

THE USE OF ACTIVE LEARNING STRATEGIES FOR AIRLINE SAFETY LEARNING MANAGEMENT TO IMPROVE LEARNING ACHIEVEMENT OF AIRLINE BUSINESS PROGRAM STUDENTS

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Abstract

The objective of this research is to study the learning outcomes according to the National Higher Education Qualifications Framework in the Airline Safety course of the airline business programs' students, Suan Dusit University Hua Hin campus. The sample for this research are the airline business program students who completed the Airline Safety Course and the Preparation of Professional Experience in The Airline Business Course in the 2018 academic year; a total of 120 students. The data was collected by using the questionnaire survey of the students' opinion on the 5 domains of learning achievement outcomes, consisting of (1) Ethical and Moral Development, (2) Knowledge, (3) Cognitive Skills, (4) Interpersonal Skills and Responsibility, and (5) Analytical and Communication Skills. The data were analyzed by using frequency distribution, percentage, mean and standard deviation. The results of the study showed that the overall sample group had an average score of opinions on their learning outcomes according to The Higher Education Qualifications Framework (TQF) at the highest level on every aspect; the first one is ethical and moral development aspect (\bar{X} = 4.86, SD = 0.36) followed by Interpersonal skills and responsibility (\bar{X} = 4.73, S.D. = 0.48), knowledge (\bar{X} = 4.71, S.D. = 0.58) cognitive skills (\bar{X} = 4.69, S.D. = 0.53) analytical and communication skills (\bar{X} = 4.63,

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S.D. = 0.61) respectively and overall learning outcomes in all 5 areas are at the highest level (\bar{X} = 4.73, S.D. = 0.51).

Keywords : learning outcomes, active learning, aviation business program, airline safety

Introduction

Students' learning achievement is the basic objective of educational institutes. The term learning achievement is defined by the National Qualifications Framework for Higher Education in Thailand (TQF) as the 5 domains of learning outcomes; Ethical and Moral Development, Knowledge, Cognitive Skills, Interpersonal Skills and Responsibility, Analytical and Communication Skills. These act as a guideline for us to comply with in order for our students to achieve the maximum learning outcomes in any subjects that they study, with the teacher acting as facilitator to transfer knowledge and adjust or transform the students' behavior to their fullest human potential. As we all know, safety is the most important issue in aviation and that makes everyone who is part of this industry an important cog to make the machine operate smoothly and maintain the highest standards. The pre-internship "Airline Safety Course" which is conducted by Ajarn Daa Elwasly has significantly changed in the airline business program for the students of Suan Dusit University (Hua Hin Campus); by using several methods of active learning strategies, the students were able to achieved the 5 domains of learning outcomes which means well prepared and qualified personnel in the aviation industry are ready for their duties.

Safety is the most important aspect in aviation; the principle of safety is based on the technical skills and procedures which must go along with discipline and responsibility. All the aviation employees must be aware of the importance of safety issues; in order to achieve this goal. There should be proper procedures and guidance provided by the instructor to maintain the individual behavior to improve their potential proficiency in term of competency and responsibility to the safety of their job performance. The classroom teaching technique influences a person's development; the students of the airline business program will eventually be part of the aviation industry therefore, the teacher should be able to adopt many teaching techniques such as active learning to encourage the students to improve their ability and learning outcomes. The teacher should adopt the teaching method to support the habits of acting ethically and responsibly. These should be consistent with high moral standards and the ability to understand the knowledge of procedures and the principle of airline safety utilizing cognitive skills to analyze situations and solve problems. This is especially true in the safety framework as the aviation industry involves social responsibility and effective teamwork that requires a high standard for communication skills in terms of communication technology.

Active Learning for Airline Safety Course

The Pre-internship of “The Airline Safety Course” of Suan Dusit University; Hua Hin campus is conducted by Ajarn Diaa Elwasly; this subject has been prepared and performed in accordance to the ICAO regulations (Doc 10002 Cabin crew safety training manual) and the discipline principles, which lead to the student’s learning achievements. The course syllabus of Airline Safety Course at Suan Dusit University (Hua Hin campus) consists of the following subjects; Basic safety and emergency procedures, Cabin crew safety training requirements and qualifications, Aviation Security Training, Dangerous Goods Training, Crew Resource Management Training, Aviation Medical Training. Due to the limitations of the training facility of Hua Hin Campus which does not comply with the ICAO regulations regarding the training facility and devices (Doc 10002 Cabin crew safety training manual; chapter 2) as Suan Dusit University (Hua Hin campus) is not an airline. The campus does not have complete training devices and equipment such as aircraft door training, aircraft training simulator and firefighting simulator, etc. The campus has limited safety training equipment such as safety demonstrations equipment, HALON fire extinguisher, portable oxygen bottle and life jacket. This area of training will be concentrated on the theoretical. While the airline must comply with the rules and regulations stated in the ICAO Cabin Crew Training Manual and as well the civil aviation authority of the airline registration country. For example Gulf Air cabin crew training course for initial training or newly joined will include the following subjects (Table 1):

Module 1-10	Module 11-19
Gulf Air Company Induction	Initial Dangerous Goods Training
General SEP Training	Initial Aviation Security Training
Initial Fire & Smoke Training	Initial Flight Time Limitations Training
Initial Survival Training	Initial CRM Training
Fleet Specific Aircraft Systems Training	General Cabin Service Training
Initial Fleet-Specific SEP Training	PA Delivery Skills
Fleet Specific Aircraft Familiarization Visit	Initial Grooming Training
Initial Medical & First Aid Training	Fleet-Specific Initial Cabin Service Training
Initial Defibrillator (AED) Training	Initial Qualification Graduation Formalities
Initial Passenger Handling Training	

Table 1: Cabin crew initial qualification curriculum training module summaries

Source: *Gulf Air OMD (Operation Manual Part D) Cabin crew training*

Therefore, the main objective of the Pre-internship “Airline Safety Course” of Suan Dusit University; Hua Hin campus is to enable the students to have the basic idea of cabin crew safety training through the teaching method of classroom discipline and as well for students

who have been recruited by the respective airlines; this course will help the students' achievement during the airlines' initial cabin crew training.

Many researchers have agreed that active learning approaches promote learning for all students depending on how the teacher adapts the techniques as an effective tool in making the classroom more inclusive. Active learning techniques to be used such as;

1. The pause procedure- The teacher will pause or stop the lecture for two minutes every twenty minutes to encourage students to discuss and ask questions. For example, Dangerous Goods (DGR) subject, the teacher will use teaching materials such as power point presentation slides and videos, then he will ask the questions and let the students answer. The teacher can apply this technique for all topics as this approach encourages students to check their understanding of the lecture materials and also provides an opportunity for questioning and clarification (Rowe, 1980; 1986; Ruhl, Hughes & Schloss, 1980; Bonwel and Eison, 1991; Brame, C., 2016). The teacher will be able to notice the difficult parts which he might need to stress and at the same time students will gain accurate information and cognitive skills as this give them clear a picture of the subjects.

2. Retrieval practice- The teacher will stop his lecture every 15-20 minutes to encourage the students to memorize and retrieve information as well ask questions and answers, which improves long term memory (Brame and Biel, 2015). Especially in the airline safety and emergency procedures subject, the students must be able to memorize the drills 100% as this is the first step, then the teacher will demonstrate how to use some equipment and hands on practice or role play based on the drills.

3. Demonstrations – The teacher will ask students to predict the result of a demonstration and observe how well may the students practice then follow up with the teacher explanation. This technique will give students clarification and test their understanding. If the students misunderstand the contents, the teacher will give a prompt answer and immediate feedback to resolve the misconception. This helps the students to memorize the drills of how to handle the in-flight emergency situations and as well the students are able give complete information during oral tests. The teacher might choose a male student to demonstrate an in-flight medical emergency situation case; this engages the students in participation which will improve their interpersonal and communication skills.

4. Case based learning – The teacher will present students with situations concerning aviation safety such as a pilot being incapacitated, emergency ditching, the scenario of how the cabin crew must prepare the passengers and cabin in case of crash landing or ditching, etc. Role play will be applied; students will act according to the situations given, this will create classroom interaction and reduce stress. The teacher will reveal the suitable solutions based on the ICAO rules and regulations. Hands on exercises and simulated exercises; are defined by ICAO (Doc 10002, 2014) as exercise on the use of equipment/aircraft system and procedures that is

conducted without a specific context. The teacher will create many scenarios that may promote students' understanding for first aid training and practice some emergency equipment on board the aircraft such as portable oxygen bottle, fire extinguisher, and passenger life-vest, etc. in normal and abnormal situations. The teacher will show many videos related to the airline safety especially the catastrophes that happened due to human error and incompetency. The teacher will then explain how important we are in the aviation industry. This enhances the ethical and moral development.

5. Zone of Proximal Development - ZPD has been defined as:

“the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers” (Vygotsky, 1978. P.86)

The two main ideas ZPD focus on are (1) the knowledgeable teacher who can observe and practice the student's skills and (2) social interact with competent peer that will support the students through the ZPD. The teacher gives a lecture by using “teaching by telling” and “hands on practice” method and showing the video on certain topics such as; how to operate the aircraft doors in a normal and emergency situation, how to use the portable oxygen bottle then the teacher may ask questions to check the students' understanding on that topic one by one until the complete answers are given.

6. The immediate feedback assessment technique (IF-AT) has been publicized by Epstein (Dihoof, Epstein and Brosvic, 2003, Maurer & Kropp, 2015) IF-AT is an alternative optical or bubble sheet for recording answers to multiple choice questions. The IF-AT has an answer until correct idea, it comes in the similar format like bubble sheet but is covered with an opaque coat and box has a small star in it, while the other boxes are blank. The student will scratch the chosen box to answer the question, if a star appears; it confirms that the answer was right. However if the box is blank; it means that the chosen answer was not correct, and the student can then reconsider the remaining answers until a small star is found. IF-AT forms are often used in team-based learning setting where a group of students work together on a joint quiz or activity and complete one IF-AT form (Cotner, Baepler, & Kellerman, 2008; Cotner, Fall, Walker & Baepler, 2008b; Lee & Jabot, 2011; Maurer & Kropp, 2015). The IF-AT is more effective when used in groups as this technique encourages the student's engagement and interaction (Slavin, 1991; Michaelson et al, 2004; Cotner et al, 2008; Crouch & Mazur, 2011). The idea of using the immediate feedback assessment technique (IF-AT) is implemented during the oral tests at the beginning of each session. The set of questions will be running according to the topics then teacher will direct question to the first student, if the given answer is wrong, the teacher will

pass the same question to the next student until the correct and complete answer is verified. This will encourage the weak students to improve their long term memory.

“I was very excited when the teacher directed the question to me; I wasn’t embarrassed if I could not give complete information and my classmate was able to give full details and got full mark as this made me memorize the answer because my mistake has been rectified right away” Ms. Wannapat Narunchorn (student ID. 60-6002).

The implementation of operant conditioning and classroom discipline for the Airline Safety Class is adapted; in the first lecture, the teacher starts the first session with the ice breaking atmosphere; normally the students will introduce themselves to all their classmates as well as telling them about his or her dream job. The number of students in one classroom should not exceed 30 students to enable the teacher to monitor everyone. The classroom rules must be set from the very first session i.e. students must attend all classes, prohibit the use of any communication devices, punctuality is a must (classroom door will be closed on time), the students will be given a 10 minutes written test and oral test every session, only one 20 minute break given for a 3 hour classroom session, students have the right to check their mistakes on the written test at the end of every session. The operant conditioning can be defined as a form of learning in which behaviors are dependent on, or controlled by their rewards and consequences. The experiment was first conducted by Thorndike (1905) and followed by B.F. Skinner (1938); both experiments were done by putting animals in boxes or cages and observing how they were able to learn. A law of learning stated that any behavior that is followed by positive consequences is likely to be repeated, and any behavior followed by negative consequences is likely to be stopped (Saul, 2018). Thorndike (1914) wrote the book entitled “Educational Psychology” which summarized the fundamental matter of learning in three laws of learning or the so called “The connectivism of Thorndike”; law of readiness, law of exercise or repetition and law of effect. The law of readiness explained that the students should be ready mentally and physically in order to learn and this is one of the reasons that the students per one class should not exceed 30 so the teacher can observe and monitor. For example if a student feels sleepy during class, that student will be called to do a bit of exercise i.e. stretch arms and walk around the classroom then the law of repetition will take place, the teacher will ask students to repeat and role play on certain drills i.e. emergency landing and ditching evacuation drills, fire-fighting drills such as oven fire drill, overhead compartment fire drill, etc. This keeps the students engaged and reduces boredom. The law of effect added to the law of exercise which explains that there is a connection between situation and response. If a situation is followed by a positive reinforcing stimulus, the result will be positive and vice versa. The classroom’s disciplines have been set based on the concept of law of effect; students will be allowed to attend the class and complete their tests if they follow the rules. The opposite is

the case, if they attempt to break the rules; i.e. arrive late after the break, the scores for that class will be canceled. This improves punctuality, as punctuality is one of the key points in the aviation industry; students who participate in the airline safety class must follow the classroom rule of punctuality, if students come late they are not allowed to attend the class which leads to the reduction in scores as each session consists of two tests (one written and one oral) and this encourages students to arrive early. There will be as well the deduction of points if an attempt is made to gain advantage by using the mobile phone in class or helping friends during written test. Students try to infringe the classroom's rules by giving excuses i.e. the delay of their arrival to the class due to transportation problems or attempt to use cellphone during class; then the teacher may have to apply high techniques to maintain discipline.

Research Objectives

To study the learning achievement outcomes in the Airline Safety subject of the Airline Business Program students of Suan Dusit University (Hua Hin Campus)

Materials and Methods

1. Population and sample

The population for this study was the airline business program's students at Suan Dusit University, Hua Hin campus who completed the Airline Safety Course and the Preparation of Professional Experience in the Airline Business Course in the 2018 academic year; a total of 200 students.

The sample of this research was the airline business program's students at Suan Dusit University, Hua Hin campus who completed the Airline Safety Course and the Preparation of Professional Experience in the Airline Business Course in the 2018 academic year; a total of 120 students.

2. Design and development of the survey tool quality

The questionnaire survey was used as a research tool; the researcher designed and developed the questionnaire survey according to the National Higher Education Qualifications Framework and referred to relevant research and the scope of the research tools have been set in accordance with the research purposes and content validity under the observation and guidance by our research consultant team. The questionnaire is divided into 2 parts. Part 1 is general information and part 2 is the student's satisfaction assessment towards the teaching and learning of Airline Safety. A 5 point scale is used to interpret the mean score as follows:

Average score of 4.50–5.00 means the highest level

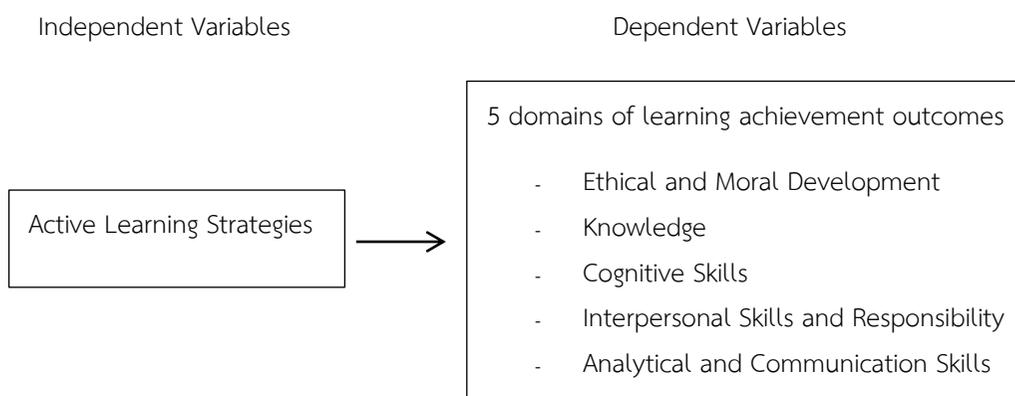
Average score of 3.50–4.49 means high level

Average score of 2.50–3.49 means moderate

Average score of 1.50–2.49 means low level

Average score of 1.00–1.49 means the lowest level

The survey questionnaire was created by the researcher through the trial revised as suggested by a research consultant by using the IOC value. Then, the questionnaire was sent to try out on the 30 students of the airline business program to find the confidence (Reliability) of the questionnaire and then find the Alpha coefficient of Cronbach which was 0.94.



Research result

1. The general information from this study found that most of the students are female. The average GPA is 2.74. The highest GPA is 3.43 and the lowest is 1.97. The average TOEIC score is 523.4. The highest score is 825 and the lowest is 305.

2. The learning outcomes of students according to the National Higher Education Qualifications Framework (TQF) found that students had opinions on their own learning achievements in the Airline Safety course at the "highest" level in all aspects. The highest opinion is the Ethical and Moral Development aspect ($\bar{X} = 4.86$, $SD = 0.36$), followed by the Interpersonal Skills and Responsibility ($\bar{X} = 4.73$, $SD = 0.48$), Knowledge ($\bar{X} = 4.71$, $SD = 0.58$), Cognitive Skills ($\bar{X} = 4.69$, $S.D. = 0.53$) Analytical and Communication Skills ($\bar{X} = 4.63$, $SD = 0.61$) respectively and overall learning outcomes in all 5 domains are at the highest level ($\bar{X} = 4.73$, $SD = 0.51$) as shown in Table 2. In addition, when considering the details, found that the students had the highest opinion on the top 3 learning outcomes i.e., diligence and patience ($\bar{X} = 4.88$, $SD = 0.33$) on time performance ($\bar{X} = 4.87$, $SD = 0.36$) and discipline ($\bar{X} = 4.86$, $SD = 0.37$)

3. The results of the overall students' satisfaction on Airline safety courses showed that students were satisfied with the course at the highest level ($\bar{X} = 4.81$, S.D. = 0.54).

4. In addition, the students also commented on the important points of the Airline safety course that contributes to self-development and other achievements obtained from this course such as they can apply the knowledge obtained from this subject when answering questions during job interview, they gained more confidence to speak and answer the questions and they can apply the knowledge during their internship, etc.

Table (2) the results of the students' opinion on the 5 domains of learning achievements for the Airline Safety Course of the Airline Business Program students at Suan Dusit University (Hua Hin campus) (n=120)

5 domains of learning outcomes (LO)	\bar{X}	S.D	Data interpret
1. Ethical and Moral Development			
On time performance	4.87	0.36	the highest level
Discipline	4.86	0.37	the highest level
Honesty	4.84	0.39	the highest level
Diligence and patience	4.88	0.33	the highest level
Courtesy	4.84	0.36	the highest level
2. Knowledge			
Knowledge of basic safety and emergency procedures	4.79	0.53	the highest level
Knowledge of cabin crew safety requirements and qualifications	4.71	0.60	the highest level
Knowledge of dangerous goods	4.72	0.56	the highest level
Knowledge of crew resource management	4.67	0.61	the highest level
Knowledge of aviation medical	4.67	0.62	the highest level
3. Cognitive skills			
The ability to analyzed systematically	4.61	0.54	the highest level
The ability to solve problems in various situations	4.66	0.55	the highest level
The ability to apply the airline safety training knowledge at work	4.72	0.52	the highest level
The ability to develop the skills after has been trained for stimulated thinking	4.70	0.55	the highest level
The ability to improve the problem solving skills efficiently	4.73	0.50	the highest level

5 domains of learning outcomes (LO)	\bar{X}	S.D	Data interpret
4. Interpersonal skills and responsibility			
The ability to work in a team as a leader or team member	4.67	0.51	the highest level
The ability to build good relationship with colleague	4.66	0.56	the highest level
Self-responsibility to the assigned duty	4.81	0.42	the highest level
The ability to plan the operations successfully according to the schedule	4.82	0.41	the highest level
The ability to adapt to the aviation profession environment	4.72	0.49	the highest level
5. Analytical and Communication Skills			
Self-confident in English communication	4.62	0.62	the highest level
Confidence when giving information and opinions	4.60	0.63	the highest level
The ability to listen to other opinions	4.71	0.57	the highest level
The ability to make brief and precise conclusion	4.63	0.63	the highest level
The ability to search for aviation information by using information technology	4.61	0.62	the highest level
The overall (LO) 5 domains	4.73	0.51	the highest level
The overall the students' satisfaction	4.81	0.54	the highest level

Conclusion

The result of this survey shows that the students were very satisfied with “the Airline Safety Course”. The result of 5 domains of learning outcomes in the Airline Safety Course were at the highest level ($\bar{X} = 4.73$, S.D. = 0.51) which is consistent with the study of Freeman et al. (2014: 8410), the result indicated that average examination scores of the students in science, engineering and mathematics improved by about 6% in active learning sections, and that students in classes with traditional lecturing were 1.5 times more likely to fail than were students in classes with active learning and that go along with the Dr. Anna Blackman (2012: 59), the potential of instance feedback could help to foster student engagement, encourage interaction between students and provide immediate feedback on student understanding. Grace A. Fayombo (2012: 126) found on her study that the active learning strategies are effective in engaging learners and assisting them in creating their own learning experiences in a changing

environment and motivate students to attend and also participate. The active learning techniques promote the students' learning achievements according to TQF 5 domains, when considering every aspect, the result showed that the ethical and moral aspect was at the highest level ($\bar{X} = 4.86$, S.D. = 0.36) and the students achieved in the top 3 areas which are the diligence and patience ($\bar{X} = 4.88$, S.D. = 0.33), the on time performance ($\bar{X} = 4.87$, S.D. = 0.36) and discipline ($\bar{X} = 4.86$, S.D. = 0.37), these 3 areas are very important in the airline profession.

Recommendations

Airline safety training for cabin crew is an ICAO requirement so that cabin crew members are proficient in the performance of their duties and responsibilities. It establishes a baseline for cabin crew competencies to prevent catastrophes for the flight operations of the airline. The training must be very intense in its content and there must be no gray area, therefore the minimum pass mark which most of the airlines establish for this course is 80% as the cabin crew must be able to handle the situations related to safety without any doubt. The pre-internship "Airline Safety Course" of Suan Dusit University (Hua Hin Campus) has been set in the same way to construct the disciplined behavior in our airline business students who will soon be part of the aviation industry. To achieve the goal of learning outcomes, the teacher applies many teaching techniques. The students who pass this course are well aware of the importance of airline safety. At the same time, they learn the necessity of punctuality and responsibility in their studies as they must work hard throughout the course. This reduces careless and unsuitable behavior which is reflected in their grade. During the of 48 hour course, the teacher guides the students in cognitive skills to analyze situations and solve problem especially in the airline safety domain. The students learn how to work as a team when they are chosen to act in the role play and resolve the problems together. According to the teacher records, there is a significant improvement every year compared to the first semester that he conducted the course; the number of students who passed the course increased dramatically from 20-30% in the year 2015 to 70-80% in 2018 and some students were able to obtain over 90% pass marks. Finally, Ajarn Diao Elwasly who conducted the training says:

"A Good teacher is the one who set good examples and is willing to work hard to improve the students' learning achievements"

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