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Enhancing aviation security awareness of vocational students from travel agent major of SMK Sriwijaya, Palembang

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ABSTRACT

Taking a vital role in safeguarding the safety and security of aviation operations, an Aviation Security Officer (AVSEC) possesses specific knowledge and skills subject to rigorous regulation and supervision in adherence to international standards set by the Directorate General of Civil Aviation (DGCA) an Indonesian administrator. However, to qualify as an AVSEC, a mandatory administrative prerequisite is obtaining an AVSEC license issued by DGCA involving a series of training and competency tests in an accredited institution incurring burdensome expenses. To reduce costs while ensuring quality training, Sriwijaya Aviation Vocational School engaged in a community service program with STTKD, the School of Aerospace Technology. This one-week training program specifically complies with knowledge provision and skills practice around AVSEC duties. Materials and assessments are tailored to align seamlessly with approved AVSEC training providing participants with effective preparation for the real examination. Among all the material in an approved AVSEC training, this program delivers material about AVSEC duties and problems, situational awareness at the airport, and politeness in English imperative for AVSEC. Consequently, the significant enhancement in students' knowledge and skills is reflected in their outstanding average scores on learning assessments for each training module. Despite none of the participants having taken the actual test, the training results instill optimism about their potential success with proper material review before the exam.

KEYWORDS
Aviation security awareness
Aviation security license
Aviation security job
English imperative
Politeness

1. Introduction

Aviation Security Officers (AVSEC play a critical role in upholding the safety and security of passengers, baggage, and flight operations, focusing on predicting and preventing potential threats and incidents within airports and on aircraft [1]. Their extensive responsibilities include a series of tasks aimed at ensuring a safe and secure travel experience, all of which are detailed in the regulations of international aviation organizations [2]. Their vigilance, training, and dedication collectively contribute to the overall success of air travel security particularly in countering terrorist threats.

Given the pivotal nature of their responsibilities, AVSEC personnel must possess knowledge and skills aligned with the standards of each license level (basic, junior, and senior). These encompass proficiency in technology and cybersecurity [3]–[5], profiling [6], [7] continuous learning [8], effective communication and customer service [9], and problem-solving based on situational awareness assessments [10], [11]. Acquisition of these skills is facilitated through specialized training programs designed to prepare AVSEC under the supervision of the Directorate General of Civil Aviation (DGCA) [12].

Within the aviation industry, possessing Aviation Security Awareness is crucial for all personnel, but it is particularly indispensable in the AVSEC sector. The diverse skills required of AVSEC personnel support their role in anticipating and preventing incidents within the aviation domain. However, becoming an AVSEC is a challenging endeavor that demands specific training provided by DGCA-approved institutions, along with obtaining personnel competency certificates (STKP) issued by DGCA. DGCA

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serves as the implementer of technical guidance and supervision and acts as the administrator in the realm of air transport operations [13].

Human resource procurement for AVSEC positions undergoes stringent selection, following international regulations regarding aviation personnel and their prerequisites. The incompetence of AVSEC may lead to an inadequate time response to unlawful interference [14] due to the unpredictable nature of security control circumstances and unforeseen risks [15], thus potentially jeopardizing the safety of many people. The minimum educational requirement to apply as AVSEC, is a high school with a mandatory license of STKP [16]. Taking into account the unique characteristics of knowledge and skills essential to the aviation industry, the provider of AVSEC workforce should originate from aviation vocational schools. Vocational schools offer a comprehensive learning experience that emphasizes practical, hands-on training tailored to specific areas of expertise and industry needs [17]–[19].

Aviation Vocational School, SMK Sriwijaya Palembang is one of the vocational schools that prepare young generation to work in the aviation industry. It has 2 majors, namely Airframe Powerplant (AFPP) and Travel Agent (UPW). With two specific majors, one of the skills graduates of the UPW major expected to have is as an AVSEC so that they have the opportunity to fill job vacancies at AVSEC. The education program at schools experiences problems since the license of STKP as the foremost requirement to become an AVSEC can only be issued by the DGCA. AVSEC training and tests may only be held by institutions that have approval from the DGCA. An AVSEC training includes material, licensed instructors, and expensive practice tools. As a result, the training and the test come with a burdensome cost while the license of STKP can be issued on condition that the participant meets passing standards. In case the participant does not pass the passing grade, the test must be retaken with extra cost. Accomplishing formal basic education until the high school level is already considered expensive for some families. Thus, taking additional training and tests specifically required to become an AVSEC is not always affordable for them.

One of the solutions considered by the principal of the SMK Penerbangan Sriwijaya, Drs. H. Sukarno. Y.S., M.M. is proposing a collaboration with STTKD, School of Aerospace Technology. STTKD has a Training Center (STTKD-TC) as one of the accredited institutions by DGCA to provide AVSEC training. Community service performed by STTKD lecturers is the perfect program for the students majoring in UPW to have a provision on AVSEC Awareness. Regarded as preliminary training phase preceding the official training and test, this program is designed to furnish students from the UPW major at SMK Sriwijaya with comprehensive knowledge, enhancing their likelihood of success in future endeavors. Additionally, addressing funding issues can be mitigated through this approach. Beyond the training itself, students engaging in this program can fulfill the formal graduation criteria of SMK-Bisa, positioning them as a ready-to-use workforce for the aviation industry.

The absence of available data concerning the participants' past enrollment in this specific course or their interest in pursuing a career as AVSEC, which poses a limitation in delivering the instructional content. The lecture material, unfortunately, cannot be customized to accommodate the diverse knowledge levels of the participants. Consequently, each participant is approached as a beginner learner, targeting the output at the AVSEC Basic License level.

2. Method

A one-week training session on aviation security awareness was conducted for 21 vocational students specializing in Travel Agent (UPW) at SMK Sriwijaya. The training took place from June 12 to June 16, 2023, at STTKD. It was performed in two ways, which were (1) lectures on knowledge regarding aviation security awareness, and (2) practice of skills for device-assisted passenger and baggage screening. Theoretical knowledge and practical instructons were delivered through the stages of a pre-test, lecture, discussion, and final evaluation. Assessment is focused on the student's level of understanding of all the material presented by each mentor. Procedures of delivering material show as Fig. 1.

Fig. 1. Procedures of delivering material in theoretical knowledge and practical skills

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Each material is delivered by a mentor/s utilizing facilities such as classrooms, multimedia, and ground handling laboratories. AVSEC assistive devices to support practical training in screening passengers and baggage are available in the ground handling laboratory including (1) an x-ray machine, (2) a walk-through metal detector (WTMD), (3) a hand-held metal detector (HHMD), (4) items categorized as dangerous articles and (5) airport airside simulators. Evaluation tools to measure the level of theoretical understanding vary from written tests in the form of print versions (paper-based) and internet-based to oral tests in the form of interviews. To evaluate screening skills, practical tests simulating examining person and baggage are used.

3. Results and Discussion

Strengthening aviation security awareness for Sriwijaya Vocational School students in the STTKD community service program is designed thoroughly to make sure that all compulsory materials are presented entirely. With a complete training series, students can get an outline of actual AVSEC personnel training and test simulation to get a score that meets the passing level for issuing STKP. Material on the AVSEC job descriptions comprehension along with its cases is presented on the training of concepts and practice for AVSEC's Role Analysis in Security Checkpoint (SCP) I and II. Understanding personnel awareness in airport working areas is conveyed in Situational Awareness training at airports. Apart from that, training in the concepts and practice of communication etiquette is also delivered in the training of Politeness in English Imperative for AVSEC.

3.1. Training of AVSEC's Role Analysis in Security Checkpoints I and II

This material was presented by Elnia Frisnawati, S.Pd., M.M and Siska Ayu Andarini, S.E., M.M as lecturers from the Air Transportation Management study program. On this occasion, AVSEC's duties in SCP I and II were explained including equipment used to do screening on persons and baggage, dangerous goods/articles that are prohibited on flights, legal actions taken by AVSEC officers if they find dangerous goods on a person or his/her baggage, and cases that most often occur around these spots. Existing cases include bomb threats [20], the discovery of goods that are categorized as dangerous goods or articles such as scissors, knives, razors, water jugs, Indonesian keris, and 9 cans of snow spray which were caused by passengers' lack of knowledge [21]–[23]. These various cases certainly require resolute handling from AVSEC. The discoveries in SCP II tend to be more in number because there are differences in procedures between SCP I and SCP II. SCP I focuses more on baggage that is larger in size such as baggage, mail, and goods while SCP II focuses on carry-on/cabin baggage so that even though the finding goods are smaller but more in number. Material and lecturing activity show as Fig. 2.

Fig. 2. Material and Lecturing Activity of 2 Mentors on AVSEC Role in SCP I and II

Skills training for checking goods and passengers is carried out using equipment including an X-ray machine for goods, WTMD, and HHMD for people. The practice of using an X-ray machine includes how to operate and identify the types of objects in passenger luggage based on their shape and color.

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Different material reflects different color on the screen to ease monitoring and identification. Orange means organics, green means unorganics, and blue means metals. On the other hand, the practice of using HHMD is intended as an exercise in detecting the position or location of all luggage on the clothing or body of prospective passengers. When examining people, the posture and direction of the examination are also trained according to procedures using alternating role techniques To assess trainees' understanding, a pre-test and post-test are conducted before and after events, like an intervention [24], [25]. The pretest establishes baseline understanding, and the post-test measures learning. Participants with high pretest scores typically show the most improvement, while those with the least improvement may have performed poorly initially. Interventions, such as revisiting material or collaborative learning with high scorers, can be tailored based on pretest results [26]. Student practice show as Fig. 3.

Fig. 3. Students Practice on Person and Baggage Screening

The achievement and implementation of provision to increase AVSEC competency for 21 students of the Sriwijaya Aviation Vocational School majoring in UPW show a comparison of the average pre-test and post-test scores in the table that there is an increase in the average test before and after providing the material with a pre-test score of 84. 28 and the post-test score was 100 increase by 16 percents. The lowest average score was on several questions that tested comprehension of legal regulations around aviation security. This means that students have not fully understood the laws that underlie the AVSEC personnel work system. The highest scores can be seen from questions regarding the AVSEC job description both in general and specifically. This means that students can understand and are ready to implement the main tasks and functions of AVSEC in practice. Comparison of students pre-test and post-test show as Fig. 4.

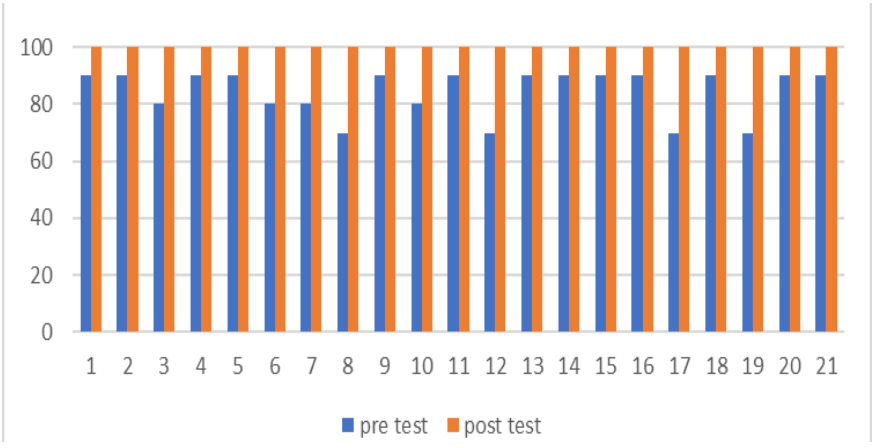

Fig. 4. Comparison of Students' Pre-Test and Post-Test Scores on AVSEC Job Descriptions

The findings indicate a notable increase in students' average scores, with post-test scores surpassing pretest scores. This improvement may be attributed to better participant preparation for the post-test. It's crucial to acknowledge that participant readiness during training can impact grades, reflecting their understanding and readiness to apply AVSEC tasks. This corresponds with earlier research, demonstrating a 79.67 percent improvement in elaboration ability scores, in harmony with the program's objective to enhance knowledge using pre-test and post-test techniques [27], [28]. While other studies and programs have effectively enhanced participants' knowledge, addressing limitations arising from its restricted facilities can be managed in this training through the inclusion of a ground-handling laboratory.

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3.2. Training of Situational Awareness at the Airport

For its correlation to a person's mental state, material about situational awareness was presented by Walid Jumlad, S.Psi. M.Psi, a Psychologist with a background in psychology. With experience in several previous research related to this material regarding airport work areas, such as on the work activities of Aviation Accident Relief and Fire Fighting (PKP-PK) officers [29] as well as Apron Movement Control (AMC) officers [30], UPW students are trained to be alert and careful at work through the application of situation awareness (SA).

Situation awareness (SA) is the ability to understand, and perceive all elements in the surrounding environment, understand their meaning, and project (estimate/predict) these conditions in the future [31]. Failure to implement SA will be an error in understanding the situation correctly which will also result in failure in projecting/predicting future situations. Where these failures can result in events/incidents/accidents. Material and lecturing activity show as Fig. 5.

Fig. 5. Material and Lecturing Activity of Situational Awareness at the Airport

Situational awareness training starts with an introduction to the levels of situational awareness. Endsley [32] divides situation awareness into level SA1 (one), level SA2 (two), and level SA3 (three). SA1 level is a person's knowledge about the conditions of the workplace, work equipment, and movement situations in the work environment. SA level 2 is the ability to combine situations at SA level 1 with the knowledge one has with the goals determined in each job. Meanwhile, the SA3 level is functioning/applying the abilities possessed at the SA1 level and SA2 level by predicting future conditions and acting according to things that happen with anticipatory efforts in the future. Comparison of Students' Pre-Test and Post-Test show as Fig. 6.

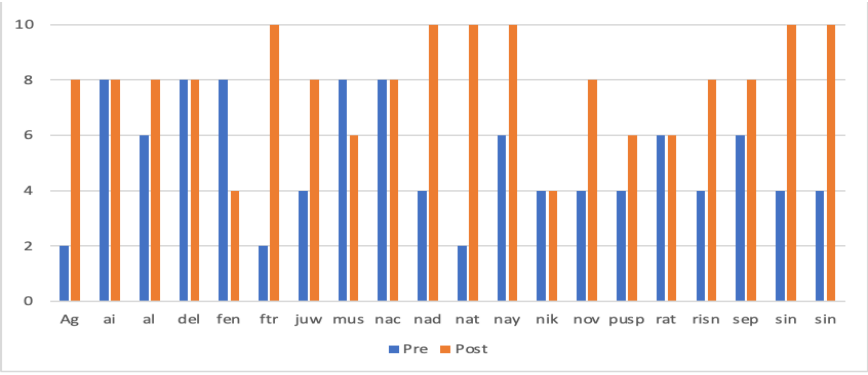

Fig. 6. Comparison of Students' Pre-Test and Post-Test Scores on Situational Awareness at the Airport

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As expected, the results show higher comprehension scores in the post-test after the training than in the pre-test before the training. Despite its function as a valuable skill that can improve personal safety and decision-making in a variety of situations, situational awareness is not typically taught to the general public as part of formal education. Therefore, the very significant difference in the pre-test and post-test results is not surprising. With adequate provision, the majority of students ultimately meet the passing grade for this material as a provision of strategic skills to pursue a career as an AVSEC.

3.3. Training of Politeness in English Imperative for AVSEC

Customer service is one of the skills that AVSEC must master. Looking at the profile of an AVSEC whose main task is airport security, it is not surprising that their posture and character look noble and tough. On the other hand, as an AVSEC officer, s/he is also expected to provide service in a polite and friendly manner. The dual profile which is the unique characteristic of AVSEC [7] can be seen when officers convey commands while carrying out their duties in screening persons and baggage. Material and lecturing activity on politeness in english imperative for AVSEC show as Fig. 7.

Fig. 7. Material and Lecturing Activity on Politeness in English Imperative for AVSEC

Imperative sentences in the socio-pragmatics perspective contain an element of authority that makes someone do or not do something. If the person giving the order has a higher position, of course, there will be no obstacles in conveying it. It's different if the person giving the order is of a lower social position, in this case, an officer towards passengers who are his customers. It is considered impolite for the officer to deliver the order. There is an applied technique used to save the face of passengers (Face Threatening Act) due to orders addressed to them.

Considering that AVSEC's work area at airports is international, in communicating, officers are expected to master English as the language in aviation. Workers in the aviation industry undergo regular assessments, both initially and periodically, to evaluate their proficiency in Aviation English as a standard practice. Hence, this training equips participating students in the community service program with comprehension and practice regarding the English imperative in the context of AVSEC. To master this skill, an AVSEC can be an upholder of security standards while being polite in communicating with customers. In English imperative for politeness includes the use of (1) 'modal verbs', (2) the word 'please', (3) longer sentences and (4) flatter intonation tends to be lower [33]. Apart from that, body language and gesture training are also provided to emphasize the meaning of politeness.

As a result of the AVSEC officers' communication system training, the participants demonstrated the ability to distinguish sentences that required politeness or assertiveness in the various simulations tested. Students' understanding of danger levels reached an average score of 92.5 as seen from the production of sentences produced in response to the discourse completion test (DCT). This outcome reaffirms the effectiveness of the Discourse Completion Test (DCT) as a valuable tool for data gathering in speech acts

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[34]. Apart from that, students also understand the importance of controlling intonation according to the level of danger. In situations with a low level of danger, the intonation of the sentences used emphasizes politeness even without compromising on standard aviation safety procedures.

4. Conclusion

Planned and systematic continuous development training has been proven to have an increasing impact even for beginners with minimal knowledge and experience. Carrying the slogan SMK-Bisa, SMK Sriwijaya, Palembang is committed to providing its students with skills that meet the criteria of potential users. Equipped with these skills, students are expected to apply for jobs after graduating from school. As a minimum educational background requirement, SMK meets the criteria for applying as an AVSEC in the airport work area and its surroundings. However, there is an absolute requirement besides having graduated from a high school which is an STKP, AVSEC license. In collaboration with STTKD through the community service program, students from UPW major of SMK Sriwijaya, Palembang have received enrichment on Aviation Security Awareness with very satisfying results. Thus, this community service has effectively accomplished its objective, which is to lay a robust groundwork of knowledge and skills for high school vocational students in AVSEC without expensing. In addition, this preparation empowers them to confidently approach and excel in both theoretical and practical tests required for obtaining an AVSEC Basic License, greatly increasing their likelihood of success. The training program, incorporating instructional material lectures and hands-on practice sessions, a methodology commonly embraced in vocational schools, has been conclusively shown to bring about notable enhancement in students' skills and knowledge [35], [36]. This positive impact is observable in assessments conducted both before and following the training sessions, highlighting the comprehensive enhancement of students' skills and knowledge. This result can be used for further follow-up to the official training and competency tests from the DGCA in the institutions that complied with Aviation Security Awareness approval, such as the STTKD Training Center or other institutions. As none of the participants in this training have undergone the official test, evaluating the impact of the STTKD community service program on their AVSEC Basic License and its connection with their test achievements is presently unfeasible. Nevertheless, this aspect presents an avenue for exploration in future research and development initiatives focused on enhancing the effectiveness of the STTKD AVSEC preparation course.

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Declarations

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