, such as those for instrument and meteorology practice, enhances students' comprehension of aviation operations and better equips them for professional careers in the field (Armitage et al., 2022).

Superordinate Theme 2.2: Preparedness

Informant 1: "The thinking of the students nowadays is that lectures are enough for them, not thinking of the importance of having both practice and actual learning. Most of the students prefer just studying theories because they are nervous using real equipment."

Informant 2: "Make it sure that those instructors are professional enough to handle and to teach students mannerly. Make sure that all students have a chance to experience it to enhance their skills, and make it easier to remember how they will apply it in their future work."

Theoretical learning lays the foundation, but confidence and preparation for any aviation job come from practical experience, which students appreciate. Some learners only lean on the lectures and are reluctant to work with actual equipment. As stated by Chen et al. (2025) and Mullet et al. (2025), the ongoing use of simulators and training tools within a session promotes students' engagement, awareness of safety, and level of training readiness. Moreover, the use of specialized equipment and practice with real instruments enables learners to integrate the theory and practice, improving confidence and preparation for their future.

DISCUSSION

Conclusions

Based on the results and analysis, the following were concluded:

Based on the result and analysis, the researcher concluded that having designated areas and equipment for meteorology, which requires practical interpretation, boosts students' capacity to understand, analyze, and apply the theories. Even though Aircraft Instruments does not need a complete lab because of its mainly theoretical character, access to additional teaching tools, such as mock-up panels and visual material,s still helps in gaining a better understanding. The use of modern teaching methods made the learning process more effective and the students' performance better. These approaches can also foster students to practice their critical thinking in weather analysis, analytical skills, advanced training systems, and improve their ability to perform instruments accurately.

Based on the results, the study concludes that aviation students' learning and skill development are significantly impacted by the availability of facilities and equipment. Tools enabling students to see flight operations, understand weather data, or take part in a simulation are the ones that help to close the gap between theory and practice. The above mentioned opportunities make the students more confident and ready for various aviation positions not only flying, but like flight dispatch, planning, operations, and safety-related functions. On the other hand, the limited availability of facilities hinders hands-on learning and makes it harder for students to use the academic notions efficiently.

Based on the results gathered, having dedicated spaces and resources for students specializing in Air Transportation greatly contributes to their learning and operational readiness. A lot of students pointed out that the availability of the necessary equipment and areas that are exclusively meant for this purpose should make students participate more and be able to grasp the difficult aviation concepts. The use of these learning areas helps to develop the qualities of teamwork, analytical thinking, and problem-solving, which are very important in aviation education and can be applied to different career paths.

Based on the information gathered, the institution can further strengthen its training by enhancing its Meteorology learning materials. Improvements like these are possible and consistent with the standards of aviation education. The regular availability of simulators, weather interpretation tools, and teaching aids would, along with the support of faculty skilled in simulation-based teaching, lead to a great increase in the effectiveness of skill development. Also, students are likewise encouraged to maximize the use of these facilities through

consistent hands-on practice and active engagement to reinforce theoretical learning and enhance their overall operational preparedness.

According to the findings, there is a strong link between having a specialized area and equipment that influences the students' practical skills, knowledg,e and overall learning experience. When students have convenient access to facilities and equipment, they learn more effectively and are more confident in executing practical activities. The findings indicate that the educational infrastructure helps to improve academic results no matter whether the students intend to take flying or other operational aviation careers. Good learning environments have a supportive role for all students by equipping them with the basic skills that are required in the aviation industry.

Based on the results, it shows that good management, scheduling, and use of facilities and equipment are very important for getting the most out of students' learning. Even when there are facilities, limited access can make it hard for students to get the full practical experience. All students can benefit equally from hands-on training if it is scheduled properly and everyone has equal access. So, to improve student readiness, promote fairness, and keep the quality of instruction in aviation programs, we need efficient management systems.

Based on the information collected, for the implementation of facilities and equipment for the subject meteorological and aircraft instruments to be effective, it should be incorporated or integrated into the institutions' curriculum. Facilities and equipment are ineffective when there are no professors who are experts in these subjects, a professor who can explain concepts through this equipment, so students can learn. Above all, these facilities and equipment should be accessible and large enough to accommodate the Air Transportation students.

RECOMMENDATIONS

Based on the discussed conclusions, the recommendations are as follows:

The study recommended that the **institution** establish designated areas and equipment for meteorological and aircraft instruments. Having these resources allows **students of Air Transportation** and other courses to enhance their technical skills and hands-on experience in their future careers. Also, **instructors** are encouraged to teach more practical equipment to promote students' critical thinking, competence and preparedness. This implementation can lead to student improvement, higher satisfaction, and increased enrollment.

Institutions should upgrade and maintain aircraft instrument facilities at the top of their list of things to do to give students modern and effective places to learn. It should add more hands-on training sessions, like practicing on simulators and getting to know the instruments, to help students remember what they learned in class. **Instructors** should also get the right training so they can help students use aviation equipment safely.

Also, all students, **Air Transportation Students, and other aviation students** should have equal access to training tools so they can practice and improve their skills. Partnerships with the aviation industry should be made stronger so that students can get real-world experience and be better prepared for their jobs.

To enhance **Air Transportation students' and other aviation students'** understanding and active participation during lessons, as well as to integrate real-world job requirements, **institutions** should allocate resources to establish and sustain specialized education environments equipped with simulators, physical models, and dedicated areas. This will elevate the quality of education in the aviation industry and serve as a reference for future **researchers**.

The **institution** ensures equal access to laboratory facilities and equipment for all sections to promote consistent learning experiences. The school should standardize practical activities and schedules for meteorology and aircraft instrument training to minimize differences in skill development. Regular **instructor** coordination and monitoring are encouraged to maintain uniform instruction and fair facility use.

The administration may also upgrade and expand laboratory resources and promote collaborative hands-on sessions among sections to enhance students' technical competence and overall preparedness for their future aviation careers.

The researchers recommend that the **institution** provide an accessible area and equipment to facilitate learning about the subjects of meteorology and aircraft instruments. **Air Transportation students** will learn more if they have these resources available to them because they will be able to apply what they have learned in theory and gain practical experience as well.

The **institution** can start small by offering students a room with basic equipment or teaching aids. If teachers were trained on helping students use the equipment safely and correctly, that would be great too. Students will be more confident, develop their skills, and leave the institution better prepared for their future in aviation because of this.

Improving air transportation facilities necessitates organized scheduling, effective management, and ongoing equipment monitoring. Enhanced coordination among instructors, laboratory staff, and administrators ensures optimal resource distribution during classes. The implementation of a reservation system can facilitate access and minimize delays. Additionally, regular maintenance and prompt repairs are crucial for seamless operations. Collecting student feedback can identify access issues and inform necessary adjustments, ultimately enhancing the learning environment.

Institutions should incorporate the implementation of the facilities and equipment to the programs /institutions' curriculum. Ensure that the facilities are spacious enough. Essential equipment must be provided,not just one but at least enough to be used by the number of students in a class. And most importantly, it is critical that the **instructors** were expert and knowledgeable also with the subjects,concepts, and equipment for a good outcome. And also for **future researchers** to further study the impact of hands-on experience on the students overall performance, and determine the various essential equipment needed for this type of facility.

ACKNOWLEDGMENT

The study's researchers would like to sincerely thank everyone who supported, assisted, and contributed to the completion of this study.

We would like to express our gratitude to our adviser, Ms. Marianne Shalimar Del Rosario, for your advice, expertise, and openness in answering our numerous and frequent inquiries during the study.

To our validators, Mr. Adriel De Leon, Ms. Alexandra Legaspi, and Mr.Vincent Gambalan, whose time, wisdom, and suggestions were invaluable in helping to make this thesis a reality. To the respondents who participated in this study, without you, this study would not have been possible.

To our families and friends, we thank you for your unconditional support both financially and emotionally, patience, and for the encouragement and inspiration to keep going and for the reminders that every effort is worth something and the problems we have gone through will eventually lead us to success, which we needed the most.

Above all, to our Almighty Father, the researchers will always be grateful for guiding us in all events of our lives, especially in finishing this study with patience, strength, wisdom, and faith in You and ourselves.

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