Haaga-Helia
ammattikorkeakoulu Oy

Implementing competency-based approach to cabin crew safety training – renewing door test and evaluation for new entrant training course

Ida Flykt

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Abstract

Haaga-Helia ammattikorkeakoulu Oy

Author(s)
Ida Flykt

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One new approach to the cabin crew safety training is training and evaluated on competencies. Competency-based training is not only adopted to in the aviation industry, but also in other industries. Competencies are important tools for organizations, to help to attract, develop, retain and position the best possible people to the right jobs. ICAO defines competency as combination of knowledge, skills and attitudes.

The aim of the thesis was to renew the door test used during the cabin crew safety training for new entrants accepted to the course through Finnair recruitment process. At the same time the aim was to renew the cabin crew safety training, by implementing more competency-based training elements to the training and to renew the evaluation to evaluate not only the level of knowledge, but also skills and attitudes.

The beginning of the thesis report is focusing on the theory of the cabin crew safety training and standards and regulation related to the cabin crew safety training. The regulations have changed in time to ensure good level of safety in operations and protective measures from outside threats, but the report points out that new measures need to be applied and the training is developed provide more efficient training to further develop the knowledge and skills of people working within the industry. Also, the requirement is that Crew Resource Management and its principles should be integrated into relevant parts of cabin crew training.

The thesis was done using action research approach. Action research can be used to solve practical problems or to improve existing practices within the organization. As action research requires participation on the people involved in the research, also the methods used to collect data in action research should be like which are participatory. Data was collected using from the instructors using questionnaire. Data relating the regulatory practices an authority representative was interviewed. When the renewed door test model was ready, focused discussion session was organized where feedback was collected, and possible corrective actions were mapped out and taken inconsideration when finalizing the door test model.

As a result, the door test was renewed so that it was also including the evaluation of skills and attitudes. The new model has two test, one focusing to grade the knowledge and the other evaluating the learner's performance and skills. Evaluation is based on written performance statements.

For suggested future research topic was new technological tools which be utilized in training and how to implement competency-based training further to make the trainings more based on the individual's needs.

Key words
cabin crew safety training, competency-based training, performance criteria, ICAO

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1 Introduction

ICAO has defined competency as a set of knowledge and skills, to be able to perform tasks. Competency-based training strives always towards continuous improvement and development of competencies. (ICAO 2014, 34-35.) As part of the renewal of the cabin crew new entrant training, the initial aim was to renew also the assessment of cabin crew competencies in Finnair. The focus was decided to be on door training, as there was already some structure of assessing door competencies created for recurrent training for year 2016. Also one reason was, that there had been a feeling that when evaluation of the door training was done, there hasn't been the ability to so much focus on the competence, but only to see someone trying to pass a test with providing all technical knowledge, but not so much providing the feeling if they actually are thinking why are they doing something and how would the situation around have an effect on the way they are acting. As competency-based training and evidence-based training have been somewhat trends now in aviation on recent years, it was one of the reason this was chosen as the topic of this thesis.

The writer of this thesis has been working as cabin safety instructor at Finnair Flight Academy since 2016. Also, before that taking part in the trainings as a student, both in company conversion training and annual recurrent training since 2012. These years taking part in trainings has shown how the cabin crew training has started to change from traditional classroom lecture-based theory training, combined with few hands-on drills, to be more activating training. This has happened by applying more different training methods and participation of the listeners in the classroom. Crew Resource Management elements, further introduced and discussed in this paper, have begun to be more integrated part of the training, not just separated topic, during the trainings.

The new entrant training for inexperienced cabin crew has both door training and hands-on door testing, so therefore it was decided first to focus on the new entrant course door test evaluation, with the aspect on competency-based training. As the recurrent training is being renewed annually, it would benefit more in regards for future studies to first gather data and test the evaluation on the new entrant course. In the future the competency-based approach could be further implemented to cabin crew safety training, when instructors are more familiar on with the evaluation process and there would be more understanding what it requires to plan trainings and assessments with competency-based education elements. Also, with more understanding of the competency-based training, trainings could be planned to better serve individual's needs and development plans. The re-

search was done as action research, as it was seen as something that would fit to the nature of the study. Action research aims to improve something current (Koshy 2005, 1-22) and when compared to the other research methods, constructive research and case study, the action research was seen as more fitting to the time frame and to the research problem, where the focus was on the improvement of the evaluation, mainly from the instructors' perspective. Data was collected through literature, interview, questionnaire and in the end also making observations and using focus group to be able to evaluate the results. The aim of this research was to study competency-based training and based on these findings, together with the data on current situation, provide renewed guidance on door training and evaluation of performance.

2 Cabin Safety Training

The aviation industry has developed on regarding safety and security, throughout the history of aviation. As the technologies are changing the operations, new issues and risks need to be also taken into consideration. The regulations have changed in time to ensure good level of safety in operations and protective measures from outside threats. As the World changes and the operating environment changes, new measures need to be applied and the training is developed provide more efficient training to further develop the knowledge and skills of people working within the industry. Many high-reliability organizations, including airlines, aim to promote efficient and same time safe behavior in managing tasks. Regulatory authorities are setting up more requirements for training. Crew resource management is increasingly adapted to training to take human behavior factors as part of training, developing skills and maintaining competencies. (Alavosius, Houmanfar, Anbro, Burleigh & Hebein 2017, 142-170; Sheehan 2013, 258-259; Baldwin 2017, 33-36.)

Traditional training simulators are important part of safety training but require a lot maintenance and proper facilities. The airline training planning is a huge process and the equipment are in heavy use, where the risks of malfunctions can cause big losses and increase the work of planning. The demand for more advantaged and experience-based training solutions is already existing and many airlines are willing to take part in the development process. With new technological solutions and more advantaged training methods, the training simulations can be done by using alternative training methods, like virtual reality or mobile training equipment. As trainings wouldn't need an actual training facility in its traditional form, this could also decrease costs, even though the investments to new technologies can also be at a high cost level. Already now, part of the training could be done before coming to a training class, the training times will become shorter and more efficient. There are many regulations that cover airline activities and many of the technical and safety requirements are general, not specific to any region or aircraft type. Regulations regarding safety training requirements will to some extent limit the amount, how much of the training can be done outside the classroom and tested using new solutions. Collaboration with training product and innovation providers and with the airlines and regulatory authorities, is the key to further develop the safety training in a way the training supports the high-level safety requirements. (Baldwin 2017, 33-36; Doganis 2019; 329-330.)

2.1 Regulatory requirements

In Aviation, the regulations are generally based on the set of international standards and recommended practices set as annexes to the Convention on International Civil Aviation,

also called as the Chicago Convention, which was signed in 1944. The International Civil Aviation Authority, ICAO in a United Nation specialized agency was founded to manage the administration and governance of the convention. These annexes, and the Standards and Recommended Practices (SARPs) are frequently revised and updated by ICAO, working together with the 193 member states of the convention. In Europe the aviation regulations are executed by European Aviation Safety Agency, EASA. EASA has mandatory powers in Europe, regarding regulations related to aviation. Also, the airlines which are members of International Air Transport Association (IATA) are required to meet the requirements set in IOSA Standards Manual. The IATA Operational Safety Audit (IOSA) program is an internationally recognized and accepted evaluation system designed to assess the operational management and control systems of an operator and all IATA members are audited frequently and they need to stay compliant to the requirements to maintain their IATA membership. There are requirements related to cabin crew training and qualification. (Doganis 2019; 329-330; IATA 2018b, 30; ICAO 2019.)

Cabin crew safety training in Finland is overseen and audited by the Finnish National Aviation Authority Traficom. The airline operator oversight of the National Aviation Authority is based on the Implementing Rules of Commission Regulation (EU) No 965/2012 on control, ARO.GEN.300, and the control program, ARO.GEN.305, as well as on Traficom's working instructions which are based on those. The training audit shall ensure that the training meets the requirements of Regulation 965/2012 and is in accordance with the approved operator's training manual and training program. In general, the cabin crew training and checking is covered in Implementing Rule ORO.CC. 115. In addition, each regulation has its own content requirements on which the checklist used in the inspection is based. According to the working instructions, cabin crew training inspections are conducted in accordance with a separately approved control plan. The control plan shall take into account the nature and complexity of the operators' activities. In accordance with the principles of risk-based control, the control rate may be increased, decreased and allocated. The sources of information for risk-based control targeting are organizational profiles, occurrence reporting, and organizational analyzes, as well as any other reliable information that has become available. (Aaltela 15.10. 2019; EASA 2019, 426-438.)

The implementing rule ORO.CC.115 covering conducting cabin crew training courses and checking, it states that the operator shall establish a detailed training program and syllabus in accordance with the requirements. The training program is required to cover both theoretical and practical training, and practical trainings both collectively and individually performed. It is required that operators are ensuring that the training methods and training

devices are relevant to the training and accurately represent the actual aircraft on operating environment. Checking methods used during each training course should be determined and they should be appropriate to the checked training element. The methods include practical demonstration, oral exams, written exams, computer-based assessments and in-flight checks. Relating to cabin training devices and aircraft training requirements, the implementing rule states that whenever practicable, relevant parts of Crew resource management training should be conducted in representative cabin training device that reproduce a realistic operational environment. Interaction should be encouraged during practical training. Crew Resource Management and its principles should be integrated into relevant parts of cabin crew training. (EASA 2019, 426-438.)

The training audits conducted by the authority are intended to provide the best overall picture of how well the training provided by the operator covers all the duties and responsibilities of the cabin crew member and the used instructional methods. In addition, efforts will be made to ensure that training is systematic and truthful. At the same time, it is considered that the trainer has the appropriate qualifications and sufficient skills to carry out the training. In addition, the audit ensures that the exam or proficiency test organized is appropriate to the subject being trained and covers all areas of the training program. After the audit, an audit report is drawn up and sent to the persons responsible for training in the company. The audit report summarizes the general and more detailed findings of the training. Based on the findings, the inspections on training can be targeted and added to specific training or there are suggestions or requirements on improvement. (Aaltela 15.10. 2019.)

2.2 Crew Resource Management in safety training

One starting point to put more focus on the human factors in aviation safety training, is seen to be the accident which happened in Tenerife Los Rodeos airport in 1977. After the accident more focus was put on the research work to find out how these accidents, that should have not happened, could be better avoided. During the years Crew Resource Management has been developed and implemented into the safety training, with the aim to gain better co-operation between crew members, to enhance situational awareness, communication, decision making and improve attitudes towards safety and safety procedures. For airlines and aircraft manufacturers accidents are something that will affect to their economical productivity. Even though following regulations and standards related to safety procedures, training and technical requirements, among other fields of the aviation field, will create costs for them, it is vital to their ability to be able to operate their business.

Even though the human factors are in the center of Crew Resource Management, it is important to understand that it seeks better ways of doing things and better utilization of attitudes and skills, not finding someone or something to blame. Crew Resource Management is described as an effective use of all resources to achieve the highest possible level of safety. This refers to resources such as hardware, software and people. Hardware may refer to for example to the actual aircraft, software to the knowledge and procedures. (Alavosious et al. 2017, 142-170; Doganis 2019; 329-330; Rinne 2018, 234-244.)

Effectively developing and applying the non-technical skills is seen to be one step towards improving operational safety and efficiency. Human factors training should also include issues which are connected to efficient teamwork, as procedures and the service chain is designed in a way that every team member contributes to the whole performance and is not just an individual performing tasks. Human factors should also be included in the scheduling of work shifts, in the training of supervisors, the designing of procedures and the evaluation of employee's medical fitness. The aim to include human factors into safety procedures and training, is to gain a good level of safety which is taking into consideration the limitations of human performance and recognizing the risks involved in tasks performed by people. Crew Resource Management focuses on the reduction of human errors trough training and behavioral change. In Crew Resource Management some skills are put into the focus with the aiming to optimize interpersonal interactions between crew members, who work cooperatively within the dynamic environment. These skills can be grouped into measurable skill sets with can be evaluated as part of the operations and training. These skill sets most commonly include situational awareness, communication, decision making, teamwork, workload and task management and leadership. (Alavosious et al. 2017, 142-170; Balk, et al. 2011.)

Situational awareness refers to the ability to monitor and perceive the environment and to understand their meaning and their effect to the future events. When assessing situational awareness skills, it also includes the ability to communicate these perceptions and changes to others and the ability to adapt their behavior to meet the prevailing conditions. Communication skills do not only refer to individuals' ability to speaker's verbal behavior, but also to understand the relation of between the verbal behavior between the speaker and the listener. Training towards effective communication and improving the communication processes, may help to break barriers that have been established thorough hierarchies and to engage people to more effective problem-solving behavior and reduce environmental ambiguity. There are many factors influencing the decision making, and the influence might be even stronger in abnormal situations. These factors may include time pressure, probability of negative outcome, client expectations, personal factors or cultural

aspects. Training on decisions making frameworks, such as DODAR (Diagnose, Options, Decide, Act and review) and assessing decision making abilities during training, may help to train the crew members to be able to maintain the control of the process, even when abnormalities occur. Effective teamwork is one of the goals of Crew Resource Management training, with the goal of crew members working towards common goal. Crew members should be able to work together so, that their behavior is something that respects the outcomes that benefit the whole team, not just only themselves. Standard operating procedures have been developed to help crew members to manage their workload and tasks, but factors like stress, fatigue, other human factors or changes in the environment may limit the individual ability to sustain their optimal performance level. Near misses and unpredictable reactions may occur and training should also include this aspect and how people are self-managing their performance. Teambuilding skills and empowering skills are related to leadership behavior. If leadership behavior is emphasizing the importance of the Crew Resource management, it may even help to enhance the safety culture of the organization or the team. (Alavosious et al. 2017, 142-170; Rinne 2018, 229-248.)

2.3 Purpose of the cabin crew safety training

ICAO defines cabin crew as a crew member, who is not acting as a flight crew, but who performs duties assigned by the operator or the pilot-in-command, in the interest of safety. Traditionally the role of cabin crew members regarding safety was seen more focused in evacuating the aircraft in the event of an accident. Cabin crew safety training has changed to recognize cabin crew's role being more proactive in managing and maintaining safety in normal operations. Cabin crew training aims to cabin crew members to be able to recognize possible threats and manage risks in order to prevent possible incidents or accidents and understand their role regarding everyday safety. Even though accidents are statistically rare, this makes it very important that the cabin crew safety training ensures that the crew members are able to act in abnormal and emergency situations, are aware of their responsibilities are stay proficient. The assessment of airline's employees and their abilities and talents is often stated in the recruitment phase. Majority of airlines are conducting the training in-house. The duration of basic training course for new cabin crew members usually is something between five to twelve weeks. During the training their talents and abilities are being observed and recorded to be able to see already in an early stage, on which direction they could move in their career in the future, within the company. Competence and evidence-based training has been implemented to the training and training facilities are being developed to support the need to further measure employees' talents. The aim is also to already in an early stage to find people who would be able to proceed to captains or instructors and who would be able to best utilize their talents and knowledge

within the company. The aim is also to be able to get people to commit to work in the company. (Belobaba, et al. 2009, 297-309; ICAO 2014, 8-9; Kearns, Mavin & Hodge 2016, 73-74 Long 2018, 6-9.)

Training should also to be able to motivate the cabin crew members to acknowledge their important safety role and to enhance the feeling of organizational belonging. Previously the profession on cabin crew member was considered to be something out of the ordinary. The requirements to become a flight attendant have changed and the profession has become more reachable to many. This is something that also needs to be considered regarding training. When the demand for cabin crew in growing, there are more job opportunities available and the airlines need to seek to recruit the best people as there is growing competition od the best resources at hand. The organizational belonging should be created through training and act as an extension of Crew Resource Management. At the same time the training should be effective and regulatory compliant. Cabin crew members are expected to be self-starter, team players and able to think quickly. Professionalism often comes from practice, training and motivation to improve. Therefore, the training and checking requirements are also requiring the use of different training methods and exercises, as well as requiring that the practical training should be done in a way they are as close to the actual working environment as possible. Trainings are planned to include more scenario-based drills to also include Crew Resource Management elements. This is to be able to evaluate during training if the recruited persons are meeting the requirements and have the desired set of knowledge and skills. (ICAO 2014, 8-26; Kearns 2017, 7-9; Pierobon 2019, 22-24.)

2.4 Cabin crew safety training at Finnair

It is good to get to know the current situation and to point out where the improvements could be done to guide the research towards desired outcome. That would also help to understand what is already known about the subject of the research and the current situation and then to determine what kind of data is needed to be able to conduct the research and provide and outcome that would improve the current situation and helping to solve the defined research problem. In this case it is important to look at the current training, but also to look what are the requirements and standards that the training needs to meet regarding the regulatory framework.

After the persons who have applied to Finnair to become cabin crew members, have passed the selection process and the medical assessment, they will attend to Finnair

cabin crew training course. At Finnair the cabin crew training is held in Finnair Flight Academy. (Finnair Company 2019.) In Europe, the airline operator must have an operations manual (OM) as specified under 8.b of Annex IV to Regulation (EC) No 216/2008. The OM covers different parts and may be issued in separate parts. May that the form may vary, the training and checking requirements, syllabi, training procedures, documentation and other training related procedures and requirements are outlines in OM part D. (EASA 2019, 309-329.) The requirements for cabin crew safety training are stated in Finnair's OM-D in Appendix 201" Aircraft Type Specific Training and Operator Conversion Training Syllabus for A320 with Differences to A319 and A321". The syllabus is written to comply with EASA regulation and IOSA standards. The operator requirements for the training fulfill the EASA regulations and IOSA standards as applicable, as a general rule, but the operator requirements may exceed the EASA regulation and IOSA standards. Competency requirements for cabin crew members are outlined in OM-D under Cabin Crew Member competencies, in indicating the required competency, competency description and behavioral indicators, for each competency. The competencies required, include stress resistance, teamwork, self-started orientation and ability and willingness to follow instructions. (Finnair 2019.)

The requirements for Finnair cabin safety instructors are described in OM-D. In Finnair, the cabin crew safety instructors are selected and qualified persons, who need to be qualified and Finnair employed cabin crew members. Instructor applicants are evaluated based on their background, competencies and experience. During the process they are interviewed and asked to hold a brief sample lesson. Suitable applicants are approved by the Manager of Cabin Safety and Training. The selected applicants go through instructor training and after that shall receive authorization from the Finnish Civil Aviation Authority, Traficom, before they are being fully qualified. (Finnair 2019.)

2.5 Door operation training and testing

ORO.CC.125 Aircraft type specific training and operator conversion training shall involve training and practice on a representative training device or on the actual aircraft. The training should cover at least the operation and actual opening, of each type or variant of normal and emergency doors and exits in the normal and emergency modes by each cabin crew member. It states that the training should be conducted in a representative training device or in the actual aircraft and should include failure of power assist systems where fitted and the action and forces required to operate and deploy evacuation slides. (EASA 2019, 439-444.)

Finnair OM-D Appendix 201 Aircraft Type Specific Training and Operator Conversion Training Syllabus for A320 with Differences to A319 and A321 includes the training and checking requirements for operation of doors and exits. Requirement for practical demonstration in syllabus is market with 2 and theoretical test requirement with 1. It is required that training related to operation of doors and exits is done instructor aided and shall include operation of relevant training device. Training level 3 indicates that the training shall be conducted in a representative training device or in the actual aircraft and shall include failure of power assist systems and the action and forces required to operate and deploy evacuation slides. Training shall include operation and actual opening of doors and exits in the normal and emergency mode. For checking the syllabus outlines that both theoretical test and practical demonstration shall be conducted as part of the training. Required score for passing a test is eighty percent or higher. Practical demonstration must be passed on a scale indicating if the test is passed or failed. (Finnair 2019.)

Appendix 4 shows the current door test evaluation form. There the maximum score is sixteen point. One point is given to each described part observed during the demonstration. The learner is asked to also verbally indicate what they are doing, and the instructor is leading the demonstration according the form, making sure that the learner is either explaining or demonstrating each required component tested during the demonstration. The form is including also a lot learning demonstrating the required knowledge by answering the questions made by the instructor. It is including the required demonstration of normal and emergency operation of each required door or exit, relating on the aircraft type. The points are calculated, and the learner is required to get eighty percent of the points to be able to pass the test. However, there are some required actions the learner must be able to perform correctly, to be able to pass the test, giving more emphasis on certain required tasks the learner needs demonstrate during the practical test. This mainly focuses on operating the door in correct both in normal operations and in emergency situations. The form is including the instructor guidance on how to conduct the practical test. The instructor is advised not to ask leading questions, or then if leading questions are used to not give a point on the particular tested component. It is left to the instructor to determine what questions and regarded as leading. (Appendix 4.)

3 Competency-based training

Aviation training programs have been usually designed to meet the qualifications and standards, applying the regulatory requirements. A big trend today is to change safety training from more traditional training in to training where people are not only trained on topics, but where their competences are more evaluated and trained by using different methods. Traditionally, many airlines or regulators were only adding hours on training requirements, where they saw there was room for improvement or where was seen to be a risk of lack of knowledge and skills. Now many times competency-based education is favored, as it focuses on the development and the assessment of knowledge and skills. The benefit for the organization is that they don't necessarily need to add hours in training anymore, which also benefits in saving training costs. Some airlines which have implemented competency-based education on their training have seen motivation to remain on a high level throughout the course. Competency-based education is still relatively new in cabin crew safety training and there are still many challenges to implement it efficiently as being part of training as it is quite complex. Also, it would still require regulators to also actively participating in the development and have open mind on the new ways of training and assessment. The airlines would have to prove that the way they have development training is still providing high level of knowledge and skills, but maybe with less hours of traditional classroom training, which is now regulated. But the industry has changed towards the directions, where competency-based education is more favored by the stakeholders, as it is seen to reinforce transparency and accountability. (Kearns, et. al 2016, 3-14; Wong, Masnawi & Hon 2017, 5-9; Rothwell & Graber 2010, 14-27.)

Competency-based training is not only adopted to in the aviation industry, but also in other industries. Competencies are important tools for organizations, to help to attract, develop, retain and position the best possible people to the right jobs. According to some studies some individuals might be even twenty times more productive than others. Competency-based training and evaluations might help move people to the right jobs, enhancing the productivity and the way the employees through their own work promote the organization. Competencies are more than just tasks related to the works. Competencies include also behavioral aspects. Competency-based training can make the training more operationally relevant, because the focus is on how the learners can apply the knowledge, skills and attitudes they have acquired during the training more efficiently to the everyday professional work and how to develop their personal professionalism. But it can be really challenging for organizations and instructors to develop trainings, linking competency statements to real-life scenarios and conduct training courses, which should be flexible and adaptive based on the evaluation on individuals' skills and knowledge. Also, the training methods,

should support different learning styles and motivate students to take more responsibility in their own learning and professional development. Also, the assessment of competencies might be something new for the trainers, and the organizations should determine on which competencies should be recognized and how will they be measured. (Kearns, et. al 2016, 3-20; Kearns 2017, 5-9; Rothwell & Graber 2010, 14-50.)

ICAO Cabin Safety Training Manual was published in 2014, to provide guidance to the competency-based approach to cabin crew safety training. For this work, there was formed ICAO Cabin Safety Group, to think how the competency-based approach could be adopted to the training and to help cabin crew members be proficient to performance their duties and understand their responsibilities. The aim was to focus on how to train competent cabin crew, with the goal to establish also an international baseline guidance for cabin crew competencies. The ICAO Cabin Safety Group consisted of 50 members, representing airlines, regulators, IATA as industry representation, union representatives and aircraft manufactures. All phases of flight were covered, trying to discover which competencies would be needed in different phases. (ICAO 2014, 27-43; Kearns, et. al 2016, 69-79.) ICAO Safety Training Manual states that the in the center of competency-based training is detailed and accurate analysis on tasks and the job. Still, some criticize that the competencies defined by ICAO are not competencies, but individual tasks. This is because some feel that they do not take inconsideration the teamworking nature of the cabin crew member job and that when the competencies have been defined by ICAO, they have focused too much on individuals' competencies as license holder, not as a cabin crew member, working as part of the team. (ICAO 2014, 34-38; Kearns, et. al 2016, 20-28.)

3.1 Definitions relating to competency-based training

The idea of competence is not new something new. During the 1960s it started to move from social sciences as part of education or training. Competencies were traditionally referred to as procedures to engage with the World and constructing it. British sociologist Basil Bernstein refers to them as practical accomplishments, which may be acquired by anybody as competence is something that in inherent relating on how the human mind works. Through the 1970s and 1980s, there was more discussion on how to define competencies required to specific positions, mostly at that time at managerial level. The challenge was how the suitability for a person for a particular job could be tested. Competence training and testing was moving then towards more practical and occupation specific direction, where the individual's skills, knowledge and attitudes were not only assessed on how correct answers the person was providing, but more assessing on the persons performance and ability to complete the given tasks. Competence based training is focusing

more on the outcomes than the inputs. It should aim to identify the individual's performance gaps and development gaps and support the persons learning and development to be able to fill in those gaps. Job performance gap is created, when the individual doesn't meet some or all requirements or competencies required at their own level of responsibility on the job. Development gap refers to the gap, where the some or all requirements for a job with higher-level on responsibility are not met. It could be said that when competency-based training is applied, it could make it possible for the faster learners to proceed faster on the training program. (Kearns, et. al 2016, 3-20; Rothwell & Graber 2010, 14-50.)

Competency-based education or competency-based training in general terms can be defined as an instructional design, training and assessment that is systematically references written competencies and is based on those competencies. Written competencies are making assumptions about competence. Competence refers to the individual's ability to fully participate in a complex social practice and to fulfill a professional role independently and capably. Competence requires knowledge, skills and attitudes relevant to the particular job. Competencies can be defined to refer to written statements attempting to represent the ability to fully participate in a social practice. These statements should be negotiated, agreed and communicated in text to make them public in advantage. In practice they are text-based descriptions of what professionals do. (Kearns et. al 2016, 9-20.)

ICAO defines competency as combination of knowledge, skills and attitudes. The developed competency framework described in the Cabin Safety Training Manual contains three components: competency units, competency elements and performance criteria. Different safety-related aspect in covered in sub frameworks: normal operations, abnormal and emergency situations, dangerous goods, cabin health and first aid and security threat situations. The ICAO competencies for cabin crew were designed to cover behavioral and cognitive components of competence. Competency unit is a distinct function consisting several competency elements. One competency element is for example, perform duties and responsibilities during ground and pre-flight operations. Competency element, according ICAO, is an action that constitutes a task that has a triggering event and terminating event that clearly defines its limits and observable outcome. Referring to the competency unit example, one competence element in that unit would be a task to perform pre-flight checks. Those competency elements are evaluated based on performance criteria, which are simple, evaluable statements on the required outcome of the competency element and description of criteria used to judge whether the required level of performance has been achieved. Regarding the competency element of perform per-flight, one performance criterion would be "report missing or inoperative equipment and systems". Figure 1

below is showing the structure of the competency framework. (ICAO 2014, 34-44; Kearns et. al 2016, 115-117.)

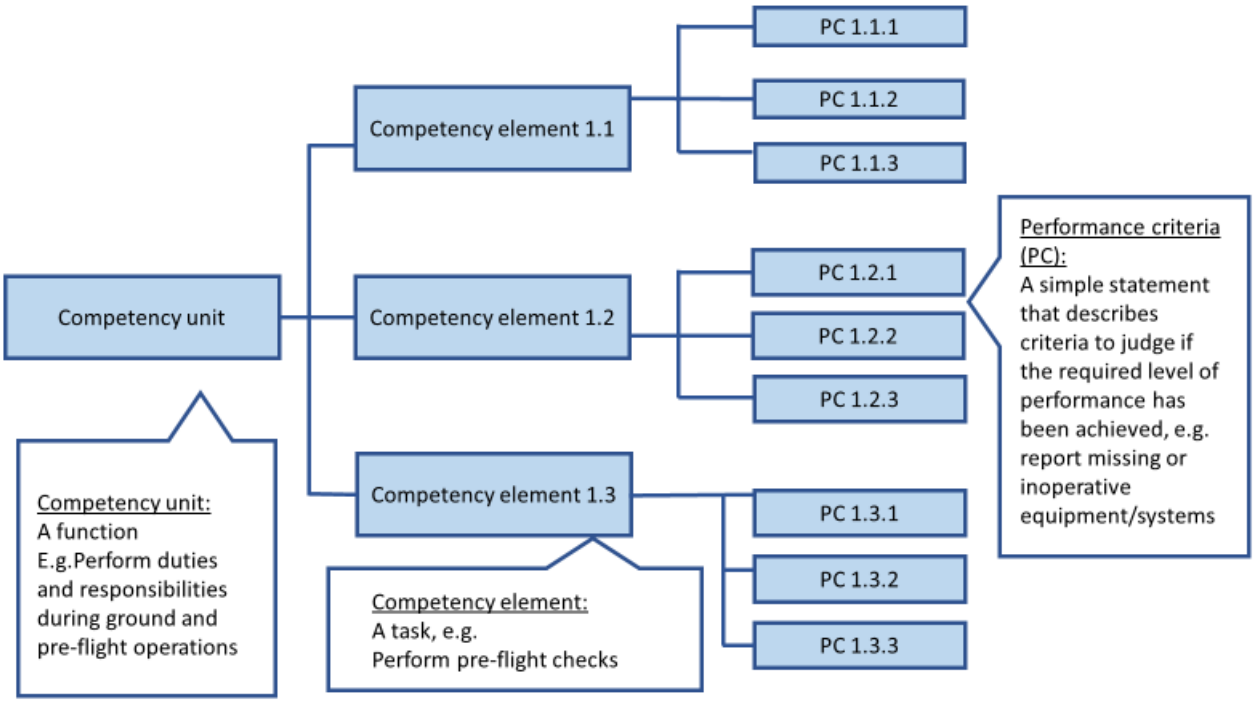

Figure 1. The structure of competency framework (ICAO 2014, 37)

3.2 Training and checking

When planning competency-based training it is suggested that it should be designed in a way it best serves the participants of the training. This is important to recognize the gaps between the knowledge, skills and attitudes, the training addressing. This means that the training cannot be same for newcomers and experienced workers, as competency-based training also aims for continuous improvement. It should be also considered, how much of the performance gaps can be improved by training. Instructional objectives should describe the desired outcomes. This means that already when the training is being planned, it should be determined what the learners should know, feel and be able to perform upon the competition of the training. Identified competencies that the participants should be able to demonstrate should be stated in competency-based terms, to describe the desired performance level, what is expected from them. (Kearns, et. al 2016, 127-148; Kearns 2017, 5-9; Rothwell & Graber 2010, 51-67.)

The ICAO Cabin Safety Manual provides recommended performance standard that is used to verify that performance criteria are met and recommendations on knowledge and skills trainees should possess and are needed to support the competencies. This should

also take in consideration the conditions under which the learner will be expected to demonstrate the learned competencies. ICAO Cabin Safety Training manual includes recommendations on conditions under which the training should be conducted. This refers to also used training methods, which could be classroom training, computer-based learning or hands-on exercise. But even if the condition would recommend something, it is good to notice that there are many different teaching strategies, which can be applied to the more traditional instructional methods like lecturing and independent reading. For example, scenario-based training and discussion are more connected to competency-based approach. There are also many other methods, which are activating learners and motivating them to manage their own learning. Also, the trainings might not teach and test all subjects separately, but apply whole task training, where learners are challenged with putting the trained topics together in practice and learners are made to act based on their own knowledge, skills and attitudes. Trainings should also provide relevant material to support the training and desired outcome and to guide the participants to understand what they are expected to perform and know during the training. Relevant reference material used during training, could be for example operations manuals, company procedures and other relevant material providing knowledge and information on the trained subjects. (ICAO 2014, 34-44; Kearns, et. al 2016, 127-148; Kearns 2017, 5-9; Rothwell & Graber 2010, 51-67.)

It should also be determined how the desired learning outcomes and competencies are measured during and upon the completion of the training. Ensuring that the new entrant possess basic level skills or confirming the development of competencies of existing staff, should be based on a plan how knowledge, skills and attitudes are measured and which checking methods are used to measure the competencies. The grading should be consistent and if assessment is based on criteria, the learner should demonstrate some kind of evidence that they can perform or that they have the required knowledge. Usually the performance criteria should offer some description of the task in behavioral terms, making it possible for the assessor to compare the actual performance with the behaviors described in the performance criteria or standard. The application of knowledge and skills to practical demonstration, where evidence on the performance level is collected through observation is one way of checking and assessing the competencies and evaluate, if the desired outcomes of the training are achieved. Other methods which can be used in collecting evidence relating to knowledge and understanding may include also tests, documents, work-related assignments, projects, case studies and role-plays. (ICAO 2014, 34-44; Kearns, et. al 2016, 127-148; Rothwell & Graber 2010, 51-67.)

3.3 Compliance with the regulations

From the authority's point of view, the assessment of competence and its effectiveness is primarily a matter for the airline operator's own supervision. The regulation covers the requirements and guidance on how the trainings and checking should be conducted and which areas should be covered in different trainings. The audits ensure that the training exam is relevant to the subject being trained and covers all aspects of the training program. In addition, an assessment shall be made of the appropriate test or evaluation of both theoretical and practical knowledge and the test or assessment shall establish that the cabin crew member has attained or maintained the level of competence and competence appropriate to the duties exercised. (EASA 2019, 426-444; Aaltela 15.10. 2019.)

The authority requires still that the test and testing methods are appropriate and relevant to the practical management and safe conduct of cabin crew duties. Skills testing should resemble, as far as possible, the environment in which the task is performed and test the areas of expertise that are needed in the task. It is essential that the areas of expertise, objectives and criteria required for the assignment are appropriately and clearly defined and easily understood by the instructor and student. Also, it is important that it is well thought about how the testing is conducted in the best possible way. Consistency and similarity of assessment, regardless of the trainer, is the key in the testing and evaluation. Even though the main responsibility for supervision lies with the airline operator itself, the conduct of examinations and exercises is monitored in the context of training inspections. Corporate audits can also randomly look at what kind of results have been achieved in different training courses. (EASA 2019 426-444; Aaltela 15.10. 2019.)

3.4 Evaluation of competency

Measurable competency-based training model should identify the required competencies of a specific position or a job. It should also include the desired behavioral indicators, work outputs and outline the quality requirements. It is recommended, that in addition to defining objectives and criteria, the airline operators should not only focus on testing, evaluating, and developing performance throughout the training, but also encourage cabin crew members to evaluate their own skills and development. From the authority's point of view, there is still quite little information on how to ensure and oversee the effectiveness of the training. The regulatory requirements for the trainings and auditing them, is still relatively traditional and does not provide much detailed information on how to check the training or the effectiveness of the evaluation. The requirements of traditionally training are sometimes not easily transferred in competency-based training, which can make it difficult for the auditors to evaluate the training, where competence-based approach is implemented.

The training, checking and the evaluation should be developed in a way it shows that the methods used are relevant and that there is prove of reliability and validity of assessment of competencies. (Aaltela 15.10. 2019; Kearns, et al. 2016, 149-165; Rothwell & Graber 2010, 28-50.)

Reliability refers on the consistency of assessments. Tests should effectively measure performance, but the same time the scores or grading should remain consistent, even if the setting and the assessor should change. Validity of assessment refers to how well the methods and criteria used for testing and assessing competencies are measuring what they are claiming to measure. The relation and between assessment and the training outcomes, should show that the testing is evaluating what has been taught. If the learner feels that the test something completely different from what has been taught, it could indicate that there is content validity is low. Criterion validity is assessed against how well the scores from particular assessment are relating to the theoretical concepts of performance, in other words, how well the assessment can predict future performance and how well the old assessment measures against older, already validated assessment. The assessment model's validity should also indicate that the assessor can be able to make conclusions on the observed activity, to be able to assess the level of competencies or elements of competencies. It is recommended that validity against on how the particular assessment is viewed from individual perspective should also be tested, to gain knowledge on how these vies possibly differ. It might be that there is even resistance coming from the stakeholders, and commonly this is coming from anxiety or from feeling of uncertainty, when new ways to evaluate competencies are implemented. Evaluators might worry how the approach will affect to their evaluation, as it is not following the traditional way of testing and grading, they are comfortable with. It could be good to take the possible resistors involved to the planning process and engage them on solving the possible problems and making the needed adjustments. This also helps to recognize where additional guidance material and support is needed regarding the evaluation of competencies. (Kearns, et al. 2016, 149-165; Rothwell & Graber 2010, 120-143.)

The ones who are giving assessments and gradings should be selected and trained to assess others. They should be familiar with the competencies and the performance criteria. As mentioned earlier, the performance criteria should be based on job and task analysis, to be able to identify what good performers do, which results are they producing and how this is indicated in during the assessment. The trained assessors should be able to observe the learners or participants performance during the simulations and provide grading based on the observed behaviors on the work output produced and measured against the defined criteria. Simulations are a good way to assess competencies, especially in high-

reliability jobs, as they can reduce the risk that the work is performed incorrectly in real working environment, as the performance gaps can be identified already during the training. Learners may also have the possibility to assess themselves against required behavioral indicators and work outputs, stated in the performance criteria. When they can compare their self-assessments to the assessments made by the trained assessors, they might be able to discover how the views are differing. This might help them to identify their own performance gaps and development needs and motivate them to manage their own learning and development better. Competency assessment should also result in some form of follow up or a development plan. It is important to notice, that the learning climate should be positive in a way it encourages people to request support in their own development and admit their possible shortcomings. (Kearns, et al. 2016, 149-165; Rothwell & Graber 2010, 28-50.)

3.5 Competencies related to door operation

In ICAO Cabin Safety Training manual, the competency frameworks are addressing cabin crew duties and responsibilities in normal operations, abnormal and emergency situations, dangerous goods, cabin health and first aid and security threat situations. Out from these frameworks, normal operations and abnormal and emergency situations, are including competency units, where competency elements that are containing performance criteria on door operations are identified. The manual provides guidance on which performance standard should be demonstrated and which skills and knowledge are required in each competency element. Also, the recommended reference material and conditions on which the training should be conducted are as part of the guidance material. Very often the recommended reference material is the operations manual. This is because the operations manual should already cover the required training topics and also describes the operator's procedures and aircraft type specific information, which usually gives clear guidance and descriptions how the tasks should be performed and in which order. The training manual also indicated that some competency elements, both in normal operations and abnormal and emergency situations framework, should be trained in a way that the classroom training is reinforced with hands-on exercises and simulated exercises. In these exercises the participants can be evaluated individually or as a part of the team. Training should be conducted with actual aircraft or appropriate training device, to produce environment and equipment characteristics, which are as close to real-life working environment as possible. Door operation and tasks related to that are required and recommended to be trained in a way that they include hands-on operation and simulated exercises. (EASA 2019, 439-444; ICAO 2014, 36-121.)

When looking at the competency elements and performance criteria relating the door operations there are some knowledge, skill and performance requirements that should be recognized when competency-based training and evaluation criteria on door competencies are being planned. Learners are required to have knowledge related to door closing and door opening procedures and understanding on the importance of complying with the signals and authorization to perform tasks. They should have knowledge on common terminology and the effect of communication. They should be able to perform arming and disarming procedures and carry out cross-checking according to operator procedures for the aircraft type. They should have knowledge on normal operation procedures, but also, they are required to be able to recognize emergency abnormal situations and to be able to perform duties related to those situations. They should understand the importance of monitoring the cabin to be alert for any possible situation affecting safety and their responsibility to recognize and report any abnormality to others and to the pilot-in-command. They should be aware of the different situations and environments effecting on evacuation and to be able to perform their tasks and manage the evacuation equipment, including the doors and exits, in different evacuation scenarios. Skills which are repeatedly mentioned as required skills when going through these performance are situational awareness, decision-making, workload and time management, teamwork, communication, workload management and error recognition and management. The required knowledge and skills statements and performance standards are described under each competency element and required tasks to perform are described as performance standards. As door operation tasks are related to several competency-elements and performance criteria, in both frameworks, it provides only guidance material to the door training and door competencies evaluation, not a ready model. (ICAO 2014, 36-121.)

4 Research methodology

Different research approaches should be used on the purpose to use the best suitable approach to meet the demands set by the desired outcome of the research project. The researcher should try to identify, what would be the desired outcome of the research. If the desired result is to produce a process or a product and to be able to also implement and test it, the two most suitable approaches would be either constructive research or action research. Both, action research and constructive research are more focused on producing a ready solution to the problem. Also, the knowledge and theories of the gained from constructive research and action research can be implemented to later research projects. Especially with action research this can happen as the research is usually heavily involving people working in a project or organization and the produced theory is often new and crated to solve a precise problem. From these two, action research can be seen as a way of understanding the complexities of practices and aims to improve the practice, rather than policy. Improving a policy, such as for example educational knowledge which is abstract, might be rather difficult. It might be even more important to aim to improve practices, through action research, which could in time result in improving also to the more abstract policies. The purpose of action research is that professionals can better understand their practice and use the enhanced understanding to effect changes in practice. (Koshy 2005, 1-22; McAteer 2013, 7-25; Ojasalo, Moilanen & Ritalahti 2009, 58-62.)

During master's studies in Haaga-Helia, on a course "Applied Research and development", one of the assignments was to plan and write a research plan. The plan introduced and described the research problem and the approach planned to be used on the research to get to the desired result. It was recommended that to use the assignment to plan the thesis topic and describe the for plan the thesis research to be done. It was known that there was already plans to start renewing the cabin crew new entrant training during 2019 and that the competency-based approach was something that would be even more preferred in the future as part of the training. The new entrant company conversion door test was seen as a good thing to test students. Still, according to the safety instructors' experiences, it was found out that there would be room for improvement. For these reasons the research plan, required for the course, was made on the topic of action research to improve the cabin crew door training and implement the competency-based approach to the testing and evaluation.

4.1 Action research

Action research often aims to solve an existing problem or improving the studied issue or subject. Action research can be used to solve practical problems or to improve existing practices within the organization. Compared to constructive research, action research aims more to produce more new information and understanding on the subject of the research. Constructive research aims to solve a real practical problem and the solution should be based on the previous knowledge related to the studied issue. The study should also aim to justify the importance of the solution to the problem. In constructive research there are many project management related similarities, such as that the commissioner should be committed to the research project and that the project outcome is also implemented and tested before the delivery to the commissioner. As in this research the actual product was not possible to be tested in action and then developed further, the constructive research did not seem to be the best option for this thesis. This is one of the reasons action research was chosen over constructive research for the research approach of this thesis. Case study is a suitable research approach when the aim is only to produce recommendations and improvement ideas to the existing solutions to the problem or the existing practices. But as case study doesn't continue to implement and test those theories in practice and analyze the new information gained from testing and implementation, action research was seen as more suitable for this thesis. Action research is very focused on the solution of the problem. The focus is more on how the current situation should be, rather than describing how it is now. Action research is cyclical in nature and the research should be open for change. When action research is done, the people working on a practical level with the studied issue, should participate to the research process. It is said that the researcher should not be too connected to the subject of the research as this could increase the subjectivity of the research. In action research the researcher should be able to evaluate the authenticity, reliability and the truth of the research at the outcome. Also, the researcher should consider and evaluate, how much own voice is seen in the research and does it affect the results or the outcome of the research. It is said that some lack of objectivity is somewhat inevitable. The difficulty comes especially at the start of the project. The researcher should recognize and acknowledge any personal values, that might affect the project in different stages of the research. Good judgement should be used especially when determining what is good data and what is regarded as anomalous. The questions related to data are important to get the project into a good start, as usually the researcher might already a hunch or a general idea on the results. Therefore, the questions are vital, even if they are not easy, especially when the data is qualitative in nature, there should be evidence for the use of the data. (Koshy 2005, 1-22; McAteer 2013, 7-35; Ojasalo, Moilanen & Ritalahti 2009, 58-62.)

In action research there should be interaction between the research and the findings and theory and the practice. Action research has less theory driven nature, as it focuses on the practices and the solutions, making it more data-driven approach to research. In the most developed action research approach the conversation between research, action, practice and theory is ongoing. The research starts with planned deliberation on what should be changed to improve the current practice. It includes systematic data collection, collation and analysis of theory, testing and further analysis on the results, aiming to implementation of improved practice. The knowledge on the current situation and data are collected via observations, interviews, experiences, participation, discussions and collaboration, for example. From the analysis of data, the action research should provide not only the solution, but also new theory and information on about the studied subject. As collaboration with the organization is very essential, everyone participating to the action research need to be really committed on the process. This might also require much forward thinking, in terms of how the project is done, when it should be done and with who should be involved in the project, where the action research is used. As mentioned, action research should be open for change and the researcher should not try to offer fixed solutions based on collected data. The data serves as evidence for the project and helps to build the frame for the project and help to understand the importance of the research. The research problem and the questions should be revisited in the light of the findings and the research question could be refined to sharpen the focus of the research. (McAteer 2013, 7-25; Ojasalo, Moilanen & Ritalahti 2009, 58-62.)

Key characteristics of action research are that it is practice-based approach, which builds on critical reflection of practice. The reflection on practice should aim to be descriptive, have some emotional aspect, and relating personal views on those of others, but also critical, placing the individual views into a broader system. The action research is often driven by a desire to improve a practice. When getting to know the problem in the current situation defining the problem and start working on the research, it could be useful to create a project roadmap or a research schematic, to help to keep the process communicable to other. It could also aid to maintain academic integrity. Further on the characteristics of action research it is as mentioned already an iterative process, where each stage of the cycle is subject to review and reflection. The research might contribute to development of professional knowledge and it can be justified based on the theory and knowledge. The Kemmis and McTaggart model from 1981 describes the four-step approach to action research. The figure shows the four steps in the cyclical form, which is characteristic to action research. (Koshy 2005, 1-22; McAteer 2013, 20-30.)

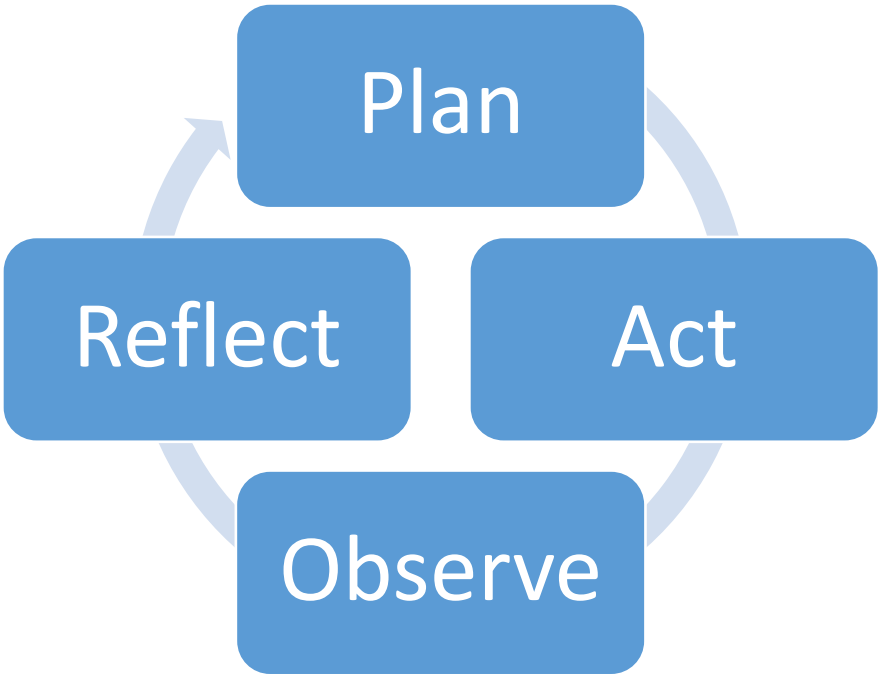

Figure 2. Kemmis and McTaggart four step approach model - The Plan-Act-Observe-Reflect cycle (McAteer 2013, 30)

4.2 Research plan

The original research plan can be found in this report, as Appendix (Appendix 1). After receiving good feedback on the research plan, it was decided to go on with the topic and the idea of the door test and evaluation renewal was introduced to the training managers in Finnair Flight Academy. The permission to start working on the topic was received and the actual implementation was planned to come as part of the actual training and as part of the new entrant training renewal, which was planned to be implemented in 2020. For some practical reasons related to this, there were some changes made to the original research plan, as it was not possible to test the actual door test and evaluation during training, such as first make improvements and then test them, like in action research. Still, the action research was seen to be the most suitable approach to use in this and the focus was changed more on the improvement of the instructors working instructions and making the evaluation more consistent.

As already mentioned, the aim in action research is to improve something that is already existing in the company, so it could also be applied to improving the wellbeing at work in an organization. The aim was to improve the working methods and instructions, making it possible to the instructors to change focus more on evaluating technical knowledge of student, to also incorporate evaluating skills and competency, by implementing competency-based approach to the door test and evaluation. It had been decided to use the ICAO

competency-based training for cabin crew manual as the basis of the theory part, but when starting planning and finding out more about competency-based training, it was also decided to study the competency-based training outside aviation training. This gave broader picture on how the competency-based training is understood in general and how it could be implemented as part of training and evaluation.

In the original plan it stated that one source of data would be interviews with pilot instructors, as the pilot training has already been implementing competency- and evidence-based approach for some time. But it was soon learned during planning on how to proceed with research, that the way they train and evaluate, is something that was possible to do, as pilots are evaluating longer sessions during simulator training, when more tasks can be evaluated at the same time. Cabin safety instructors' do not have similar possibility to observe the students for longer periods of time. Also, instructors working in cabin safety training are not all familiar with evaluation of competencies. As the aim changed to more support the instructors with the evaluation and implement competency-based approach to evaluation to only one task, it was decided that the main source of data are the instructors, to understand the current situation and the support they would need. Also, one great source of data to support the theory and manual literature, was the interview with the Finnish National Aviation Authority representative, Senior inspector Niina Aaltela, to clarify the regulatory requirements, which would also need to be considered in the planning.

4.3 Data collection and analysis

As action research requires participation on the people involved in the research, also the methods used to collect data in action research should be like which are participatory, such as interviews, questioners, group discussions and observations. When using these methods, the researcher should plan them well. The data should be used as it would build a narrative to the project, helping to understand the importance and provide evidence base for the project. In planning it is important that good ethics are followed, so that the result would not harm or offend anyone but would contribute to the research problem solving. When considering what kind of data should be collected using different methods, it is important to go back to the research problem to understand, what kind of data is needed to support the research. Even if the researcher would already have some perception on what the end result should be or what kind of data should be collected, it should be more examined if the data collected would then serve the research and could be translated into grounded facts to justify the research result. It is helpful to first get acquainted with the problem and think about what is already known about the studied subject or the current state and what still needs to be found out to be able to move forward with the research.

Also, it is good to choose data collecting methods that are suitable to the time available for the research. (Koshy 2005, 81-107; McAteer 2013, 62-88; Ojasalo, Moilanen & Ritalahti 2009, 58-62.)

As important as to plan what data is needed and which methods are used to gather data, it is to decide what type of data is collected and presented in the research. The researcher should consider the usefulness of both categories of data, qualitative and quantitative. Quantitative data can be measured with numbers and presented by numbers. There are sometimes assumptions that when data is presented in numeric form, that it would make it more legitimate, but using is tables and charts is only one way of presenting the collected data. Still, the data needs to be analyzed and its use should be relevant and valid to the initial research question. Using qualitative data, such as interview transcripts, does not make the data less reliable. There is a risk that the focus initial question gets lost or the interview data is not referred more often, if qualitative data interview transcripts are dealt with quantitative framework and transformed into numeric form. The researcher should be aware of what type of data is justified to use in the research and select the method to best serve the purpose of the research. Quantitative data is useful when the researcher is handling large amounts of data and can provide background and new ideas for the study. Qualitative data may provide more insights to the actions and to the outcomes of the research. (Koshy 2005, 81-107; McAteer 2013, 62-88; Ojasalo, Moilanen & Ritalahti 2009, 58-62.)

Whether the collected data is qualitative or quantitative in type, the researcher should always focus on the quality of the data. The validity and reliability should be considered. When focusing on assessing the validity of the data, the researcher should consider how accurate is the data, which is used as evidence. If the interpretations on the data and the analysis vary a lot between different people, the validity might be affected and questioned. Also related to the quality of the data is the reliability of the data. The researcher should consider how consistent are the results and the measures of the data. The researcher should evaluate if the measured results from the data could be repeated, with the similar results. (Koshy 2005, 81-107.)

When planning on the data that should be collected, there was need to consider that the data collected on the current state of the safety instructors' work, the data collected should be such kind that would help to justify the changes which were planned to make. The collected data should also provide valid data on the situation and the insights of the insight of the instructors, in a way that it wouldn't be only justifying the researcher's views. This was something that needed to be considered, after having worked with the same issues and

having already some picture on the current situation and an idea on what would need to change. Different data methods were used in different situations. At starting point a questionnaire was used to map out the current situation and to support the regulatory literature data. Interview was chosen to gather more data on the authority insights. Later when the planned changes were ready, focused discussion was used, to gather insights, feelings and conclusions on how the instructor's saw the planned results, to be able to reflect them and implement them to the final result. Figure 3 shows which methods were used to collect data in this research and who the data was collected from.

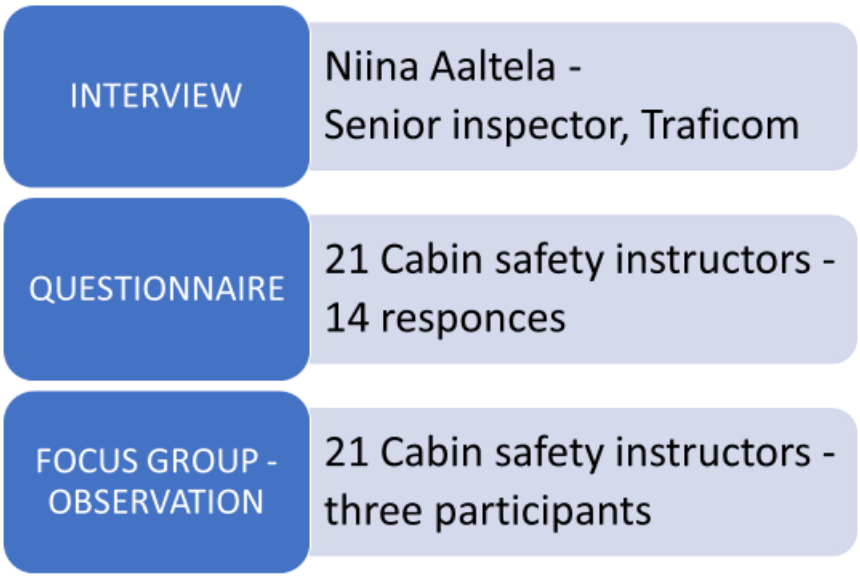

Figure 3. Data collections methods and target groups.

4.3.1 Interviews

When the data is collected using interviews, the researcher should respect the interviewed persons in a way that they are all the time aware of why they are interviewed, for what cause and if they are being recorded. When selecting the interviewed persons, the researcher should consider what they want to find out through the interview and who would be able to contribute useful info, to serve the purpose of the interview. The interview questions should also be well-planned before doing the interview. The questions should be planned in a way, that the original research question remains in the focus. The interviewed person should also be able to answer the questions truthfully. Also, the time and the place of the interview should be planned or if the interview will be done using other method than face-to-face interview. Time planning is very important, so that the interview situation itself or the lack of time, wouldn't change the answers or the opinions on the interviewees. Also, the interviewer should keep in mind that all the participants could have a chance to answers to the questions and there should be clarity in the questions, so that it

would not affect the gathered data in a way that would make it irrelevant. The way the answers are collected should capture the content of the interview, so that the data could be later revisited and utilized in the research. (Koshy 2005, 81-107; McAteer 2013, 73-79.)

As cabin crew safety training is very regulated and the training requirements are overseen by the authority, there was a need to gather information on how the authority oversees the trainings, to understand on which extent which changes can be implemented and what would have to be considered during the planning process, when implementing competency-based approach to the training and also, to the testing and evaluation. The EASA regulations and the approved training syllabus were at this point available, but there was hardly any information on how the overseeing of the trainings is done in practice by the authority, that would have helped to describe the current situation and the possible considered regulatory restrictions, which could have affect to the outcome of the research or how well the result could be implemented in practice. Niina Aaltela from Traficom, the Civil Aviation Authority in Finland, was contacted and she was asked if she would be willing to answers to some questions related to the research problem. It was agreed that the interview questions were sent to her via email, and she would answer them and send the answers. One reason to do the interview via e-mail was time, but also the fact that that there were some questions, which would require more reference on the regulatory statements and that where the answers provided wouldn't be only simple. When sending them back, Niina was kind enough to tell that if there would be any further questions, she would be ready also to answer them. But provided that when going through her answers, it was concluded that they provided enough support to use them as reference alongside the actual regulation text and the syllabus. The interview transcript is found on this report in Appendix 2.

4.3.2 Questionnaire

When gathering the data by questioners, the researcher should consider the target group of the questioner, when planning the questions. The questions should be simple enough to answer and to understand, to avoid frustration to answer or misunderstanding the questions. The questions should not be leading in anyway. Misunderstanding the question or too leading questions might not provide proper data to analyze and could steer the researcher in a wrong way. If questioners contain open-end questions, the researcher should consider, how the responses should be analyzed and what kind of data they would provide to the research. Some common problems that are recognized in using questionnaires are mainly related to planning and questions. There can be lack of planning on how the data is gathered and analyzed or unreasonable expectations on what can be learned

from the data gathered from the responses. Wording and framing of the questions might be ambiguous or bias, or the presentation and layout makes it difficult to answer. (Koshy 2005, 81-107; McAteer 2013, 78-81.)

Simple “yes” or “no” questions might be simple for the target group to answer, but the collected data might be irrelevant or would not provide any usable data. Multiple choice questions are good to create numeric data, but they should be planned so, that the data collected is contributing to the research. Therefore, there could also be free choice questions or open questions also, but it should not make the questionnaire too long. The researcher also needs to decide if it is relevant to gather the names of the persons who have answered, or should the questionnaire be anonymous. It might help to pilot the questionnaire before sending it to the target group to test it. There are many things to consider when gathering data with questionnaire and when planning the questions. These are all things the researcher needs to consider and justify, as there is no one right way to plan or conduct a questionnaire as it always related to the research question and relevant data related to the research. (Koshy 2005, 81-107; McAteer 2013, 78-81.)

To gather the data on the insights of the instructors related to the current door test and the evaluation, it was decided to conduct a questionnaire. With the questionnaire the aim was to get more personal and honest answers, as what they could have been, if they would have been asked either by being interviewed or than if it would have happened in a group discussion. Some instructors have long background in the company and in safety training and some have just stated one year ago. There are different levels of confidence on training, testing and evaluating the results and some different insights on the current situation. Also, as the writer is also an instructor and a colleague, it was to use the questionnaire, as it would be better to see them only as responses and numbers and it not affect their answers, or the personal insights would not affect the way the responses were viewed at. Time was provided for the instructors to answer and build a questionnaire which would not take too long to answer, with the aim to get as many answers as possible. The project and the aim were also introduced to the instructors, so that they would know for what and why would they answer. The used tool was Microsoft Forms, it provided the possibility to send the questionnaire to instructors’ work email and as it was related to work, it was decided to keep it inside the company network. The Forms questionnaire template sent to the instructors can be found in this report as Appendix 3.

4.3.3 Focused discussion and observation

Observations also require planning and scheduling before they should be conducted as a part of the research. The researcher should determine before conducting observations, if they are going to be a participant or non-participant observer. The group which is being observed could also place some requirements on how the observations should be conducted, as it is very different to observe as a complete outsider in a new organization than to observe colleagues in own working organization. If the observed group consist of colleagues, there should be a discussion on what is going to be observed during the observations and how the results would be utilized. This might help to create trust between the researcher and the colleagues. Planning helps also determine which kind of data is supposed to be collected as the observations may provide a lot of data and all of it cannot be analyzed, or then the most important data is left to be unanalyzed. Observations could also be documented, filmed or recorded, but then it is important to keep in mind the good ethics and honesty. The observations either documented or not, should be validated when the data is use in the research. That is how well it was done, was it done the right way and, it should be shown that the collected data was reliable. Through observations the aim is to gather understanding on what interactions, conversations and behaviors are happening during. Observations can provide data to very practical questions. (Koshy 2005, 81-107; McAteer 2013, 81-83.)

Other data collection models than the more traditional interview, questionnaire or observation, can also be to use focus group (McAteer 2013, 83). Focused discussion facilitation method was chosen as one method to use a focus group. A session was then facilitated using that method. The method was used to collect data and insights of the instructors and how they feel about the possible future changes that were planned during that time, to map out what kind of support and instructions would they need to feel more comfortable to work with the renewed door test and evaluation. To the facilitation event the invitation was aimed to the safety instructors, who would be the ones working with the renewed door test and evaluate the students based on the renewed evaluation criteria. It was chosen to use the focused conversation model, which introduced to the writer during studies in the course “Acting as Coach and Facilitator” in Haaga-Helia. On the course students were introduced to the model based on Ulrich Neisser’s Cycle of perception-model and I utilized the questions found on the material given us during the class. The questions are helping the participants to write down their facts and emotions, and then as a group to write down their meaning sentences as conclusions, which I would then further utilize. (Rajalahti 14.11.2019.) The advantages of using focus conversation is that is that it works both with strangers and long-time colleagues and that it has no specific content to teach as it is just

simply a conversation. But it also provides room for listening as the participants are required also to think first themselves and listen to each other and pushes them to be more creative than critical. (The Institute of Cultural Affairs 2000, 20-35.) It was decided to use observation alongside with facilitation event, to be able to also observe what was said outside the focused conversation questions, just to be able to see if it was supporting the conclusions that the participants were forming on the paper.

As it was not easy to find suitable time from instructors' calendars for the session and as it was work related, the session had to take place during work hours. The plan was to get instructors with various years of experience to participate to get better result. Three instructors managed to join the session. They all had different years of experience working as cabin safety instructor. There was one instructor with over five years of experience, one with three years and who had work as an instructor for almost a year. The intervention phase was next, when the actual facilitation took place. The session started with the introduction of the background of thesis project, the purpose of the session and then handing out the renewed door tests, and evaluation forms with the performance criteria. The participants were asked to read the handed-out documents through and think about the facts and emotions, about the renewal plans introduced to them and then use the guiding questions for their help to do this. This took around 15 minutes and then participants were asked to place their post-its, where they had written their facts and emotions, on the map I had been drawing. Then they were asked to look at the "meaning" guiding questions and with keeping in mind what the reason was we were doing this to discuss now together on their facts and emotions and draw conclusion like sentences on the meaning. There was no need to try to spark up the conversation or guide it too much, as they were really wanting to participate and understood the reason. The facilitation went well.

5 Research process and implementation description

The first meeting regarding the renewal of Finnair new entrant course was held in July 2019. In that meeting the plan how the training would be renewed was made and the major change was to renew the structure of the training curriculum, so that it would first focus mainly on the procedures and general knowledge first and then move to train more aircraft type specific features. The aim was to renew the training material to be more consistent with the safety manual structure, so it could better direct the students on where to find relevant information relating on the taught subject. One aspect of the training during new entrant training is to teach them how to use operating manuals to find relevant information. Also, one aspect was that the training would aim to build up knowledge during the course and the structure more to support the information building, first focusing on training the normal procedures and then moving on abnormal and emergency situations and afterwards taking that knowledge on the type specific training.

It was also decided that the renewal of the door test would be done as part of the training curriculum renewal. This made it possible to also change also the way the training regarding the door operation was conducted and consider which training methods could be utilized on the training, in addition to the traditional classroom lecture and hand-on training with the door simulator. In the current form of the new entrant training curriculum the procedures and door operation were trained at the same time and quite on the early stage of the training course, so the learner had to at the same time focus on learning the general procedures and the aircraft type specific features regarding the doors. The training of the features, components and indicators were mostly instructed at the same time when the person was performing the hands-on training in the simulator. As the competency-based approach would suggest having more scenario-based drills included in the training, this was also something to be worth looked into as part of the renewing of the training and evaluation. Figure 4 illustrates the research process of this this thesis and the implementation plan.

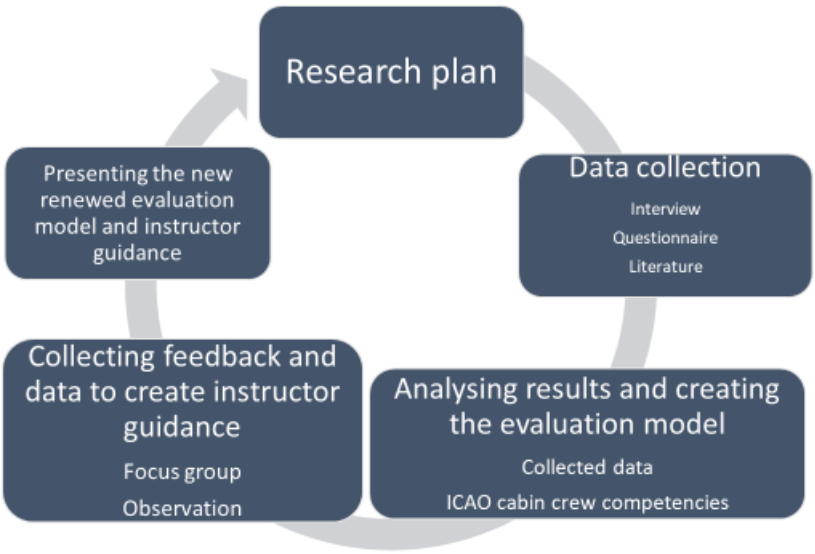

Figure 4. Research process and implementation plan of the thesis.

5.1 Collecting data

Important part of the research was to try to gather data on the current situation, that would indicate how the current situation is seen by the instructors. It was important focus and not to make assumptions based only on regulations and the written material as then the analyze would be too much affected by the writer's own experiences and views. Such data should be collected that would help to analyze where the instructors saw room for improvement, what were their views and expectations. Focus was more on gathering information on the regulatory aspects and how the competency-based approach could be implemented. But because one important aim was also to make the training and evaluation guidance to meet better the needs of the instructors, there was a need to gain understanding on how they saw the current situation, how they saw the current door training was supporting them in evaluation of the student's capability to perform tasks. It was seen important to know, how the instructors' saw the evaluation should be done or graded, to make them feel more comfortable when performing the assessments. Even if there were some plans on how the door training and testing could be renewed, there was still a need to gain knowledge on how the other instructors were reacting to the plans, in order to take the plan in the direction that would best serve them and improving their current feeling

The decision was made use questionnaire, as it felt that that could help to get more honest answers, when everyone could answer on their own, without having to state their own possible insecurities in a way that it would be made aware to others. Also, it was figured that there would be a possibility get more variation on the views, if the answers could be

collected from all instructors, with different experience background. It could happen that if ideas and views would have been collected through facilitated discussion sessions, the more experienced instructors' views could affect to the views of the instructors with less experience. The wish was to get as many answers as possible to gain better understanding and as all instructors are also working as cabin crew members and working also irregular schedules, a questionnaire would be more suitable way of collecting answers form people, because everyone could answer to that in according to their own schedule. As mentioned in earlier chapter, questionnaire was created using Microsoft office application called Forms. The application was familiar and because all instructors have been also using that previously it was chosen as the platform for the questionnaire, giving it also more transparency, as the ones answering are also familiar on how the tool can be used and how the results are shown. The plan was to create short enough questionnaire, for two reasons. One was that it would collect data that was really needed and that it would make it possible to keep the focus on the competency-based training implementation. This was done intentionally as otherwise the research could be confused with too many new ideas that might not be relevant regarding the competency-based approach and the general plan of the new entrant course renewal agreed in the planning meeting in July. (Appendix 3.)

The questionnaire was sent to twenty-one instructors who were currently working as cabin safety instructors. The questionnaire was sent via the email, explaining that it was part of a thesis research and that the aim would be renewal the door training and evaluation as part of the new entrant training evaluation. The questionnaire was sent in the end of August. On the same day there was held quarterly instructor cooperation day, where all cabin safety instructors were present. The research plan was introduced there, and instructors were informed on the questionnaire. The deadline to answer was first two weeks, but as only four responses were received during that time, the time was extended five more days and reminder email was also sent, to inform them also about the low number of responses. Fourteen responses were received in total. Answers were received from all experience categories, as shown in Figure 5 below.

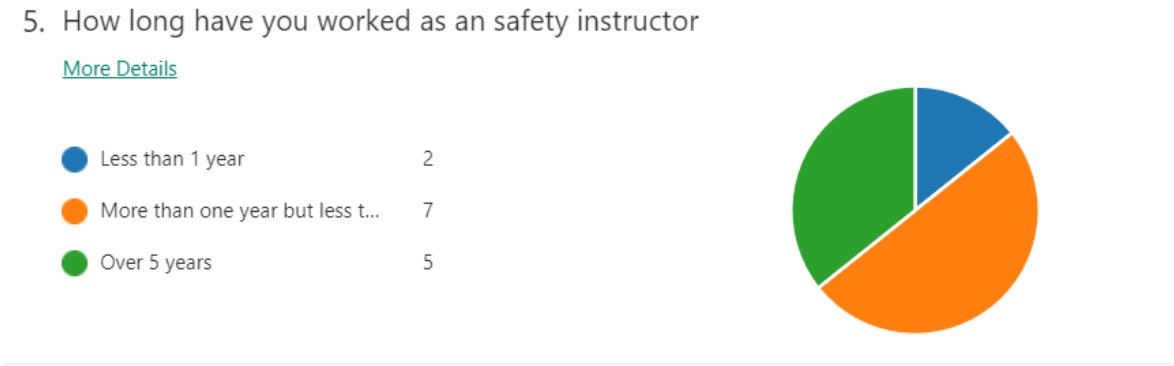

Figure 5. Responses indicating the experience of the respondents

5.2 Analyzing the results

The first question was requesting to indicate how well the instructors felt the current door test was giving them information on the knowledge on the learner's knowledge and competencies in order to assess them. They were asked to give a grade from one to five, based on how well they felt and indicating the scale on what the grades indicate. The question and response summary in shown in Figure 6.

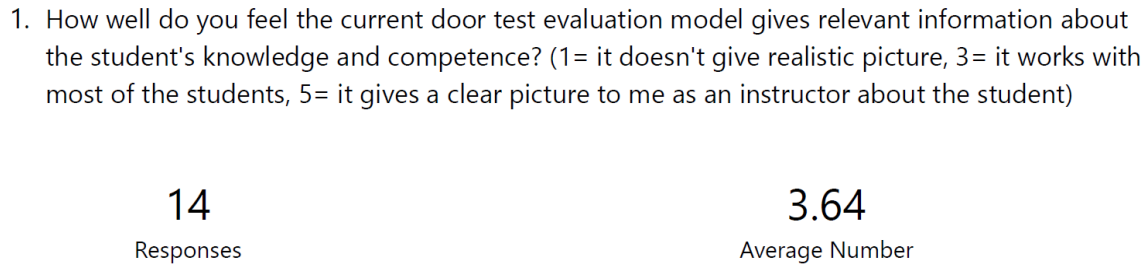

Figure 6. Question 1 with the response summary

One respondent was giving the grade indicating that the instructor does not feel the evaluation model gives realistic picture about the learner's knowledge or competencies. Most respondents answered that it works with most of the students or better. Only one answered with the grade five. The following question was more focusing on how well the current evaluation guideline was supporting the instructors, based on their confidence to give passing grade for the learner or to let the learner pass the test. There could be seen that even the majority was seeing that the current evaluation model was giving them relatively good picture about the learner's knowledge and competencies, not as many were confident to base the grading only on the evaluation guidance but were seeking some support. (Figure 7.)

2. How confident do you feel to evaluate the student with the current evaluation form? (1= I feel the form doesn't give me tools to evaluate the student, 3= I can evaluate a student, but seek support from fellow instructors, 5 = I feel it is easy for me to pass or fail a student based on the current evaluation form)

14	3.57
Responses	Average Number

Figure 7. Question 2 with the response summary

The third question was an open question asking that if they felt the evaluation form does not support them in assessment and grading, was there some specific reason. Out of the fourteen respondents, nine were answering to this question. Three respondents stated that they felt that the grading is regarded as vague and leaver too much decision based on the individual instructor's judgement. Two respondents stated that they felt that all the parts should not be valued equally, as some parts are more relevant to the task than others. Four respondents were also bringing up the issue that they felt that the evaluation model does not support consistent evaluation as so much is left to be judged to individual instructor. They felt that the test might not be conducted always in the same way and that some instructors are accepting to ask more leading questions than others and, in this way, helping the leaner to pass. They wished for more consistency to the evaluation and to the instructions how the test should be conducted.

Question six was formed to gather information on how they would feel on one way of renewing the test. This plan was already something that had been initially planning, to be able to observe also the skills of students and focus more on evaluating the actual performance in scenario-based setting. Still, this was something to be asked in the questionnaire, to see if this would be seen as something that the instructors would be interested in. Based on the responses, this was seen as a good idea by the majority of the respondents. Four respondents also regarded it as a good idea but stated that they would need more information on what it would mean in practice One respondent answered other, saying that it would be something worth of truing, if there would be any difference. (Figure 8.)

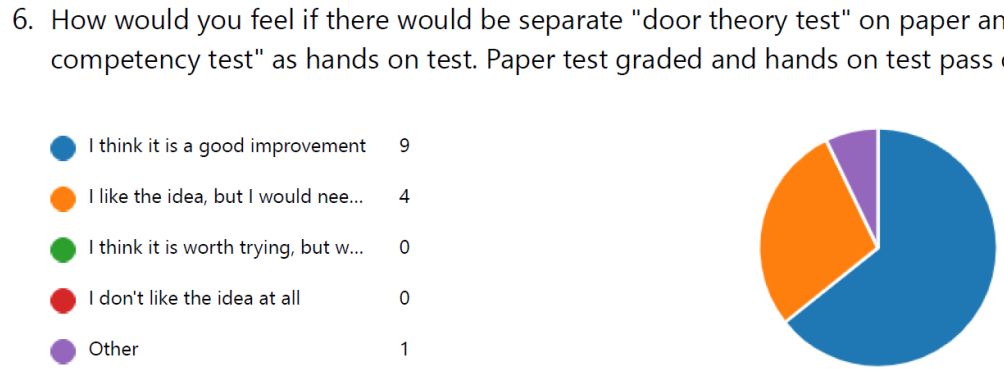

Figure 8. Question 6 with the response summary

In analyzing the analyzing tool in Forms application was also utilized. It was providing an analysis, indicating that many of the respondents who were already feeling that the current evaluation model was giving them a good picture on the learner's knowledge and competencies, were also thinking that separate theory test and practical competency test would be a good idea. (Figure 9.) This was indicating that even if the current evaluation model was not regarded as something that should be improved, many were still seeing as the plan to make two separate test was seen as a good improvement. Based on these responses, it could be justified that this was something that could be seen as an improvement to the current situation and was something that could help make assessment to be more consistent. This was also supported by the responses to question 10, asking what they saw was good about the current door test. Most respondents stated that it is important that there is a practical test where the individuals are tested separately. This would be something that would be included also to the planned renewed door test model.

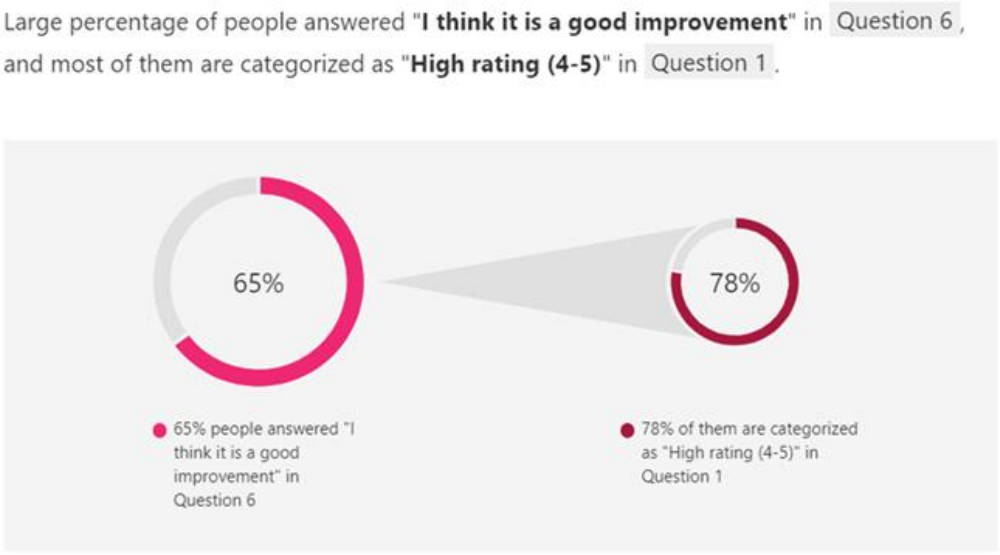

Figure 9. Analysis showing the relation between responses to questions 1 and 6

In order to find out what kind of grading of the hands-on test would be seen as most comfortable or most useful by the instructors, three options for grading models were offered. Majority of the respondents were seeing that the best way, in their opinion, was to grade performance by evaluating if their performance was regarded as “standard”, “standard with debrief” or “unsatisfactory”. (Figure 10.)

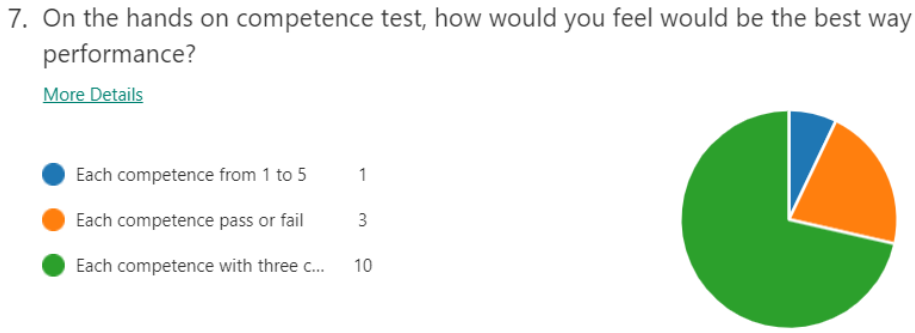

Figure 10. Question 7 with the response summary

When respondents were asked how they would renew the current door test, many were stating that the form should be simplified and there should be sufficient amount of time to conduct the test and checking. Some mentioned that they felt that there were too many things in the evaluation form and that made it difficult for the instructor to actually focus on the observation with the time reserved for the test. Many also were mentioning the consistency and that there should be more clear criteria described on which the instructor could base their evaluation on. This was also indicated in the responses to question on what kind of guidance would they need to be able to evaluate the competencies, as Figure 11 shows.

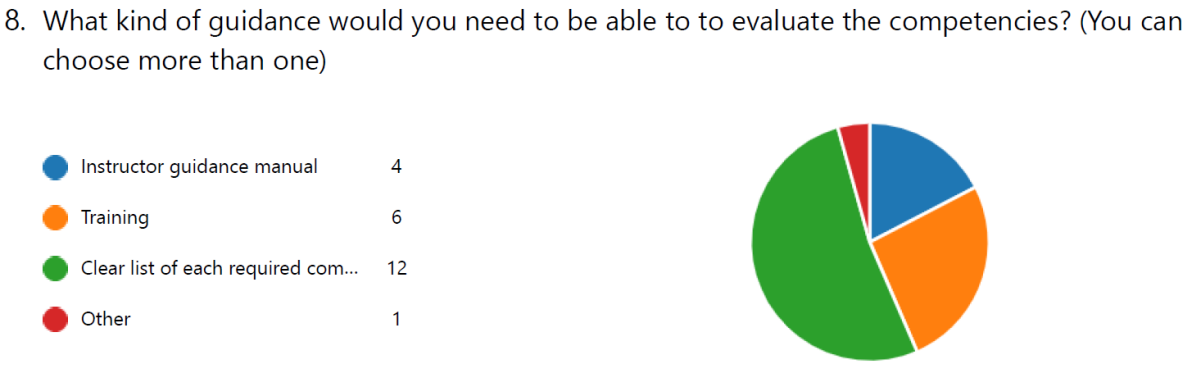

Figure 11. Question 8 with the response summary

It needed to be evaluated first if there were too leading questions, because it felt the results were only strengthening the initial plans on how that the door test should be renewed

in order to make it more consistent and giving the instructor time to focus more on evaluating the skills, not on only the technical knowledge. For this reason, the next step was to go through the answers with colleagues from cabin safety department, outside the training organization and expressing this worry regarding the validity and reliability of the data. There was a good point made, that the respondents were colleagues. There was already some kind of picture of the problems that were existing in the current state and there had been brainstorming happening already before with them on what should be changed. This was something that made it feel more confident that the collected data was relevant in order to continue the research project based on the data.

5.3 Renewing of the door test

Based on the data from the questionnaire, it was decided to renew the test structure. Also, as part of the new entrant course renewal the way the door operation was trained was also changed, aiming to provide the learner first the possibility to focus on gaining knowledge and then practice. Currently the door operation is trained mostly during the hands-on training some of the procedures related to door operation are covered on lessons before the hands-on training and some on the later lessons. Now the training is first covering all normal operation procedures, then abnormal and emergency and then moving to the type specific knowledge. Door operation is first trained in classroom as door theory lecture, covering all procedural aspects and technical components and knowledge related to the door operation. They can make notes and, they are informed where the relevant information and supporting training material can be found. This lesson is followed with the hands-on training, where the learners can practice the actual operation of the door with the assistance of the instructors. The instructor can more focus on the observation and guiding, as they are not expected to teach the topic for the first time to the learner at the same time. In the new structure there is also some more time to perform the hands-on practice on the training device, without increasing the number of training hours used to safety training during the new entrant course.

For the test renewal, the plan was to create two separate tests. Based on the data from the questionnaire, some instructors were thinking that there were too many topics tested at the same time, there was not enough time and that some items with different relevance were valued the same way. This one reason why it was decided to renew the structure to first test the knowledge in a paper form test. This is because the basic knowledge is something that the person should already have before their performance could be assessed. The answers to the open questions of the questionnaire were also indicating, that some instructors felt that there was some inconsistency on evaluating how much technical

knowledge the learner should have. In the renewed test structure, the questions in door theory test are based on the operations manual and are covering the relevant knowledge relating to door operation and door components. The grading is following the same requirement as other safety training test. The learner needs to score eighty percent or higher correct, to pass the test. If the learner does not pass the test, they have one chance to renew the test. The door theory test can be found in the appendixes of this report, as Appendix 5.

After the learner has demonstrated they have the required level of knowledge by passing the test, they are next tested on a practical test, where they are demonstrating the knowledge and they are assessed on skills and performance standards. Based on the questionnaire the instructors were wishing for more specified criteria to support the evaluation. The grading options they were presented with, were indicating that the most popular option was to evaluate the student skills on scale where the student could score “standard”, “standard with debrief” or “unsatisfactory”. This option was something taken from the old recurrent training material from 2016. In that year, the door test for the experienced cabin crew members, was assessing the skills of the performer. The wording was taken from that test model, but grading changed from five level grading to be only three level grading. This is because the door practical test is measuring mainly one task in different scenarios and the expected level from a new entrant is standard. It would be really hard to tell that someone is able to operate the door beyond standard as standard is what is required and something according the operations manual.

The skills evaluated in the skills test are based on the ICAO Cabin Safety Training manual guidance and to the required competencies for Finnair cabin crew members, described in OM-D. The ICAO Cabin Safety training manual was studied and was door operation related competency elements and performance criteria were collected from different competency units and from both normal operations framework and abnormal and emergency situations framework. The described performance standards which were referring to the door operation, were also collected. Based on that study, a model where the door operation was one competency unit was formed. The first competency element was door operation and application of procedures in normal operations. The other competency element was door operation and application of procedures in an emergency situations. Under those two elements were listed all the performance criteria collected from the guidance material, to see which activities should be included in the practical test. Then based on those, it was mapped out what knowledge is required according to the guidance material and checked it was in-line with the knowledge test. Next step was to write down the performance standards described in the guidance manual. Based on those performance

standards, the skills evaluation model was formed. In the practical test the instructor is evaluating the student on five different skill categories. Every category is evaluated based on the performance statements, indicating the required level of performance in each activity. As the data was indicating that the instructors felt that the current guidance for evaluation was too vague or inconsistent, in the new model, they can base their evaluation based on the performance statements. The learner is given one point from each category they perform “standard”, making the highest score five. The leaner should receive in minimum one point from the practical test. The test is failed if even one category is performed on “unsatisfactory” level. Then the student will have one chance to retake the test. The form used during the practical test can be found in this report appendixes as Appendix 6 and the evaluation guidance with the performance statements as Appendix 7. The performance criteria will be introduced to the learners during the training, so that they are aware of what is expected from them. The grade received from the knowledge-based door theory test and the practical skills test are combined, giving the grade for the door operation competencies of each student.

5.4 Creating the instructor guidance

To test if the model for the new test was something that the instructors saw was improving the current model, there was a need to gather some feedback and views on how they saw it and if there were some problems, that had not been recognized. Aim was to find out what kind of guidance would the instructors need, to be able to conduct the practical door test. Different method was used to gather this information. A facilitation event was organized, using focused discussion model to gather the instructors’ feelings, views and possible problems they saw. This also gave the chance to present the test and evaluation forms which had been already designed. Now the instructors were presented with something concreate, not only ideas or some abstract model. Unfortunately, there were only three instructors participating in the event. But on the positive side, they were representing different levels of experience, so giving some variation between the participants and possibility to gather different views. The description of the facilitation event was described in the previous chapter. The results and the facts, feelings and conclusions I was able to gather during the session are visible in the Appendix 8 of this report.

Based on the observations during the facilitation session and what data was written down by the instructors, it was noted that the theory test was regarded as a good improvement. Also, the skills test and evaluation guidance received positive feedback. What was clearly indicated that the instructor guidance on how to conduct the test should be clear and descriptive, so that everyone would conduct the test in a same way. Also, the guidance,

should explain how the grading is done and what is the purpose of the performance statements. The test should offer some scenarios that would make the test closer to the real work environment and situations. The scenarios would also form the script of the practical test and form that everyone should follow when conducting the test. The instructor guidance in presented in the Appendix 9 of this report. Also, when the renewed new entrant courses start, the safety instructors are briefed on the renewed structure and to the renewed evaluation model of door operation.

5.5 Future development

It should be noted that there might be something that is altered in the door test models, after the first new entrant courses with the new structure are being conducted and when the renewed door test model is tested in practice during the courses. It would be beneficial to also gather feedback from the new entrant course participants, to gain knowledge how the learners are experiencing the evaluation model. This would help to find out what kind of support the learners would need during the training, so that they would be able to understand the requirements related to the job performance.

Technology can offer more tools and platforms to support, create and deliver competency-based learning. These new tools and platform can be blended in to training and they might help to increase the impact of training. Utilizing new tools and platforms to augment the learning process, there could be possibility to offer more individual variations in training. Technology could offer solutions for identifying and assessing competencies and to create training and assessment models on competencies. The record keeping on the results could be done more efficiently and with fever supporting staff. It could offer the learners more flexibility for learners and moving towards the direction, where they are expected to take more responsibility on their own learning and professional development. It is important to improve knowledge on what will be the approach of future professionals towards learning, but also how the current professionals are adopting the new approaches of training and learning. For future development there are still more research to be done, to solve problems related to the utilization of technology, required to justify the use of new tools and platforms used to measure and train competencies. (Kearns, et al. 2016, 149-165; Rothwell & Graber 2010, 68-108.)

For future research it would be interesting to explore what kind of new technological tools could be used in the training to support the learning. Already Finnair is providing videos, demonstrating the procedures and tasks in practice to support the learning and self-studying. But it would be interesting to study, how for example the computer-based exercises

could be improved to provide more feedback already about the learner's own performance and understanding about the required competencies. Regarding that would be also interesting to study how virtual reality could be utilized in exercises. There are already some airlines using virtual reality in training, where the training aims to create a practice in a virtual environment that is realistic to the actual aircraft environment and where different scenarios can be applied. Applying competency-based approach to also other practical drills, would be also good subject to future research. Using for example video recording during the emergency landing preparation and evacuation drill, could help to evaluate the competencies based on a complete competency element or elements, containing several tasks. This would help also to evaluate the individuals as part of the group. ICAO is said to renew the guidance material on competency-based training, so when the renewed guidance material is published, it would be interesting to explore, how the new material is designed and if it is taking these aspects in consideration.

6 Conclusions

Aviation industry is changing in a way that more technological innovations and digitalized solutions are being implemented to the service and operational processes. At the same time expected growth in passenger numbers also creates a demand for new employees in the industry. As the IATA report on human resources in aviation has discovered, there will be need for more cabin crew member jobs in the future. The challenge to attract new talent is that the requirements for the jobs have changed. The ability to use digitalized tools is required in every job already and is not something that will be highlighted in the future as a required talent. It is already something that is expected from every new applicant. More than the ability to work with digital tools, the ground operation personnel, customer service and cabin crew should obtain such competencies as the ability to understand the importance of safety and also to have good abilities to work with customers. These skills are hard to train and are perceived as qualities which are expected from the new applicants. This creates a challenge to the recruitment to be able to find such talents. (IATA 2018b.)

Customized training and performance management aims to the more positive employee experience. Employees should feel they are trained more in a way most suitable for them and to more benefit their own work. Customized trainings and empowering people to manage more their own learning, is something which can improve the engagement of employees. Aviation industry should be able to increase the level of attractiveness on the jobs in the industry, as there is a challenge how to attract good applicants as the salary demands of the applicants are increasing. There is a price tag on talent and if people are not happy with their job, they are ready to change the company or the position easier than before. Training programs should be developed in a way that makes the work seem more important for a person performing the job. People should be able to see that they have possibility to train themselves on the subjects or skills they feel are important to them and helping them to perform their job in the best possible way. (Burrell 2018; IATA 2018b; Dumitrache 2017, 14-16.)

The research in its part shows, that there is a need to develop trainings to the direction that is more activating people to learn and directing them towards the correct sources of information. The training has traditionally focused more on providing all possible information for the learner and not so much assessing how much of that information the learner is adopting. The assessment of skills has been done more during service training, assessing the skills related to service and customer experience delivery. Cabin crew safety training has been more focusing on training on the topics and hands-on training are

done without thinking the relation between the different topics and real-life working environment. There is now more demand to add more scenario-based drills to training. It has been exciting to see that there is much more will to change trainings towards the direction that would provide more personalized training and support individual leaners. The training should support all kinds of learners, but it is not very motivating for the faster learners, if the training is built in a way that the starting point is to support the slowest learner, who needs much more support with skills and knowledge. Training should also to be able to provide possibility to develop for everyone, even if they are already performing at a high level. The evaluation of competencies helps in moving towards individual study plans, that make it possible to better personalize trainings and make them more engaging and interesting to the people who are already professionals in their job.

Even if the term competency-based education and the general idea of it was familiar before this research was started, it did not take long to notice that there is much more complexity in competency-based education than what was the first idea when making the research plan. It would have required much more changes in the training and evaluation, so that it would actually aim to continuous development. There is much more topics and alternative training methods, for future research, to fully-implement competency-based approach into cabin crew training. As the limitations on how much can be achieved with this action research and this thesis, there was a need to frame the research to focus more on the renewal of the door training and student performance evaluation. As the door test has been focusing more on testing technical knowledge at the same time with the hands-on testing, there has been not so much evaluation of skills or performance standards.

The aim was to include skills testing to the evaluation, where more scenario-based testing could be used. The main aim of the research was formed to improve the guidance for the instructors on how to evaluate the skills of the student during the test, taking out the basic knowledge testing and putting it to a separate test. In the new model the learner needs to first prove that they have the required basic knowledge, before they are assessed by their skills in scenario-based practical drill. To support the instructors in evaluation and making the evaluation more consistent, it was important to describe the performance criteria for skills and simplify the form, as the time reserved for the test is limited. As cabin crew training does not include longer periods in the simulator with the instructor, as the flight crew training does, it is not as easy to evaluate multiple tasks, knowledge and skills in different scenarios for cabin crew. This is why the thesis focused only for evaluation of one task and skills required to perform that task in different scenarios, based on the competencies required for Finnair cabin crew members and written on OM-D. To make the evaluation of skills, based on performance criteria more known for instructors, it could result to make it

easier in the future to extent the competency evaluation to other tasks and further to different scenario-based drills, covering multiple tasks.

Expectation at first was to be able to implement competency-based approach much more into the cabin crew training. But it needed to be accepted that there could be only limited amount of improvements at this moment, during this research. It took some additional time to clarify the new aim for the research. Also, there was doubt if the new approach and more focused aim, could be seen as too limited, compared to the original research plan. But as the work on this subject continues in the future, there is still the possibility to utilize the learning done during this research and the future development plans. Best possible outcome was achieved, in this situation and within these limitations. There is no one size fits all solution, which would then result on full implementation of competency-based education. The implementation has many different alternatives, which should be further explored, researched and tested for future training, to be actually able to evaluate and develop cabin crew member competencies and provide more personalized training, which aims to develop individual's knowledge and skills, needed in their profession. As technology will continue to be more utilized in training in various ways and the modern training devices are supporting the scenario-based training utilization, it will be exiting to continue on working with cabin crew safety training and the development projects, which aim to the development of the training towards more competency-based approach.

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Appendixes

Appendix 1. Original research plan

Research plan on implementing competency-based training to cabin crew safety training

The assignment was to create a research plan on the topic of own choice. The research plan could be done on the topic, which is chosen to be the topic of the master's thesis. Research plan should include the introduction part about the topic, the aim and description on the methods which are planned to be used to conduct the research. In addition, the research plan should introduce the data collecting strategy and expected results.

The topic chosen for the research plan is also the topic I believe I will choose as the topic of my master's thesis plan. I find it useful for myself to start working with the topic already. The topic is something familiar for me, as I work as a cabin crew safety instructor. Doing the research plan already and getting some feedback on that, might also help me when I will make the final research plan for the master's thesis, when I start working on that.

Introduction
Competency-based training has been used in pilot training already for many years and there are already guidelines for pilot instructors and to plan the training of pilots, so that the training will be more evidence based and evaluates also the competencies. The competency-based training is also giving valuable information, when future trainings are being planned together with the reports of occurrences, near misses and incidents. Competency-based training aims to continuous improvement as the training and the data can be utilized not only within the initial training, but on the job training, annual recurrent training as company and aircraft specific trainings. As ICAO (International Civil Aviation Organization) and IATA (International Air Transport Association) have created already a set of recommendations, standards and guidelines to implement competence and evidence-based training, according to EASA (European Aviation Safety Agency) the standardizing of regulatory framework, regarding competency-based training requirements is not possible to be fully implemented, be-cause of the complexity. The civil aviation authorities are responsible to evaluate the effectiveness of the training and how it complies with the training requirements set by the authority and how they comply with the company syllabus. (CAT 2017; EASA 2016, 18-37; IATA 2013 7-30.)

The competency and evidence-based training is being more implemented in the other fields of safety training in the aviation industry. As the competency-based training has been used mainly for pilot training, it is being now more on the focus to start implementing competency-based training more widely to the cabin crew training as well. (CAT 2017.) Based on my own experiences, some competency-based training has already been implemented, but the evaluation has usually been lacking or hasn't supported the main goal of the competence-based training, which is continuous improvement. Grading and scaling often lack of prioritizing on competencies and grading for each part of the task is for the same value. This has been under discussion among the instructors if this really measures the competencies and gives reliable information about the skills and knowledge of the person in training. Also, the evaluation now doesn't give any feedback to further improvement, only a grade.

ICAO defines competency as a set of knowledge, attitudes and skills re-quired to perform tasks to prescribed standard. ICAO has developed a cab-in crew safety training manual, to provide guidance to the development and implementation on competency-based training for cabin crew. ICAO states that the approach to competency-based training aims to train cabin crew

members to proficient to perform their duties and responsibilities. The manual is adaptable and the manual states that the operators should use it as a guidance as they tailor their own training to fit their own need. Still the aim to introduce the approach of competency-based training is to achieve in time a global standard on the competencies of cabin crew members. (ICAO 2014, 34-38.)

The representative of the Finnish Aviation Authority (TraFi) responsible of auditing the cabin crew safety training, was stating in the meeting concerning the development of the cabin crew safety training, that there aren't any clear regulatory standards to help the evaluation of competency-based training. Training topics are regulated, and the syllabus is defining the frequency they should be trained, but for the evaluation of skills, for example door operation, there isn't any clears framework by the authority, on how the competence should be tested and performance evaluated. Therefore, I feel the topic needs to be further researched and as the evaluation is not highly regulated by the authority, it gives the possibility to create and test an evaluation guideline and grading guideline, to be used for testing on competence. As the only competency-based test in the cabin crew safety training is at the moment the test for door operations, the guideline and the grading table will be implemented on that one. Guideline for evaluation and grading table will be then tested on training and further improved based on the feedback and findings. The goal is to create a guidance for instructors and a grading system, which supports the competency-based training aim for continuous improvement, so that it could be further implemented on the recurrent training on cabin crew as well.

Methods

The method chosen to conduct this research is action research. As the research problem is everyday problem in the organization and needs to be further developed, the action research was chosen as the research meth-od. One justification to that is also, that as I am working with the re-searched subject, I have the possibility to test and gain feedback on how the new developed evaluation system is working and then further change it based on the feedback gain from other instructors. The research problem itself is that the evaluation and the grading of door operation testing is not now evaluating competencies and doesn't provide feedback or grading which aims to the continuous improvement. Also, the guidelines for instructors to conduct the evaluation is not existing at the moment.

In an action research the aim is to solve practical problems and create change. Further than focusing on the current situation, the aim is to change the current state of the topic being researched. The researcher actively takes part in the problem-solving process and people working with the topic on an operational level are taken in to the research project. Their feedback and actions are relevant part of the research. The aim is to pro-duce solutions and promote learning of the organization. The data is first collected, analyzed, issues identified and then actions are taken. Those actions and results are then further analyzed and corrective actions implemented to the tasks, making the process of action plan cyclical. In action research the understanding of the topic is gained by using sources handling the topic, benchmarking or observing. Participation of people working with the topic and co-operation are important part in conducting an action research (Ojasalo, Moilanen & Ritalahti 2009, 58-61; Saunders, Lewis & Thornhill 2015, 189-193.)

Action research is often viewed as a qualitative research (Ojasalo ym. 2009, 61). On this research the interviews provide mainly non-numerical data and the results are done by observation and feedback, so qualitative approach seems to be an obvious choice. Although it is also stated that the distinction between purely quantitative and qualitative research might be quite narrow or problematic. It is also said that action research can also take advantage of quantitative methods, but in this research plan, I see that the research material will be more of qualitative nature, as the analyzed material and feedbacks is expected to give more insights, and it is not a matter of counting votes. As something new is

being implemented in a new way, the opinions of participants should provide more information than just counting votes for opinions. As observation is done and feedback analyzed, the participants are expected to give more qualitative than qualitative information to be analyzed and that the process is more interactive. (Ojasalo ym. 2009, 61-62; Saunders ym. 2015, 165-169.)

Data collection

To collect data and to gain information to be analyzed, I will conduct face-to-face interviews. The interviewed persons will be cabin safety instructors, training specialists, people working on the company side in cabin safety department and with pilot instructors. The aim is to gain information on which are the issues, which are seen to best measure the competencies of the people getting the door operation training. I find it useful to not only get the cabin safety instructor view on the topic, but also the companies safety management, so that those standards required by the company are met. Also, I wish to include the pilot point of view as their training already includes competency-based methods in other trainings and as they are pro-vided with the same door operation training as the cabin crew members. The advantages of interviews are that many people want to participate and want to be heard, so there is a possibility to gain a lot of valuable information. The reliability and validity still need to be evaluated as, there might be a risk of bias or that the interview questions are directing the answers to the interviewer's own view. The advantage of the interviewing is also, that once I have scheduled the interview and planned the agenda, I will get at least some information collected at one time. Waiting for people to answer to surveys might take long time, without getting any answers. The method how the information from the interview is recorded should also be decided and confirmed from the people being interviewed. Depending on the time available, I believe some interviews will be done as group interviews. (Lan-caster 2004, 130-137.)

Testing of the instructor guideline and the grading is done by applying it to be used in actual door test. Usually the amount of people participating in the door test is around 18 to 24 students. The test situation is observed. The aim of observation is to see if the use of the guidelines and grading supports the test situation if the grading is easy to make or if it makes the test situation more difficult for the instructor or the student to perform. The permission to observations is traditionally required, when observations are being done, but in this case the observation of door tests is quite common and sometimes required as instructors are being trained to conduct the trainings. The role of the observer needs to be defined and, in this case, the observer should not participate too much as it might disturb the performance of the student. The aim of the observations is not to only analyze individual observations, but to gain a better understanding of the big picture. (Ojasalo ym. 2009, 103-107; Lancaster 2004, 98-110.)

Feedback will be collected through interviews with safety instructors using the guidelines for evaluation of competencies and using the grading scale. The feedback is then further analyzed and the guidelines and grading then adjusted based on the feedbacks and the findings found on the literature reviews and they need to be further compared to meet the authority requirements and suggestions on corrective measures.

Expected results and risks

The reason why I have chosen this topic, is that during my years as a cab-in safety instructor, the competency-based training has been something that has been talked about, but not so much has done to implemented as part of cabin crew training. In I have also felt that among the safety instructors there is little knowledge on how to evaluate competencies and that has sometimes been visible when door test is being evaluated and there are many views on how the grading should be. I expect to provide a guide-line that helps to solve these problems and a grading model, that could be further developed so that it could be applied to door test done on later trainings. I also expect that some of the findings and analyses could be also been used when implementing competency-based training further

to cabin crew safety training. I expect to get good results from the interviews and the best case would be that the competency-based training guidelines would serve as a basic of on-the-job learning evaluation.

As I am working so much already on the topic, there is a risk that I might be interpreting the results based on my own point of view. I have previously worked on developing the training materials and methods, so I have used to put my own views on the side, because sometimes the feedback has been totally different than expected and the authority audits especially provide feedback, which forces to redesign the training. There is also a risk that the process of using the guidelines and grading scale proves to be too complex to use on the test situation, where the time is limited. The worst-case scenario is that I won't be able to complete the project or that the feedback gotten from the first testing is such that forces me to start from the beginning. The risk of not getting enough information from the interviews is rather small as I work as a part of the organization, but I need to keep in mind the risk that the received information might not be reliable or valid.

Conclusion In my own experience this topic has not been studied yet so much, as it should have been. The ICAO manual for cabin crew safety training pro-vides already a good basis to implement the training, but I think as it is de-pending so much on the company's own ability to further research and implement the topic, it is easier just to copy best practices or implement only parts that need little research. I feel the competency-based training itself, is relatively easy to implement and do practical drills combining the topics studied in class room and from the manuals. But what I have found is, that rather often the feedback is just given verbally, and the evaluation is not based on agreed standards. The feedback is not recorded, so the evaluation of improvement is lacking as there is no scale on how to evaluate.

For the purpose of the of the possibility to conduct the action research and provide a solution to the problem, I had to narrow the competency-based training down to door operation training. Then I have the possibility to also test and get feedback. That is also the only competency that is really test-ed, evaluated and graded at the moment as part of cabin crew safety training, so that also made it easy to focus on that. I really hope that this will

provide more tools for safety instructors to evaluate competencies and provide feedback that aims to further improvement of safety competencies.

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Appendix 3. Forms Questionnaire to safety instructors

Door test renewal survey

As part of my thesis I would like to hear your opinions on door test as part of the NE company conversion training. In my thesis I wish to improve the evaluation form of the door training and make it also measure competencies of the trainee. I would appreciate if you could spare few minutes of your time to complete the survey. All responses are visible only to me and the results will be combined and displayed as part of the thesis anonymously. If you have further questions, please feel free to contact me via email. Thank you for your time.

Hi (recipients name), when you submit this form, the owner will be able to see your name and email address.

1.How well do you feel the current door test evaluation model gives relevant information about the student's knowledge and competence? (1= it doesn't give realistic picture, 3= it works with most of the students, 5= it gives a clear picture to me as an instructor about the student)

1
2
3
4
5

2.How confident do you feel to evaluate the student with the current evaluation form? (1= I feel the form doesn't give me tools to evaluate the student, 3= I can evaluate a student, but seek support from fellow instructors, 5 = I feel it is easy for me to pass or fail a student based on the current evaluation form)

1
2
3
4
5

3.If you felt the evaluation form doesn't support you as an instructor to pass or fail a student, can you specify why?

4.What do you find the hardest with the current door test? (Time, situation, evaluation of skills...)?

5.How long have you worked as an safety instructor

- Less than 1 year
- More than one year but less than 5 years
- Over 5 years

6.How would you feel if there would be separate "door theory test" on paper and "door competency test" as hands on test. Paper test graded and hands on test pass or fail

- I think it is a good improvement
- I like the idea, but I would need more information
- I think it is worth trying, but won't see much difference
- I don't like the idea at all
- OTHER

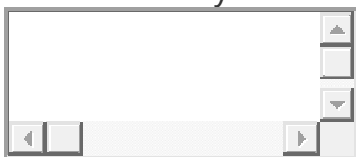
7.On the hands-on competence test, how would you feel would be the best way to scale the performance?

- Each competence from 1 to 5
- Each competence pass or fail
- Each competence with three categories (unsatisfactory, standard with debrief, standard

8.What kind of guidance would you need to be able to evaluate the competencies? (You can choose more than one)

- [ ] Instructor guidance manual
- [ ] Training
- [ ] Clear list of each required competence level and practical examples
- [ ]

9.How would you renew the current door test?



10.What is good about the current door test?

Appendix 6. New evaluation form

DOOR SKILLS TEST

Name:_____Date:____/_____/_____

	Unacceptable	Standard with debrief	Standard
Situational awareness & Communication			
Workload and time management			
Ability and willingness to follow procedures			
Error recognition & stress resistance			
Decision making & self-starter orientation			

Instructor comments (optional): _____

_____

_____

_____

_____

_____

_____

Appendix 8. Focused discussion – filled in chart