Development of Autonomous Learning Model to Enhance Inflight Safety-Based Competence for Cabin Crew

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Abstract

Currently, the aviation business is a popular service that helps people travel conveniently, quickly, and safely. People in the airline business have become more stressed with the need to learn about inflight safety-based competence to effectively serve the broad range of passengers' needs. One reason for this is the nature of their jobs, which also affects their learning. Therefore, this research study developed an autonomous learning model to enhance inflight safety-based competence for cabin crew and then studied the effects of using an autonomous learning model to enhance inflight safety-based competence for cabin crew. This study was conducted in two parts using research and development methodology (R&D). The first phase identified problems and needs in learning about inflight safety-based competence, while the second stage examined the results of using the developed learning model. The results revealed that an autonomous learning model consisted of the model's purpose, identification and management of learning goals, knowledge development of learning strategies, the trainer's role, practical ideas, and reflection on and evaluation of the learner's learning. Furthermore, the cabin crew members had improved scores in inflight safety-based competence learning in four areas: safety policy, risk management, safety promotion, and safety assurance, compared before participating in the autonomous learning model testing. The vital learning promotion course for cabin crew dealing with the inflight safety of the passengers. The developed autonomous learning model should enhance the inflight safety-based competence of cabin crew.

Keywords: airline cabin crew, andragogy, autonomous learning, safety

1. Introduction

1.1 Significance and Problems of the Research Study

The background and significance of the current situation in Thailand's aviation industry have grown and developed exponentially due to various factors such as shifts in the economy, society, technology, trade liberalization, aviation liberalization, competition policies in the aviation business, promotion of the Thai government's tourism industry, and expansion of infrastructure to support tourism. Restructuring Thailand's transportation sector has made the aviation industry crucial to making travel more convenient. The industry has evolved and grown a lot, gaining a high degree of safety compared to other modes of transportation. Therefore, many countries are paying more attention to the aviation industry, which is crucial in linking the shipping economy, including tourism, international relations, and people's lifestyles (Wulf et al., 2014). Therefore, the country has developed a system for developing human capital competencies at all levels, focusing on knowledge, attitude, morality, values, and culture in working. All this leads to working as a person with knowledge, skills, quality, and character suitable for the direction of national development, which will inevitably create added value for the nation to have higher competitiveness.

Most importantly, the country wants to increase its competitiveness, so the government has a policy to reform Thailand towards "Thailand 4.0" (Panich, 2020). Adequate human capital is an essential indicator of organizational success, teamwork, and expression of responsibility. These factors mentioned above are all crucial factors that will help them reach their goals. Thus, relying solely on knowledge without the creativity that stems from determination produces goods and services lacking vitality. Since the world is rapidly globalizing, the airlines worldwide are also globalizing, and the people in the airline business have become more stressed

about learning about inflight safety competence to serve the passengers' massive needs effectively. They must always know about inflight safety competence. The problem lies in the job, affecting the learning process. According to the International Civil Aviation Organisation (ICAO) document 10002 Cabin Crew Safety Training Manual (ICAO, 2014), air operators must provide complete theoretical and practical training to flight attendants or trainees before assigning them duties. Safety aspects covered in training include basic aviation knowledge (aviation indoctrination), procedures for everyday operations (normal operations), methods for abnormal emergencies (abnormal and emergencies), transportation of hazardous goods (dangerous goods), human potential (human performance), Aviation Human Resource Management (crew resource management; CRM), Aviation Security, Safety Management System (SMS), fatigue management, and aircraft types (aircraft type). Each individual must receive at least one annual refresher training (ICAO, 2014).

Malcolm Knowles's andragogy theory (1978) stated that adult learning differs from children's learning because adults have more experience than children. Accordingly, teaching and learning with adults must be based on principles that respond to the nature of adults. That is, they must know the principles of adult education, which Knowles called an adult education subject, andragogy. Teachers or learning facilitators must be interested in adult development and learning theories to ensure that teaching and learning are successful. This entails assessing their experiences, appreciating individual diversity, and comprehending the needs and interests of the adults in their life. All of this will benefit the organization of learning activities for teachers and students, leading to their application. Learning facilitators should act solely as facilitators of learning (Knowles, 1977). One significant feature of andragogy is that it prepares the learner to learn, while pedagogy only trains the facilitators. Preparing for the learner side using pedagogy involves only issuing orders to the learners. Preparing learners involves giving short explanations as an active learning approach. Using taglines or trailers or exchanging fast experiences, even using small projects or homework, the learners' genuine hopes and ideas about the content to be learned. Acquiring learning motivation is crucial to implementing an educational program that molds students' personalities. The program's implementation goals cannot be met if there is a high correlation between the components of learning motivation (Muda et al., 2020).

Academics in adult education have been discussing autonomous learning extensively in recent times. It has been trendy among academics in adult education for more than three decades. Researchers have applied this concept to learning in various areas, including language. The primary purpose of autonomous learning in many studies is to help learners realize and take responsibility for their learning. Educational management in Thailand plays a crucial role in implementing autonomous learning and fostering learner responsibility, as mandated by the National Education Act. The National Education Act stipulates the realization of providing education to countries worldwide. The Act specifies adherence to the principles of promoting lifelong learning combined with the application of technology to enhance learning, which will be a method that will make learning more sustainable for all learners (Benson, 2021). There has been a high level of discussion surrounding autonomous learning. It has been trendy among academics in adult education for more than three decades, especially in the airline business. Their nature of learning is challenging, considering their nature of work. The airline organization has applied the concept to learning in various areas, including language and inflight safety competence. In some studies, autonomous learning aims to help adult learners realize and take responsibility for their learning. The International Air Transport Association reports that attitudes toward in-flight safety competency training for cabin crew have quickly changed. To develop guidelines and regulations for international aviation operations, including workers who offer airline services, the International Civil Aviation Organization was designated as a specialized agency of the United Nations (ICAO, 2014). The cabin crew is another group of service providers to create a good impression on users. The cabin crew plays a crucial role in ensuring the safety of passengers who trust and choose to experience the airline's service. Additionally, operating training on inflight safety competence for flight crew is essential in the aviation industry.

In actuality, instructors teach the courses to promote inflight safety competence for cabin crew differently. The management should align the current approach with the learning nature of cabin crew. However, the management can create inflight safety competence that aligns with the abilities and nature of the cabin crew career. Therefore, in that case, the researcher is interested in developing the learning model. Airline organizations interested in promoting inflight safety competence among adult learners can apply autonomous learning, lifelong learning promotion, and the concept of non-formal education as a learning model for appropriate learning promotion. Based on the belief that the learning model is a suitable tool for the learning nature of cabin crew, it is a highly flexible tool when combined with autonomous learning. It can effectively help in learning to promote inflight safety competency. It will be an educational innovation that various agencies, educational institutions, and airline organizations can use in cabin crew work to learn about inflight safety

competence to their fullest potential.

1.2 Research Objectives

This research study has two objectives: 1) to develop an autonomous learning model to enhance inflight safety-based competence for cabin crew, and 2) to study the effects of using an autonomous learning model to enhance inflight safety-based competence for cabin crew.

1.3 Research Questions

These are the two research questions of the study: 1) What is an autonomous learning model to enhance inflight safety-based competence for cabin crew? Furthermore, 2) What are the outcomes of using an autonomous learning model to enhance inflight safety-based competence for cabin crew?

1.4 Literature Review

Autonomous Learning

Autonomous learning has been talked about a lot among academics in adult education for more than three decades. This concept has been applied to learning in various fields. In many studies, the primary purpose of Autonomous learning is to help learners become aware of and responsible for their learning and educational management in Thailand. Organizing education in countries worldwide also recognizes the importance of autonomous learning. Furthermore, it has been determined that adhering to the principles of lifelong learning and applying technology to enhance learning is essential. This will be a method that allows learners to learn sustainably. The concept of learner-centered learning supports autonomous learning, motivating learners as the most crucial aim of learner-centered teaching in various fields of learning in today's world, based on the idea that the facilitator is the only one who transmits knowledge to the learners. However, at the same time, learners must also create knowledge (Benson & Voller, 1997). However, autonomous learning is not inherent in each person from birth, even though it was initially related to adult learning. It is something that each learner should absorb over time, which means that autonomous learning occurs after the learner's awareness arises. Plus, it accepts the learner's responsibility to achieve learning or acquire various knowledge (Yoosap, 2012). Their capacity for independent learning directly impacts the effectiveness of learners' learning. Gaining an understanding of the purpose, framework, and dynamic process of autonomous learning through learning activities will improve students' understanding of the concept and help them accomplish in school and in life. This understanding is also crucial for sustainable development and talent cultivation in these changing times. Choosing the learning objective, using the learning strategy, keeping an eye on the learning process, and assessing the learning results are all commonly referred to as autonomous learning, sometimes self-learning. Learner autonomy is the cornerstone of education and represents the value orientation of modern curriculum. Depending on the characteristics of learner autonomy and the dynamic structure at different ages, there are both general and specialized definitions of autonomous learning. "Generalized autonomous learning" refers to the process by which a person makes use of his or her abilities to advance knowledge, aptitude, or development in any situation and at any time. The narrow sense refers to learners autonomously learning, developing, and changing their minds with the assistance of peers and teachers. According to the actual situation and society, formal education offers its requirements, objectives, and tasks for learning, consciously planning, regulating, controlling, and evaluating the learning process. The ability of the learners to continuously modify their state of learning and make optimal use of their resources, knowledge, and capabilities is what matters most (Zhifeng, 2017). Students' studies are founded on their cognitive knowledge, which serves as the basis for their knowledge and can help them learn more efficiently, modify their motivational tactics, and continuously recognize the importance and value of enhancing their power source—a crucial comprehension component. To put it briefly, autonomous learning occurs when students select their learning strategies, set learning objectives, keep track of their progress, and assess their learning based on their prior knowledge and cognitive abilities. Learning processes include self-design, self-management, self-adjustment, self-control, self-judgment, self-evaluation, and self-transformation. It also rests on the concept and substance of "autonomous learning." Autonomous learning is not the same as dependent learning. To be autonomous, learners must be aware of and responsive to their learning and how to learn and other related topics (Yoosap, 2012).

Regardless, learners who rely on themselves can take responsibility for the entire learning process or have the potential to strive to acquire that knowledge. Numerous scholars have tried identifying appropriate strategies for augmenting self-directed learning based on learners' beliefs. When talking about autonomous learning, some groups of learners' desire to embrace learning more autonomously than many other groups of learners. Some cultural constraints still influence learners who learn autonomously. For example, facilitators think about freedom or responsibility for each learner's attitude toward learning, which can vary to some degree in most

cases. There are no students. Who is entirely irresponsible? Moreover, at the same time, teachers rarely meet students with the conditions that facilitators wish for. It means having excellent responsibility without fail, as well. As a result, learning characteristics and cultural attitudes shape and develop a learner's freedom of learning (Scharle & Szabo, 2000).

Many scholars have pointed out that learning how to learn is a significant component of many approaches related to learning. Autonomous learning and all these factors aim to provide strategic training for learners to learn autonomously. It refers to the ability with which the learner is responsible for learning. Thus, learners must train their knowledge to develop learning strategies and confidence. It leads to the development of training for learners to strategically behave or express themselves in the autonomous learning process, thereby increasing their learning potential. It aims to train learners to develop behaviors that foster autonomous learning, enabling them to become independent and effective learners. All of these things lead learners to autonomous learning. These include 1) understanding one's learning styles and strategies and 2) being willing to accept risks (Yoosap, 2012). The learning setting is a crucial factor that influences learners who learn independently. Each learner, or the background, community, or society in which he or she grows up, may have a significant influence. Learners strongly oppose the concept of the individual (individualism) and like the idea of feeling connected to the group (collectivism). Therefore, learners are willing to keep their identities the same. Another indicator is uncertainty avoidance. As a result, learners may feel nervous about working without the help of facilitators. Alternatively, learners may only do some tasks with a fixed answer. Some learners may view facilitators as authority figures who tell them what to do next (Scharle & Szabo, 2000). Regarding the ability of learners to learn independently, facilitators should be aware that they must do more than what they usually do in their teaching roles in the classroom. It will develop learning attitudes that aim to make learners responsible for their learning. In particular, learning English will inevitably affect the role of the teacher if there is a comparison between the current role and the traditional role of the teacher. It means that as learners begin to control their learning, the instructor must act as an advocate or someone who gives advice, also known as a facilitator (Wenden, 2002).

Non-Formal Education

Learning occurs in a formal, structured setting, like an educational or training facility or the workplace. It is marked as educational (regarding goals, duration, or materials). From the perspective of the student, formal education is intentional. Usually, it results in certification. Non-formal learning is included in scheduled activities with a significant learning component but is not explicitly labeled as such regarding goals, time, or support. From the perspective of the student, non-formal learning is intentional. Usually, it does not result in certification. Daily work, family, and leisure activities also lead to informal learning. It needs more structure and organization regarding goals, time, and learning assistance. Most of the time, informal learning is inadvertent from the learner's standpoint (Bingley et al., 2018).

Over the past few decades, employees' continuous learning has been more critical to an organization's ability to innovate and prosper in the labor market. Learning at work has traditionally been viewed as formal training closely tied to the task at hand and practice-based. The topic of employee skill and competency development as they work has also been the subject of field research. The idea of individual liberty in learning has grown despite the growing interest in comprehending various "learning through work" activities and interaction and involvement. Learning at work might be understood as new behaviors that arise at work. "Practice" generally refers to the customs, expectations, and values ingrained in daily life. Practice in workplace learning refers to a set of tasks; doing and knowing are intertwined. Workplace learning practices can be shared and collective activities (like interaction) or individual ones like autonomous problem-solving (Lemmetty & Collin, 2020).

Non-formal education is flexible and can be seen in many forms. There are no restrictions on age and surroundings. The aim is to provide education for the development of human quality. There are learning objectives, curriculum, teaching methods, learning resources, and assessments and evaluations that are consistent with the problems and needs of the target group. It provides education for those who miss the opportunities to study in the formal education system or those who want to develop themselves by learning. There is an increase in the potential of learners. According to the law on national education by the provisions of the Constitution, all citizens should be promoted and supported to receive essential educational opportunities. According to human rights, everyone should receive the education as such. As a result, people will genuinely receive continuous education throughout their lives. A society of learning that is widespread and at a rapid rate has been born. It will result in the nation having higher potential competitiveness and overall development. It is also sustainable because it puts people at the center of growth, focusing on having people with morals bring knowledge, which will be a bridge leading to a learning society and learning wisdom in the future (Ratana-Ubol & Henschke, 2015).

The terms informal and non-formal education are foreign to us. These types of learning are defined not only in terms of what they are not (formal learning) but also in terms of what they do not signify in terms of the type of knowledge acquired or the extent of the learning process (Souto-Otero, 2021). It warns us that these ideas are essentially constructed frameworks for thinking about learning. They reaffirm "a tendency in current discourse to expand what was once considered singular." Different standards have been applied to distinguish between informal and non-formal learning. The definitions of these terminologies are primarily based on deliberate and institutional factors. Given that most learning is non-formal or informal and that these forms precede formal learning, it is notable that the definition of non-formal and informal learning is built on what they are not. Formal education prevailed in the conceptual war by utilizing credentials as its stones and the prominence of colleges and universities—locations primarily intended for instruction—as its slings. The goal of validating non-formal and informal learning is to address this issue and increase the visibility of non-formal and informal learning (Souto-Otero, 2021).

1.5 Significance of This Research Paper to the Literature

In the airline business, the cabin crew is the focal point of interactions with customers, and the company is in charge of ensuring both safety and quality of service. The critical learning promotion course aims to improve the in-flight safety-based competency of cabin crew members who deal with, work with, and engage with passengers worldwide. The research study will provide an autonomous learning model to help cabin crew members become more proficient in aviation safety. Teachers deliver the courses in a way that encourages cabin crew members to be competent in aviation safety. The management has matched the existing strategy with the cabin crew's inclination toward learning. On the other hand, the management can develop in-flight safety-based competence that corresponds with the skills and characteristics of a career in cabin crew. The researcher is, therefore, motivated to create the learning model in that scenario. Airline companies can use self-directed learning, lifelong learning, and non-formal education as a learning model for appropriate learning promotion to help adult learners become competent in in-flight safety. When paired with autonomous learning, the learning model—predicated on the idea that it is a fitting instrument for the learning style of cabin crew—becomes a highly adaptable tool. It can help understand how to enhance in-flight safety-based competence. This innovative teaching tool will enable various agencies, academic institutions, and airline companies to fully utilize cabin crew training to ensure they are fully competent in inflight safety.
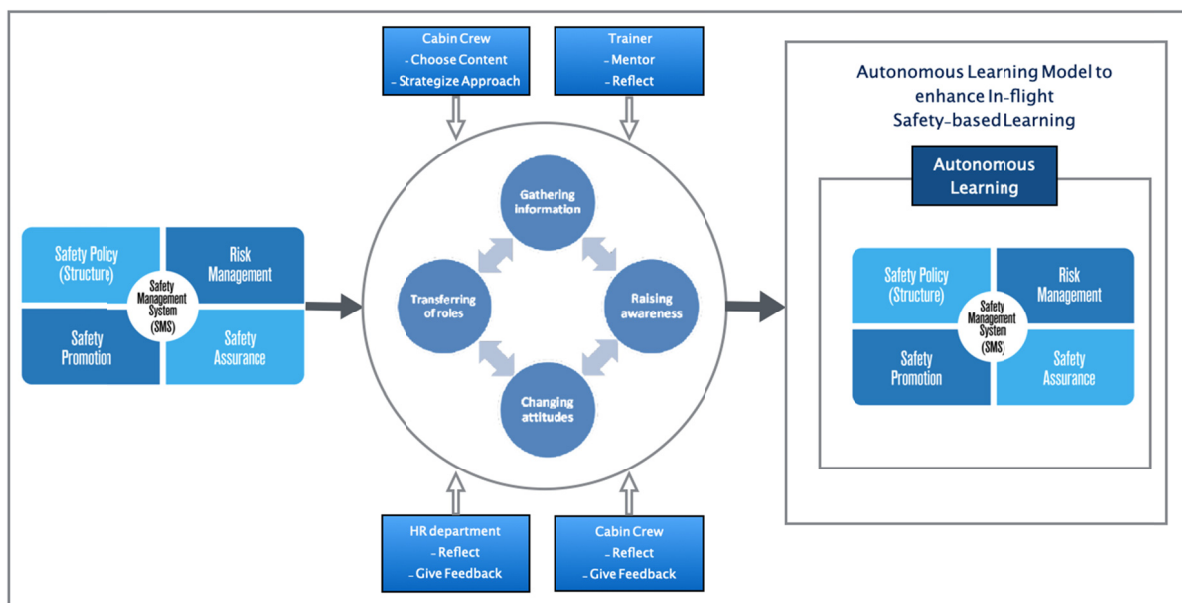
1.6 Conceptual Framework of the Study

Figure 1. The Conceptual framework of the study

2. Research Methodology

The researcher employed a two-phase Research and Development (R&D) process. Creating an autonomous learning model is the first step toward improving cabin crew members' inflight safety-based competency. The results of applying an autonomous learning model to improve cabin crew members' inflight safety-based competency were studied in the second phase. The following are the specifics of each phase's procedures.
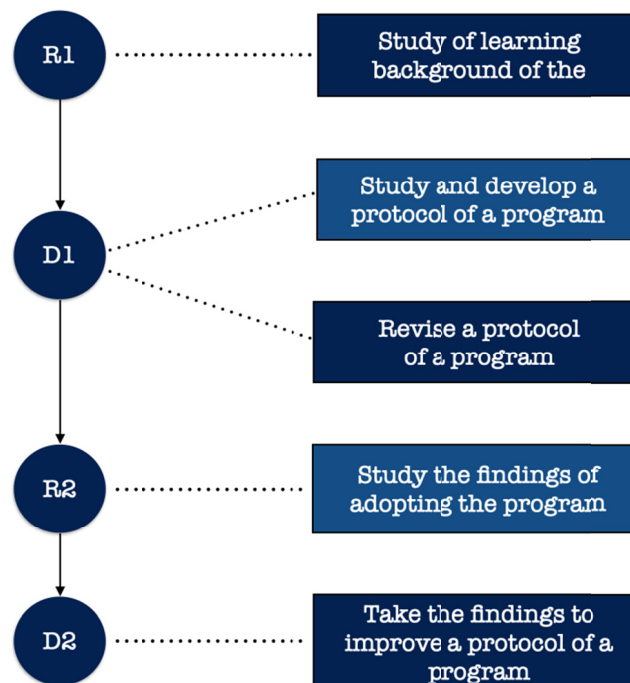

Figure 2. The study's research framework

The First Phase (R1 & D1): The development of an autonomous learning model to enhance inflight safety-based competence for cabin crew

This research phase aims to create an autonomous learning model to improve cabin crew members' competence inflight safety. The procedure is divided into three steps:

1st Step (R1): Study the cabin crew members' backgrounds to gain knowledge of inflight safety-based competence.

The cabin members were selected by using a purposive sample technique. This step employed a group discussion form with the issues as the research instrument. Two issues were raised in the group discussion: 1) problems of learning to enhance inflight safety-based competence. Plus, 2) need to learn about inflight safety-based competence in the future. The researcher gathered data by managing small group discussions according to the appointment of the cabin crew. The researcher transcribed text from group discussions and grouped keywords with similar content into subgroups. After that, related or consistent sub-information was created as the main point of the research study, and the data was presented by descriptive writing as the primary points, sub-information, and sample reference. Understanding the background of inflight safety-based competence involved two key sources of reference.: 1) problems with inflight safety-based competence learning for cabin crew and 2) the need for learning through an autonomous learning model to enhance cabin crew members' in-flight safety-based competence.

2nd Step (D1): Study the data from the experts to develop a protocol for an autonomous learning model to enhance inflight safety-based competence for cabin crew

The researcher utilized purposive sampling to determine seven experts in the airline business, cabin crew industry, lifelong learning promotion, and organization training. The interview form to develop an autonomous

learning model (protocol) to enhance inflight safety-based competence for cabin crew was the research instrument in the second step. After the researcher gathered all the data from the interview, the researcher performed a triangular examination to prove that the data were reliable, accurate, and with minimal to no error. The methods used by the researcher to examine the data were 1) data triangulation and 2) investigation Triangulation. The researcher utilized data analysis by employing data obtained from the interviews of all key informants to conclude through descriptive writing and evidence from textual interviews categorized by issues in the interview, which are: 1) Goals and outcomes of inflight safety-based competence learning in terms of safety policy, risk management, safety promotion, and safety assurance. 2) Principles necessary for autonomous learning to enhance inflight safety-based competence. 3) Guidelines for fostering autonomous learning to enhance inflight safety-based competence. 4) Stakeholders in promoting and organizing learning promotion activities to promote inflight safety-based competence. Plus 5) Supporting factors for fostering learning to promote inflight safety-based competence and barriers in promoting learning to promote inflight safety-based competence.

3rd Step (D1): The appraisal (protocol) of an autonomous learning model to enhance inflight safety-based competence for cabin crew

The researcher utilized purposive sampling to select three experts from lifelong learning promotion, training, or non-formal education. In the third step of the process, a (protocol) autonomous learning model's appraisal form was the research instrument. The appraisal is divided into three parts: Part 1) To assess the accuracy according to the principles and the viability of the components in the learning model. The appraisal was a five-level rating scale (Rating scale). After gathering all the data, the researcher evaluated the theoretical validity and practicality of the elements in the protocol of the learning model. The researcher determined the mean (M) and the standard deviation (SD) with the interpretation of the data. Part 2) to evaluate the learning plan to promote learning about inflight safety-based competence. It has the appraisal of characteristics to find the content's consistency with the objectives. (Item-Objective Congruency Index: IOC). The researcher evaluated experiential plans for an autonomous learning model to enhance inflight safety-based competence for cabin crew. The researcher conducted the mean (M) to analyze the data—furthermore, in Part 3) Further Recommendations. The researcher employed content analysis to conclude the issues that need to be reviewed, revised, and adjusted according to the expert's comments and recommendations.

The Second Phase (R2 & D2): The development of an autonomous learning model to enhance inflight safety-based competence for cabin crew

In this phase, an autonomous learning model was intended to be developed to enhance inflight safety-based competence for cabin crew. The targeted area for the learning model tryout of the protocol of the learning model designed in phase 1 was the cabin crew training department of THAI Airways International. It is the airline that was willing to participate in the research study. The sample group that participated in this research willingly joined 12 cabin crew, including 1) four economy class cabin crew, 2) four business class cabin crew, and 3) four first class cabin crew with a research period from October to December 2023.

Before and after the experimentation, the researcher utilized a self-evaluation form to learn about the inflight safety-based competence of cabin crew in the self-assessment experimental group. In this second phase, the researcher employed A five-level rating scale as the research instrument. It is divided into three factors: safety policy, risk management, safety promotion, and safety assurance, totaling 12 items, and checking content validity from three experts using the index to measure the consistency between the questions and the objectives (Item-objective congruency index: IOC). Data analysis must be between 0.60–1.00, classified as an analysis of each individual's mean safety policy, risk management, safety promotion, and safety assurance. The researcher compared the number of participants with the changed scores in the post-experiment with the pre-experiment scores by using the frequency and percentage to find the learners' development scores. The researcher also reached the number of learners with changes in development scores regarding safety policy, risk management, safety promotion, and safety assurance by presenting the frequency and percentage values. To improve the draft of the learning model to be completed.

Ethical Considerations

This study received no specific financial support. The author confirmed that the study's essential aspects have not been removed, and any differences from the planned study have been clarified. The document presents an honest, accurate, and transparent account of the research, in the authors' opinion. This study followed all ethical practices while writing. The author states no conflicts of interest in this paper's publication.

Ethical Review Board: Kasetsart University Research Ethics Committee, Thailand

Date of Ethics Review Decision: 20 October 2023

Ethics Assessment Document Issue Number: COA66/063

3. Research Results

3.1 The Results of Adopting an Autonomous Learning Model to Enhance Inflight Safety-Based Competence for Cabin Crew

1) The study of problems and needs in promoting inflight safety-based competence of the cabin crew can be divided into four elements: ① the attitude of the cabin crew towards inflight safety-based competence. ② the need to enhance inflight safety-based competence learning, ③ methods of learning about inflight safety-based competence for the cabin crew, and ④ the importance of enhancing inflight safety-based competence learning of the cabin crew. The outcomes displayed that: ① cabin crew wants everyone to consider learning about inflight safety-based competence as the most meaningful competence that every cabin crew must learn as the priority. ② The cabin crew wants the airline or Human Resources department (HR) to provide them with the most appropriate platforms that serve the nature of the cabin crew job. They have a high hope of having the opportunity to design their learning styles freely. ③ Cabin crew prefer the anywhere-anytime learning platform, allowing them to learn at the most suitable pace, style, time, and place. The cabin crew wants their learning facilitators to give them the freedom to learn. ④ They want airline trainers to be responsible for providing learning assistance to learners. They maintain interaction while learning to help learners enjoy learning. The airline trainer may give guidance or advice about planning learning activities. Likewise, ⑤ They want to be able to determine the learning area according to their preferences. They will take the time to understand the lesson fully. Some people can take one hour per lesson, while others can take five hours. They are equally effective at understanding the lesson because of the learners' cognitive abilities since each individual is unequal, especially individuals with the unique nature of their jobs.

2) The results of Interview experts to develop a protocol for an autonomous learning model to enhance inflight safety-based competence for cabin crew. The details are as follows:

① Analysis of Individual Learning Needs. It begins with each cabin crew expressing their learning needs and special learning interests. Learning can start by having another friend as a mentor and another person to take notes. Continue doing this in rotation until everyone has played their roles in all aspects, namely, those who propose learning needs, provide advice, take notes, and observe. Learning such roles gives excellent benefits in learning together and being able to help each other in every aspect.

② Setting Learning Goals. It begins with each cabin crew expressing their learning needs and special learning interests. Learning can start by having another friend as a mentor and another person to take notes. Continue doing this in rotation until everyone has played their roles in all aspects, namely, those who propose learning needs, provide advice, take notes, and observe. Learning such roles gives excellent benefits in learning together and being able to help each other in every aspect.

③ Learning planning, where Cabin Crew Determine Their Learning Objectives. Each learner must select learning plans. The cabin crew's learning planning should start with developing their learning objectives. The learner organizes the content to suit the needs and interests of the learner. The cabin crew determines the learning method to obtain the knowledge or skills that are most appropriate for them.

④ Seeking Learning Resources. Each aspect of the learning experience lets the cabin crew present the purpose, meaning, and success of the learning experience. Cabin crew can use learning resources such as libraries, temples, and health centers, which can be used appropriately. The cabin crew can choose learning resources that are appropriate for them. There should be a reasonable allocation of activities, some of which will be managed by the cabin crew alone and some of which will be organized jointly between the airline trainers and the cabin crew.

⑤ Evaluation in the Learning Process. Autonomous learning helps cabin crew understand their learning progress. Evaluation must be consistent with the learning objectives. It involves the following: knowledge, understanding, skills, attitudes, and values. The cabin crew starts with setting goals. The learning objective must be precise and clear. The cabin crew does everything to reach the learning objectives. The cabin crew gathers evidence by making decisions based on appraisals that must be based on complete and reliable information. The cabin crew then collects data before class to compare the learning outcomes after class to see how much progress they have made.

3) The appraisal results of an autonomous learning model (protocol) to enhance inflight safety-based competence for cabin crew. The outcomes revealed that all model components are valid, following the principles of the

model in all respects. They were ① the purpose of the model, ② the identification and management of learning goals, ③ the knowledge development of learning strategies, ④ the trainer's role and practical ideas, and ⑤ the reflection and evaluation of the learner's learning.

In addition, the learning model has the highest level of assessment for all components, with the same mean score of 5.00 points (standard deviation = 0.00). Concerning the possibility of implementation, all components were assessed at the highest level regarding the model's purpose, knowledge development of learning strategies, and identification and management of learning goals with a mean score of 4.80 points (standard deviation = 0.54). There was a mean score of 4.55 points (standard deviation = 0.45) for the airline trainer's role, practical ideas, and learning reflection and evaluation of the cabin crew's learning.

3.2 The Results of the Development of an Autonomous Learning Model to Enhance Inflight Safety-Based Competence for Cabin Crew

The results of learning inflight safety-based competence on cabin crew's *safety policy* before and after participating in the model. Before participating in the model, the cabin crew revealed that they had self-assessment scores at a moderate level, with five people representing 41.66% and a high level, with seven people representing 58.33%. Moreover, after participating in the learning model, the cabin crew revealed they had self-assessment scores at the highest level, with nine people representing 75% and a high level, with three cabin crew members representing 25.00%. All 12 cabin crew had a safety policy change of 100%.

The learning outcomes of inflight safety-based competence in *risk management* of cabin crew before and after participating in the learning model. Before participating in the learning model, the cabin crew revealed that they had self-assessment scores at a moderate level, with four cabin crew members representing 33.33%, and a high level, with eight cabin crew members representing 66.66%. Furthermore, after participating in the model, the cabin crew revealed they had self-assessment scores at the highest level, with ten cabin crew members representing 83.33% and a high level, with two people representing 16.66%. All cabin crew had a risk management change of 100%.

The learning outcomes of inflight safety-based competence in the *safety promotion* of cabin crew before and after participating in the learning model. Before participating in the model, the cabin crew revealed that they had self-assessment scores at a moderate level, with six people representing 50%, and a high level, with six cabin crew representing 50%. Furthermore, after participating in the model, the cabin crew revealed they had self-assessment scores at the highest level, with eight people representing 66.66% and a high level, with three cabin crew members representing 33.33%. All cabin crew had a risk management change of 100%.

Lastly, the inflight safety-based competence learning outcomes regarding the *safety assurance* of cabin crew before and after participating in the model. Before participating in the model, the cabin crew revealed that they had self-assessment scores at a moderate level, with six people representing 50%, and a high level, with six cabin crew representing 50%. Furthermore, after participating in the model, the cabin crew revealed they had self-assessment scores at the highest level, with eight people representing 66.66% and a high level, with three cabin crew members representing 33.33%. All cabin crew had a safety policy change of 100%.

The study analyzed the degree of development categorized by each factor and found that 1) safety policy represented 60% of the level of development; 2) risk management represented 53.33 percent of the level of development; 3) safety promotion represented 53.33 percent of the level of development; and 4) safety assurance represented 53.33 percent of the level of development. The table that follows provides comprehensive details.

Table 1. A study of the level of development of inflight safety-based competence of cabin crew classified by aspects (N = frequency and P = percentage)

Factors	Level of Development							
	Highest		High		Moderate		Low	
	N	P	N	P	N	P	N	P
Safety Policy	9	75.00	3	25.00	0	0.00	0	0.00
Risk Management	10	83.33	2	16.66	0	0.00	0	0.00
Safety Promotion	8	66.66	4	33.33	0	0.00	0	0.00
Safety Assurance	8	66.66	4	33.33	0	0.00	0	0.00

After testing, the protocol of an autonomous learning model to enhance inflight safety-based competence for cabin crew was completed. The researcher has adjusted the learning model (protocol) with the following

significant issues for modification.

1) The knowledge development of learning strategies. It is better not to run separate parts on learning strategies but to embed the many styles of strategies within the content and suit the cabin crew's context, to be more focused on developing surface and deep learning, and to facilitate the skills that help cabin crew learn better.

2) The learning reflection and appraisal of cabin crew's learning. To be effective in learning, reflecting, and evaluating, the airline facilitator/trainer should let learners freely utilize reflection prompts tailored to support the learning outcomes of the things that they learn. The expected outcomes that cope with the learning objectives should be added and clarified.

4. Research Discussion

From the data analysis, the researcher proposes the research outcomes to discuss.

1) Based on the research results on developing an autonomous learning model to enhance inflight safety-based competence for cabin crew. The researcher found the research discussion to be as follows: ① The purpose of the model, ② the identification and management of learning goals, ③ the knowledge development of learning strategies, ④ the trainer's role and practical ideas, and ⑤ the reflection and evaluation of the learner's learning. These components can be linked with an autonomous learning process. There are also four domains supporting the development of persons who are complex thinkers, problem finders, problem solvers, and producers of knowledge. The learners in this era will successfully navigate 21st-century issues and ensure that significant to huge problems will be tackled and analyzed to solve through lifetime significant opportunities. Learners with autonomous learning styles will never be satisfied. They perceive their needs for a nourishing life and society's needs as motivation. Their ability to be creative problem-finders, problem-solvers, and knowledge producers will always continue. In this regard, Wulf et al. (2014) supported the idea that autonomy support and enhanced expectancies had additive benefits for learning, with both primary outcomes being significant for retention and transfer. Cheon et al. (2014) also revealed that giving autonomy support benefits teachers in the same way that receiving it helps their learners. Nopas et al. (2023) examined international airline cabin crews' needs, problems, and experiences with training platforms during the COVID-19 pandemic. They suggested that the organization should identify the characteristics of trainers when conducting the classes. They should also set the appropriate climate for online training classes and clarify the differences between theoretical and practical courses. Airline organizations should learn from the difficulties in conducting online training classes during the pandemic. They should identify the difference between conducting theoretical classes and practical classes.

2) According to the research results of studying the knowledge development of learning strategies of cabin crew' risk management towards learning inflight safety-based competence, the results revealed that most cabin crews have an attitude towards learning about inflight safety-based competence as boring. Airline organizations must focus on conducting more exciting and joyful inflight safety-based competence classes. Inflight safety-based competence is essential in the airline industry. People in the airline industry must take inflight safety-based competence seriously. It is the trainer's job to make inflight safety-based competence classes more accessible and more enjoyable for cabin crew to learn, which will help them work more efficiently with passengers. After all, inflight safety-based competence helps cabin crew work more efficiently with the perfect safety on the flight and beautiful service to the passengers. Even though airline service is the main factor that passengers consider before choosing an airline, Koo et al. (2018) investigated the discussion of which safety risk information influences flight choice. The results revealed that there is also a significant variation in the extent to which the respondents are sensitive to safety information, which was represented in the form of aircraft incidents similar to the way the media use aviation statistics. Understanding the reasons for the wide variability could improve public acceptability and tolerance towards risk control measures in aviation. On the other hand, Ahmad and Ansaari (2021) stated that as passenger safety is considered a top priority for the airline industry, in-flight safety briefings must be revealed in all commercial airlines to make sure that passengers on board are aware of the safety process in case of an unfavorable emergency. Furthermore, it is not just the safety of the passengers that the airlines need to consider; it is also the safety of the flight crew, such as pilots and cabin crew. Johansson and Melin (2019) examined the frequency of presenteeism—reporting to work while unwell—among Swedish commercial airline pilots and the relationship between presenteeism and flight safety and mental health. The findings showed that, throughout the previous year, 63% of the pilots had improper presenteeism. Inappropriate presented pilots and pilots with poor recovery regarding those who reported experiencing rest, physical and mental exhaustion, and stress about their jobs were more likely to have made five or more mistakes while on flight duty in the previous 12 months, including ensuring that they can learn by applying safety policy and safety promotion gained from autonomous learning, which is relevant to the opinions of cabin crew from the focus

group that reflected that "*…I always have had the high hope to see the airline organizations provide me the autonomous, self-directed, or even the personalized learning platforms that will let me the true owner of the learning experience. I am no longer one of the kids who always must wait for teacher instruction. I have many things to do, responsibilities to manage, and family to care for. It is difficult for us here to study like the old days when I was just a little. Autonomous learning can give me the sense of doing that…*" Similarly, Aripova (2021) stated that it is devoted to the role of motivation in increasing competence to learn autonomously. It also suggests ways to motivate learners to be wholly involved in learning. Also, Cao and Li (2013) studied how cultivating college learners' autonomous learning abilities presents a significant challenge for teachers. Four aspects are summarized to enhance college learners' self-learning ability. In a dominant position in teaching activities, teachers should reform teaching methods to fully embody the learners' leading role to promote their ability of autonomous learning.

3) The results of Interview experts to develop an autonomous learning model to enhance inflight safety-based competence for cabin crew consisted of ① The purpose of the model, ② the identification and management of learning goals, ③ the knowledge development of learning strategies, ④ the trainer's role and practical ideas, and ⑤ the reflection and evaluation of the learner's learning. The components align with the theoretical framework of an autonomous learning idea pertinent to Horvath (2007), who said autonomous learning is intricate and multifaceted. Because they can assume accountability for their choices about the various facets of the learning process, it can be characterized as the learners' capacity to self-direct learning. However, the concept of autonomous learning goes beyond simple management. Firstly, Critical thinking, learning planning, assessment, and learning reflection are all components of autonomous learning, which is the learners' deliberate attempt to keep an eye on the entire learning process from beginning to end. It is autonomous learning's cognitive aspect. According to Betts and Kercher (1999), an autonomous learner solves issues by definition using both divergent and convergent thinking and may work in several fields of study with little assistance from outside sources. With the help of the autonomous learning approach, learners identify their own learning needs, create learning goals, and develop autonomous ways to reach those goals, including keeping track of and assessing their progress. The autonomous learning model may give learners the impression that they are in complete control of their education, but this does not mean that other learning methods or the role of the instructor are no longer necessary. Instead, instructors adopt an alternative role in the process of learning. Instead of being the main force behind learning, teachers increasingly take on the role of guide and facilitator. Furthermore, independent learning is described by Pinto-Llorente (2020) as a process in which students take charge of their schooling and develop into a crucial component of it. To accomplish their objectives, students must thus take the initiative to study and make judgments. Simultaneously, facilitators are expected to remain in the background and only help learners when needed, offering guidance. Furthermore, the research study's findings identified five key tenets of the previously mentioned autonomous learning model, which will be covered in the following discussion.

① The Purpose of the Learning Model

Once learners have defined their learning goals, they can begin planning their learning activities. Learners figure out what they will need to complete their learning tasks. They gathered the materials to determine the learning approaches that fit their needs. Then, learners can also break their goals into smaller pieces to make them more manageable. Thanasoulas (2000) said the study indicated that it is unnecessary to state that learners enter the learning environment prepared to organize, observe, and assess their learning. Ariebowo (2021) evaluated the method of teaching and learning English in an aeronautical technology course. According to the study, learners knew their learning goals, and they favorably correlated with those of the curriculum creator.

② The Identification and Management of Learning Goals

Once learners have their learning purpose, they can break it down into smaller, manageable goals to help them track their progress and stay attentive. Stratton (2015) studied the model to coordinate the understanding of active autonomous learning. The model connected with the principles of adult learning explained in the article as the framework for considering whether training will achieve its learning objectives and allow people engaged in learning to gain further insight into their learning. Learners are encouraged to use active, reflective learning principles while processing the article. Also, According to Snodin (2013), the study's findings support the notion that there are many levels of autonomy and that the path to autonomous learning is influenced by each person's zone of proximal development. This idea is strengthened by the explanation of the experiment's behavioral characteristics. The findings showed that learners could independently arrange the system's learning materials and assume new learning roles once the facilitator set the direction using an external framework, such as a course management system. They weren't the same as those in a conventional, in-person classroom. They may eventually acquire independent perspectives and actions due to participating in the mixed-learning setting.

③ The Knowledge Development of Learning Strategies

The learner can choose a learning task relevant to their interests and needs and ensure learners can measure it to track their progress. They should also aim for a goal they can accomplish. Since little attention is paid to exploring English language learners' views of autonomous learning, Khulaifiyah (2017) investigated learners' perceptions of autonomous learning as well as learners' proposed activities during the initiative, monitoring, and evaluation process in raising autonomous learning in the teaching-learning process. According to the study's findings, students' metacognitive understanding of autonomous learning has to be strengthened because it helps them become more competent and autonomous learners, especially during the monitoring and evaluation phases. Also, Lou (2021) also investigated how application-focused institutions foster their learners' capacity for autonomous learning. The research study outlined the present state of learners' capacity for autonomous learning in application-focused universities, explored the underlying causes of undergraduates' deficiency in this capacity, and suggested various remedial strategies to support college learners' capacity for autonomous learning.

④ The Trainer's Role and Practical Ideas

The trainers should know the importance of learning autonomy, value it, and try to enforce and promote it. Trainers should support cabin crew to become autonomous, and to some extent, they succeed despite difficulties. In an attempt to define autonomy from philosophical and theoretical perspectives, Masouleh and Jooneghani (2012) provided some pedagogical implications that emphasized the role of the teacher as the primary scaffolder in the classroom, assisting students in consolidating their autonomy. Additionally, the demands, problems, and experiences of international flight attendants using training platforms during the pandemic were examined by Nopas et al. (2023). One of the conclusions states that instructors must let the learners watch videos introducing concepts before class, focusing instead on their participation in class discussions. In addition, according to Muda et al. (2020), there is a considerable correlation between all learning motives and the essential components that shape learners' leadership character.

⑤ The Reflection and Evaluation of the Learner's Learning

The final step in the cabin crew's autonomous learning model is regularly checking their progress. They will be able to see how close they are to their learning development and identify areas where learners should be working. To finish it, they can set up regular check-ins with themselves. Take a few minutes after each week or month to reflect on what they have learned, how they are implementing their learning strategies, and if they are meeting their learning needs. Torres-Goens and Farley (2017) investigated how to encourage reflective practice in conservatoratoire learners to facilitate autonomous learning. The study's results suggested that this paradigm could allow learners to rely entirely on their facilitator for feedback on their learning. The advancement of learners may then be aided by a more reflective and independent learning process. The three primary findings from learner journals were the development of learner autonomy, a sense of shared responsibilities and partnerships, and enhanced clarity and confidence in the direction of their learning. According to the findings, journaling can encourage deeper introspection from learners and promote more independent and collaborative learning in one-on-one studio settings. Likewise, Alfaiz et al. (2019) elucidated the relationship between human autonomy and personal agency within a social system, synthesized an agentic approach to shape self-cognition of the human autonomous learning process, and described the emotional and social cognition in human learning. They also analyzed human agency as a self-cognitive strength to establish adequate autonomous learning. The study's findings demonstrated how human agency was incorporated into deliberate, anticipatory, reactive, and reflective processes. It also demonstrated how the human agency had positive relationships with autonomous human learning behaviors in social systems by facilitating autonomous learning in the selection and decision-making of actions. Furthermore, human agency is examined and developed as an agentic strategy to mold autonomous learning in a counseling way in response to current issues. In addition, Chen (2019) also presented the findings of an empirical study that examined the reflective learning of translation learners using think-aloud exercises, diaries, and small-group conversations. After summarizing pertinent ideas, it will include the quantitative and qualitative analysis and evaluation of learners' reflective levels. Based on the empirical findings, it explored the elements that contribute to a reflective and autonomous learning environment for translation students. This was followed by a preliminary model of the learners' reflective and autonomous learning process.

4) The results of the model's components are legitimate and adhere to its tenets in every way. As the nature of the workplace shifts, the ability to change, adapt, and learn to conduct new skills is becoming increasingly critical. Autonomous learning will provide learners who are adults with independence and flexibility. They need

to achieve their learning goals. For the individual, ongoing learning is a crucial competence that boosts adaptability and resilience to changing circumstances. This autonomous learning enables learners to narrow down their skills or learn a new career of the era as their environment or economic circumstances change. An effective autonomous learning strategy can improve learners' professional and personal lives. With a few simple steps, learners can take control of their learning experience and progress toward their autonomous goals. Slow down and enjoy the process if they want to upskill for an enhancement or take a fun online course. Personal learning lasts a lifetime. Lo (2010) looked at the difficulties instructors and students in Taiwan have while creating a reflective portfolio to support independent learning. According to the findings, the students' main learning objectives were to acquire time management and critical thinking. Thanks to the portfolio, the learners were allowed to practice autonomous and multi-domain learning. As a result, the learners' knowledge of independent learning was raised. To increase portfolios' capacity to support self-directed learning, pedagogical recommendations are tested.

5) The cabin crew had moderately high self-assessment scores, according to the findings of the learning inflight safety-based competency on the safety policy before and after participation in the learning model. Cabin crew members' self-assessment scores in risk management were moderate before and after participating in the learning model. Before and after participating in the learning model, the cabin crew's learning outcomes in safety promotion revealed moderate self-assessment ratings. Additionally, cabin crew members' self-assessment ratings were moderate before engaging in the learning model, according to inflight safety-based competence outcomes addressing safety assurance of cabin crew members before and after participating in the learning model. Catino et al. (2013) examined how safety culture, emotions, and cognition interacted in the context of an Italian Air Force field study on learning from mistakes. The findings showed that errors frequently originate from actions hidden in routine activity and only become apparent when unanticipated events occur. Furthermore, all emotions of varying intensities are elicited by cognitive assessment of a risky setting, and these emotions, when reasoned in retrospect, facilitate the internalization of lessons learned. Lastly, Maneechaeye and Potipiroon (2022) strongly argued that the safety climate influences safety-related behaviors. It also considered whether the causes and techniques for creating varying safety climates could affect people's safety behaviors. Furthermore, when the fleet safety climate was low, its influence became more significant because it interacted with the organizational safety climate. The findings imply that organizational and fleet safety climates can directly impact safety motivation, safety behaviors, and fleet safety climate. Safety rules can be developed at various organizational levels to reduce aviation risks using the research's findings.

5. Research Implications

5.1 Research Implications Derived from the Research

1) To plan and continue developing learning models, the airlines in Thailand should arrange an evaluation of the learning management potential in inflight safety-based competency by involving members of the aviation network in Thailand.

2) The airlines in Thailand should provide training and develop crew potential in inflight safety-based competence to increase inflight safety-based competence efficiency.

3) The airlines in Thailand should develop a linkage to learning about inflight safety-based competence by airlines within the airline organization, consistent with aircraft construction and development in each era.

4) To improve the effectiveness of learning facilitation within the airline business, the airlines should train their trainers and help them reach their full potential.

5.2 Research Implications for Further Research Study

1) From this research, the researcher found that many airlines in Thailand's aviation network in Thailand by airline organizations have the potential to be further developed and expanded.

2) Researchers should develop knowledge in developing more diverse learning styles, such as conducting intergenerational learning, experiential learning, inquiry-based learning, etc., to create variety to meet the needs of more adult learners.

Authors' contributions

Not applicable.

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