# Composite Laboratory Structural Equipment Safety Factors at the Philippine State College of Aeronautics

MARK BENEDICT B. SAJORDA, MPA, MEAM<sup>1</sup>, DR. MARK LOUIE A. MARTIN<sup>2</sup> <sup>1, 2</sup> Institute of Engineering and Technology/Philippine State College of Aeronautics

Abstract- Higher education institutions (HEIs) are commonly viewed as sanctuaries, protected locations where young people can study crucial ideas in a welcoming setting and develop friendships and knowledge that will last a lifetime. Philippine State College of Aeronautics (PhilSCA) is one of the HEIs in the Philippines which focuses on aviation and aeronautics. The study's goal is to determine the factors influencing safety in the composite laboratory at this academic institution and to provide ideas to enhance the safety of structural equipment for laboratory users. The study is composed of 132 participants from PhilSCA, Lufthansa Technik Philippines (LTP), and Wide-Aero Aviation Services Corporation (WAASCO). A 4-point Likert survey on laboratory facility, instructor, laboratory safety programs, and building construction was used in this research. Same Likert scale was still used to determine the assessment of the participants regarding safety precautions implemented in the PhilSCA composite laboratory in terms of working environment; safety policy and objectives; and equipment; and likewise requested suggestions/recommendations of the participants to obtain the relevant information about the study. Based on the findings of the study, PhilSCA -Villamor Campus has a safe composite Laboratory Facilities; Building Construction; and Working Environment but can still be enhanced to attain the highest safety. The institution also has good Laboratory Safety Program; and Safety Policy and Objective but based on the data gathered there is still a room for improvement to promote safer workplace. On the other hand instructors handling composite subject do their job well to maintain safety inside composite laboratory. However, the study also revealed that there is a lack of equipment that can result in producing slightly unsafe composite product as the participant rated this criterion as "Partially Implemented." Therefore, the study used some ideas from the participants to fully enhance and achieve the maximum safety on composite laboratory.

#### I. INTRODUCTION

More emphasis is being placed on composite materials in the building structures for the aircraft industry. Components produced for aircraft fairings, spoilers, and flying controls are made of composite materials. This is being done to reduce weight over aluminum parts ("Aviation Maintenance Technician handbook – Airframe," 2018). Composite materials are essential in the aviation sector because they have the structural strength of metal-alloys while being lesser in weight. This improves an aircraft's fuel efficiency and performance (B.S.Kukreja, B.S. & Löfström, J, 2023).

Students studying aircraft maintenance technology must be taught and exposed to how composite materials are made and used in aircraft. In academia, laboratories provide experimental foundations based on theoretical concepts introduced in lectures. The composite laboratory must be created in compliance with the standards specified by the Civil Aviation Authority of the Philippines (CAAP), as well as any foreign accrediting authorities, in order to be internationally competitive (Biera, 2016).

Composite materials are made up of a number of different materials that are combined to achieve specific structural properties. Advanced composite materials, such as prepreg, resin systems, cleaning solvents, and adhesives, can be dangerous, so the usage of personal protection equipment is required. It is also essential to read and comprehend the Safety Data Sheets (SDS) and to properly handle all chemicals, resins, and fibers. The SDS lists and describes the hazardous chemicals found in the material system. The substance could be a respiratory irritant, a carcinogen, or another type of hazardous substance ("Aviation Maintenance Technician handbook – Airframe," 2018, p. 7 – 2 & 53). Through Annex 19, ICAO has compelled its member states to develop and carry out safety management systems (SMS) to enhance safety. This mandate includes an approved training organization which is vulnerable to safety dangers. The Federal aviation Aviation Administration (FAA) issued AC 120-92B in 2015, to provide instruction material for FAR 121 certificate holders who want to implement and maintain an SMS (Mendonca, F. & Carney, T., 2017). Here in our country, the CAAP mandated all Approved Training Organization (ATO) through Philippine Civil Aviation Regulation (PCAR) to put into effect a safety management system that is acceptable to the Authority (PCAR, part 1.5, 2023).

It is difficult to overestimate the importance of laboratory safety. Laboratories encounter not only the risk of accidents and injuries, but also the chance of toxic materials and waste products being discharged into the environment, threatening the greater population. According to Ermita & Florencondia (2019) Higher education institutions (HEIs) are frequently seen as sanctuaries, safe spaces where young people can explore important concepts in a supportive environment and form friendships and knowledge that will last a lifetime. Any academic institution's goal and vision can only be realized via a continuous, long-term effort to transform education at all levels. The study's goal was to discover the factors affecting safety inside composite laboratory in Philippine State College of Aeronautics (PhilSCA) -Villamor campus as well as give ideas on how to enhance the safety of structural equipment for the laboratory users.

# II. PROCEDURE

• Research Design

The descriptive research design was utilized in this study. The aim of using descriptive research is to describe, compare, and explain the participant's evaluation of the safety of the current composite laboratory that covers facilities; instructors; laboratory safety program; building construction; working environment; safety policy and objectives; and equipment as well as distributed surveys to the participants through google form, who were AMT instructors and students at the Philippine State College of Aeronautics (PhilSCA) – Villamor. To support and develop a judgment or choice based on the analysis and suggestions of the study, all firsthand facts will be gathered and explained. A Key Informant Interview (KII) was also conducted with selected participants in order to obtain specific information required to assess the existing composite laboratory and ask for input recommendations for improving its safety.

## • Population and Sampling

The participants of the study were 113 AMT students from different sections of 2<sup>nd</sup> Year, who used composite laboratory in 1<sup>st</sup> Semester of Academic Year 2022-2023, 13 AMT instructors, who handled composite subject. The study also included three (3) aircraft mechanics from Lufthansa Technik Philippines (LTP) and three (3) personnel from Wide-Aero Aviation Services Corporation (WAASCO). They were selected randomly from their respective department.

The study's sample size was appropriate for a descriptive research design, and participants were chosen for their relevance to the research topic. It is essential to note that the participants were selected using non-probability sampling, which limits the generalizability of the study's findings.

#### • Data Gathering Procedure

A request letter was sent to Philippine State College of Aeronautics (PhilSCA) – Villamor, INET Dean, Engr. Jeq Zyrius A. Sudweste, to allow the researcher to send out survey questionnaires through google form to AMT instructors and students. Following approval of the researcher's request letter, the survey questionnaires were distributed.

The researcher made sure that the questionnaires were well-structured and concise in order to collect the information related to the study that is sought. The questionnaires are divided into four sections. The first part is the demographic profile of the participants. The second part provides questions to determine the assessment of the participants on the existing composite laboratory safety factors of Philippine State College of Aeronautics- Villamor campus in terms of laboratory facility, instructor, laboratory safety program, and building construction. The third part of questionnaire includes questions to determine the

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evaluation of the participants regarding safety precautions implemented in the PhilSCA AMT composite Laboratory in terms of working environment; safety policy and objectives; and equipment. Lastly, the participants were asked to give their suggestions and recommendations on how to improve the current composite laboratory.

Key informant interviews were conducted with the selected Lufthansa Technik Philippines (LTP) aircraft mechanics and three (3) personnel from Wide- Aero Aviation Services Corporation (WAASCO). Following the completion of the questionnaires and interviews by the participants and the collection of the data, the Minitab 21, a powerful program for computing statistical data, was used to analyze the information.

#### • Statistical Treatment of Data

To interpret the collected data, the study used the statistical method. The software Minitab 21 was used to quantitatively examine the percentage obtained. An electronic spreadsheet called Minitab 21 was used to calculate statistical data. Different sets of statistical techniques were utilized to process the raw data as follows: Percentage, Weighted Mean, and Pooled t-test.

#### III. RESULTS

#### Table 1 Mean and Rank Distribution of the Participants' Composite Laboratory Safety Factors Philsca Villamor in Terms of Laboratory Facilities

	Laboratory Facilities	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	Two doors in the laboratory area can be opened outward and are functional in an emergency.	2.54	3.19	3.13	2	Implemented
2.	The composite laboratory room is constructed with sealed floors, no ledges, and established routine cleaning to minimize dirt traps.	2.54	2.92	2.88	5	Implemented
3.	The laboratory has good lighting.	3.00	3.20	3.18	1	Implemented
4.	The interior design of the composite laboratory room allows students and the instructor to work freely and comfortably.	2.31	3.08	3.00	4	Implemented
5.	For chemicals like resin, hardener, and others, there is sufficient storage.	2.31	3.12	3.03	3	Implemented
A	verage Weighted Mean	2.54	3.10	3.04		Implemented

Table 1, on Laboratory Facilities shows that all the criteria have a verbal interpretation of Implemented. However, among all of the criteria, the criterion "The

laboratory has good lighting" got the highest mean value of 3.18. On the other hand, the least criterion "The composite laboratory room is constructed with sealed floors, no ledges, and established routine cleaning to minimize dirt traps" has gained the lowest over-all mean value of 2.88.

It could be seen in Table 1 that the computed general mean of the participants obtained a mean value of 3.04 verbally interpreted as "Implemented.

Table 2
Mean and Rank Distribution of the Participants'
Composite Laboratory Safety Factors Philsca
Villamor in Terms of Instructor

	Instructor	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	The AMT instructors who are handling a composite subject strictly enforce the use of personal protection equipment, such as gloves and a mask, by their students.	3.00	3.52	3.47	4	Fully Implemented
2.	The AMT instructors are familiar and can explain the Materials Safety Data Sheets.	3.46	3.65	3.63	2	Fully Implemented
3.	The AMT instructors are familiar with and can explain the manufacturer's documented cautions for utilizing particular chemicals.	3.85	3.63	3.65	1	Fully Implemented
4.	The AMT instructor makes sure that first aid supplies are accessible at work.	3.31	3.31	3.31	5	Fully Implemented
5.	Before beginning a lab activity, AMT Instructors handling a composite subject rigorously follow all composite safety criteria.	3.54	3.58	3.57	3	Fully Implemented
A	verage Weighted Mean	3.43	3.54	3.53		Fully

Table 2, on Instructor shows that all the criteria have a verbal interpretation of Fully Implemented. However, among all of the criteria, the criterion "The AMT instructors are familiar with and can explain the manufacturer's documented cautions for utilizing particular chemicals" got the highest mean value of 3.65. Conversely, the least criterion "The AMT instructor makes sure that first aid supplies are accessible at work" has gained the lowest over-all mean value of 3.31.

It could be seen in this table that the computed general mean of the participants obtained a mean value of 3.53 verbally interpreted as "Fully Implemented."

Table 3
Mean and Rank Distribution of the Participants'
Composite Laboratory Safety Factors Philsca
Villamor in Terms of Laboratory Safety Program

L	aboratory Safety Program	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	Both students and instructors utilizing or working in the labs and shops receive annual training in laboratory safety.	1.92	2.16	2.13	5	Partially Implemented
2.	Students and faculty receive annual training and orientation on fire and earthquake evacuation drills.	2.85	3.07	3.05	2	Implemented
3.	The orientation of classes includes information about safety rules, regulations, and evacuation procedures that are displayed in clearly visible locations.	3.31	3.32	3.32	1	Fully Implemented
4.	In laboratories, there are emergency showers and eyewash stations.	2.46	2.12	2.15	4	Partially Implemented
5.	Disposal of hazardous wastes are provided.	2.69	3.02	2.98	з	Implemented
A	verage Weighted Mean	2.65	2.74	2.73		Implemented

Table 3, on Laboratory Safety Program shows that out of five (5) criteria, one (1) has a verbal interpretation of Fully Implemented, two (2) has a verbal interpretation of Implemented, and the remaining two (2) has a verbal interpretation of Partially Implemented. Among all of the criteria, the criterion "The orientation of classes includes information about safety rules, regulations, and evacuation procedures

that are displayed in clearly visible locations" got the highest mean value of 3.32. In contrast, the least criterion "Both students and instructors utilizing or working in the labs and shops receive annual training in laboratory safety." has gained the lowest over-all mean value of 2.13.

It could be seen from Table 3 that the computed general mean of the participants obtained a mean value of 2.73 verbally interpreted as "Implemented."

# Table 4 Mean and Rank Distribution of the Participants' Composite Laboratory Safety Factors Philsca Villamor in Terms of Building Construction

	Building Construction	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	Composite laboratory building enclosure is made out of concrete and did not exceed 5 stories.	2.69	3.30	3.24	3	Implemented
2.	Composite laboratory due to its fire hazard is located in segregated building.	2.85	3.34	3.29	2	Fully Implemented
3.	There are two exits provided in every floor and basement capable of clearing the work area in five (5) minutes in case of emergency.	2.77	2.87	2.86	5	Implemented
4.	Safe, continuous and unobstructed passageways.	2.77	2.88	2.87	4	Implemented
5.	Doors leading into or out of composite laboratory are not locked or fastened during period of occupancy.	2.92	3.59	3.52	1	Fully Implemented
Av	erage Weighted Mean	2.80	3.20	3.16		Implemented

Table 4, on Building Construction shows that two (2) out of five (5) criteria have a verbal interpretation of Fully Implemented while the rest have a verbal interpretation of Implemented. However, among all of the criteria, the criterion "Doors leading into or out of composite laboratory are not locked or fastened during period of occupancy" got the highest mean value of 3.52. On the other hand, the least criterion "There are two exits provided in every floor and basement capable of clearing the work area in five (5) minutes in case of emergency" has gained the lowest over-all mean value of 2.86.

It could be seen in Table 4 that the computed general mean of the participants obtained a mean value of 3.16 verbally interpreted as "Implemented"

Table 5 Mean and Rank Distribution of the Participants' Assessment Regarding Safety Precautions Implemented in the Philsca AMT Composite Laboratory in Terms of Working Environment

	Working Environment	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	Restrictions on contamination in the cutting, laying, and bonding areas.	2.54	2.27	2.30	5	Partially Implemented
2.	Exit doors and other emergency equipment are always kept clear of obstructions.	2.46	3.22	3.14	3	Implemented
3.	Horse playing is strictly prohibited.	3.62	3.68	3.67	2	Fully Implemented
4.	Smoking is not allowed in the laboratory area	3.85	3.82	3.83	1	Fully Implemented
5.	All materials are contained in closed containers, identified as dangerous, and correctly arranged on shelves with restraint bars.	2.92	2.91	2.91	4	Implemented
Av	erage Weighted Mean	3.08	3.18	3.17		Implemented

Table 5, on Working Environment shows that out of five (5) criteria, two (2) has a verbal interpretation of Fully Implemented, two (2) has a verbal interpretation of Implemented, and the remaining one (1) has a verbal interpretation of Partially Implemented. Among all of the criteria, the criterion "Smoking is not allowed in the laboratory area" got the highest mean value of 3.83. In contrast, the least criterion "Restrictions on contamination in the cutting, laying, and bonding areas" has gained the lowest over-all mean value of 2.30.

It could be seen in this table that the computed average weighted mean of the participants obtained a mean value of 3.17 which is verbally interpreted as "Implemented."

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Table 6 Mean and Rank Distribution of the Participants' Assessment Regarding Safety Precautions Implemented in the Philsca AMT Composite Laboratory in Terms of Safety Policy and Objectives

	•		•			•
	Safety Policy and Objectives	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	The need to develop a supportive safety culture was well understood by top management and faculty.	3.23	3.37	3.36	3	Fully Implemented
2.	The safety policy is pertinent to the task or activity I was given.	3.15	3.44	3.41	2	Fully Implemented
3.	There are emergency reaction plan protocols posted in the lab for any emergency situation.	2.92	2.05	2.14	5	Partially Implemented
4.	PhilSCA conducts routine emergency drills and exercises.	2.92	3.03	3.02	4	Implemented
5.	The faculty at PhilSCA are aware of their duties under the safety management system.	3.38	3.44	3.44	1	Fully Implemented
A	verage Weighted Mean	3.12	3.07	3.07		Implemented

Table 6, on Safety Policy and Objectives shows that out of five (5) criteria, three (3) has a verbal interpretation of Fully Implemented, one (1) has a verbal interpretation of Implemented, and the remaining one (1) has a verbal interpretation of Partially Implemented. Among all of the criteria, the criterion "The faculty at PhilSCA are aware of their duties under the safety management system" got the highest mean value of 3.44. Conversely, the least criterion "There are emergency reaction plan protocols posted in the lab for any emergency situation" has gained the lowest over-all mean value of 2.14.

It could be seen in Table 6 that the computed average weighted mean of the participants obtained a mean value of 3.07 verbally interpreted as "Implemented."

Table 7 Mean and Rank Distribution of the Participants' Assessment Regarding Safety Precautions Implemented in the Philsca AMT Composite Laboratory in Terms of Equipment

	Equipment	Instructor	Student	Mean	Rank	Verbal Interpretation
1.	During a composite activity, there is a worktable available for the students.	3.00	3.50	3.44	1	Fully Implemented
2.	There is an area that is appropriate for applying finishing materials, such as paint spraying.	2.38	1.44	1.54	3	Partially Implemented
3.	The tools, equipment, and materials needed for the subject are in good functioning condition.	2.62	2.81	2.79	2	Implemented
4.	A scale is used to measure the ratio of fiber to resin accurately.	2.46	1.42	1.53	4	Partially Implemented
A	verage Weighted Mean	2.62	2.29	2.33		Partially Implemented

Table 7, on Equipment shows that out of four (4) criteria, one (1) has a verbal interpretation of Fully

Implemented, one (1) has a verbal interpretation of Implemented, and the remaining two (2) has a verbal interpretation of Partially Implemented. Among all of the criteria, the criterion "During a composite activity, there is a worktable available for the students" obtained the greatest mean value of 3.44. on the other hand, the least criterion "A scale is used to measure the ratio of fiber to resin accurately" has gained the lowest over-all mean value of 1.53.

It could be seen in Table 7 that the computed general mean of the participants obtained a mean value of 2.33 verbally interpreted as "Partially Implemented."

Table 8 Pooled Two-sampled T-test Results on the Composite Laboratory Structural Safety Factors at the Philsca Villamor

							95% Co Int	onfidence erval
Variables	N	Statistic t	df	р	Mean difference	SE difference	Lower	Upper
Laboratory Facility	126	-2.927	124	0.004	-0.5642	0.193	-0.946	-0.1827
Instructor	126	-0.689	124	0.492	-0.1073	0.156	-0.415	0.2008
Laboratory Safety Program	126	-0.677	124	0.500	-0.0901	0.133	-0.354	0.1734
Building Construction	126	-2.306	124	0.023	-0.3965	0.172	-0.737	-0.0562

Table 8 provides the results of a pooled two-sampled t-test conducted on four variables related to the composite laboratory structural safety factors at PHILSCA Villamor. The sample size for each variable is 126, and the degrees of freedom are 124.

The first variable is "Laboratory Facility," and the ttest statistic is -2.927 with a p-value of 0.004, suggesting that there is a statistically significant difference between the two groups (presumably a treatment group and a control group). The mean difference is -0.5642, which implies that the treatment group's laboratory facility safety factor is lower than the control group. The 95% confidence interval for the mean difference is -0.946 to -0.1827, which does not include zero, confirming the statistical significance of the result.

The second variable is "Instructor," and the t-test statistic is -0.689 with a p-value of 0.492, indicating no statistically significant difference among two groups. The mean difference is -0.1073, which is relatively small. The 95% confidence interval for the

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mean difference is -0.415 to 0.2008, which includes zero, confirming the lack of statistical significance.

The third variable is "Laboratory Safety Program," and the t-test statistic is -0.677 with a p-value of 0.500, indicating no statistically significant difference between two groups. The mean difference is -0.0901, which is relatively small. The 95% confidence interval for the mean difference is -0.354 to 0.1734, which includes zero, confirming the lack of statistical significance.

The fourth variable is "Building Construction," and the t-test statistic is -2.306 with a p-value of 0.023, indicating a statistically significant difference between two groups. The mean difference is -0.3965, which suggests that the safety factor of building construction is lower in the treatment group compared to the control group. The 95% confidence interval for the mean difference is -0.737 to -0.0562, which does not include zero, confirming the statistical significance of the result.

Overall, the findings indicate that the safety factor of laboratory facility and building construction are significant factors in composite laboratory structural safety factors at PHILSCA Villamor. The lack of statistical significance in the other two variables may indicate that they have a less significant impact on composite laboratory structural safety. These results have implications for improving the safety of composite laboratory, particularly by paying attention to building construction and laboratory facility factors.

# Table 9 Pooled Two-sampled T-test Results on the Assessment Regarding Safety Precautions Implemented in Philsca AMT Composite Laboratory

							95% Co Inte	nfidence rval
Variables	N	Statistic t	df	р	Mean difference	SE difference	Lower	Upper
Working Environment	126	-0.992	124	0.323	-0.1054	0.106	-0.316	0.105
Safety Policy and Objectives	126	0.446	124	0.656	0.0558	0.125	-0.192	0.304
Equipment	126	4.819	124	< .001	0.5862	0.122	0.345	0.827

Table 9 presents the results of a pooled two-sampled t-test analysis of the assessment regarding safety precautions implemented in the PHILSCA AMT Composite Laboratory. The analysis compares the mean scores of the assessment between two groups: instructors and students. The test is performed on three variables: Working Environment; Safety Policy and Objectives; and Equipment.

For the Working Environment variable, the t-statistic is -0.992 with 124 degrees of freedom (df), which yields a p-value of 0.323. This indicates that there is no significant difference among the mean scores of the two groups in their assessment of the working environment's safety precautions.

For the Safety Policy and Objectives variable, the tstatistic is 0.446 with 124 degrees of freedom (df), which yields a p-value of 0.656. This also indicates that there is no significant difference among the mean scores of the two groups in their assessment of safety policy and objectives.

For the Equipment variable, the t-statistic is 4.819 with 124 degrees of freedom (df), which yields a p-value of less than 0.001. This indicates that there is a statistically significant difference between the mean scores of the two groups in their assessment of the safety precautions regarding equipment. The mean difference between the two groups is 0.5862, with a standard error (SE) of 0.122. The 95% confidence interval for the mean difference ranges from 0.345 to 0.827.

The implication of these results is that the instructors and students have a similar assessment of safety precautions implemented in the working environment and safety policy and objectives. However, they differ in their assessment of safety precautions implemented regarding equipment. This finding suggests that the equipment's safety precautions should be further evaluated and improved to ensure the safety of both instructors and students.

Table 10
Key Informant Interview Result

Interviewee	ITEMS						
	Composite Laboratory Satisfaction	Affect of Safety and Performance	Asking if Need to Enhance Composite Laboratory	Tools and Equipment Needed to Improve Composite Laboratory	Recommen dations for the Improveme nt of Composite Laboratory		
1	Yes, for the current composite laboratory has its basic tool and equipment that serves its purpose for school training. However, it should be improve.	Safety is very vital in the performance for the reason that composite repair directly affects our health condition.	Yes absolutely. There should always be continuous improvemen t.	Industrial Vacuum and temperature controlled storage for chemicals	Proper ventilation and proper disposal bins for hazardous waste.		
2	Yes, because it has basic facility and equipment for school training.	Safety can affect the work performance of laboratory users.	Yes, there should always improvemen t.	Temperature / Humidity Control, Storage Cabinet for adhesive and fabric cloths and freezer for low temperature requirements of adhesive materials.	Enhancemen t of laboratory room and must be free from dust and any other particles.		
3	Yes, for training purposes only, but need to upgrade for occupational safety and health protocol.	Safety first before anything else, do not proceed if safety is compromise.	Yes, there should always be room for improvemen t.	Vacuum and proper lighting	Always use PPE before doing anything task for composite items, cover all suite (protection from dust and particles). There should be segregation of materials( <u>chemicals</u> and consumables		
					), and trash bin (red) such as red bin for chemicals use or contaminate d parts and trash bin for recyclable (yellow) to distinguish for proper disposal.		

4	Yes, because it is for educational purpose only. But there is a need for need for need for enough storage of materials including storage for pre-peg.	Unsafe working environment can impair the work performance of laboratory users.	Yes, there should always be an improvemen t.	Grinder 90 degrees	Laboratory users should always wear Personal Protective Equipment (PPE) such as respiratory mask, long sleeve, and etc. Materials used for composite should have segregated. All materials should have tabels such as resin, fiber, and etc.
5	Yes, <u>because</u> it is only intended for educational purposes, but it need improvemen ts such as segregation of raw materials,	Unsafe working environment can hamper the performance of the workers. Chemicals can also damage their	Yes, there's should always have a room for improvemen t.	Vacuum bagging and Oven for curing	Invest in purchasing tools, equipment and additional trainings for instructors about safety. When it comes to storage of
	proper disposal of used materials, should have MSDS available, and all materials should be labeled.	respiratory system.			materials, all light weight must be at the top and all heavy materials must be at the bottom.
6	Yes, it is enough for training purpose only.	Unsafe working environment can compromise the work performance of laboratory users.	Yes, there should always be an improvemen t	Vacuum bagging, curing Oven, and additional cabinet storage	Add more safety and emergency signages inside the laboratory room. Signages must be attractive to the eyes of laboratory users. Give additional trainings for instructors about safety.

Table 10 shows the result of Key Informant Interview (KII). The participants were selected from two Approved Maintenance Organization namely: Lufthansa Technik Philippines and WAASCO. KII was conducted to validate the gaps identified from the survey conducted about the Composite Laboratory's Structural Equipment Safety Factors at the Philippine State College of Aeronautics- Villamor campus. Data from survey revealed that safety in composite laboratory is "Implemented", this means that composite laboratory is safe but there is still a room for improvement to obtain the highest safety. The interview served as basis for the recommendation to improve the existing composite laboratory's safety, from implemented to fully implemented.

#### CONCLUSION

 The majority of participants were male, between the ages 20 to 30 years old, second year student enrolled in Aircraft Maintenance Technology (AMT) program of PhilSCA – Villamor Campus. It was also concluded that participants are qualified and eligible to respond to the survey's questions based on their profile.

- PhilSCA Villamor Campus has a safe composite laboratory facility; complied with the standard for building construction; and has good laboratory safety program. But based on the data, there is still a room for improvement to promote safer workplace. On the other hand, instructors handling composite subject perform their job well to maintain safety inside composite laboratory.
- 3. PhilSCA has a safe working environment; and good safety policy and objectives. But based on the data there is still a room for improvement to promote safer workplace. On the other hand, the study also revealed that there is lack of equipment that can result in producing slightly unsafe composite product.
- 4. There were significant differences between the perceptions of instructors and students regarding laboratory facilities and building construction. Meanwhile, there were no significant differences between the perceptions of instructors and students regarding variables "instructors" and "laboratory safety programs."
- 5. There was no significant difference in the assessment of instructors and students on the variables "Working Environment" and "Safety Policy and Objectives." On the other hand, there was a significant difference between the perceptions of instructors and students on the variable "Equipment."
- Key Informant Interview (KII) participants are satisfied with the current composite laboratory of the PhilSCA – Villamor Campus. But they suggest to have continuous improvement.

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