Virtual Training versus Classroom Training for Cabin Crew: Benefits and Challenges

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This thesis was born as product development as a way of research in response to the needs of airline FINNAIR Oyj when presented with the raging COVID-19 pandemic and the need to keep on training (Recurrent training) of their flying personnel while following requirements by the aviation authorities and keeping with the safety measures.

This research aims to evaluate Finnair's improvised online training methods as a way to improve them and help the airline better prepare for similar situations in the future.

This work starts by giving background into the airline in question, the aviation business and its training, and a current state of aviation moving on to the methodology. Data collection and analysis come next, followed by results, discussion, conclusion, and learning outcomes.

The study was conducted as qualitative research collecting data utilizing semi-structured interviews with three groups: 7 Cabin Crew members, 12 of Finnair's Cabin Crew instructors, and 5 different airlines to conduct a benchmark on their methods utilized during the pandemic. Literature was limited by gathered data was sufficient, proving how current and important the topic was.

The research found virtual training to be less effective and less liked than classroom training, with a lack of interaction, technical problems, and difficulties for controlling cabin crew participation with the principal benefit being the flexibility it offers. It was also found that while classroom training is more interactive and communication works better, virtual training can be adjusted to improve its efficacy.
The findings addressed that the legal requirements imposed by the European Aviation Safety Agency and TRAFICOM do not allow for complete virtual training, partial virtual training is possible, and effective if done right.

A set of suggestions is presented as well as opportunities for further research in the future. The thesis was conducted and written from December 2020 to April 2021.

Keywords
Cabin Crew, recurrent training, pandemic, COVID-19.

Table of contents

Glossary of terms:

Aerodrome: location from where an aircraft flight operation takes place according to performance and runway requirements (EASA, 2021).

Aircrew: Cabin crew and flight crew.

Airworthiness: a measure of an aircraft's legal and physical state for safe flight.

ANSP: Air Navigation Service Providers

ASK: Available seat kilometres

CAA: Civil Aviation Authority

CC: Cabin Crew.

CRM: Crew Resource Management

EASA: European Aviation Safety Agency

EC: European Community

EU: European Union

EUROCONTROL: The European Organization for the Safety of Air Navigation.

FFA: Finnair Flight Academy

Flight Crew: Personnel that is involved in operating or flying an aircraft, usually composed of pilots, flight engineers, and navigators.

Air Freight: carry of goods by air. Also called cargo.

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

JAA: Joint Aviation Authority

Market Share: the portion of a market that a company or product controls. In this case, aviation.

Onboarding: the process of integrating new employees into the organization. Induction.

RPK: Revenue passenger kilometres

SARS: Severe acute respiratory syndrome.

SARPs: Standards And Recommended Practices

TRAFICOM: The Finnish Transport and Communications Agency

WHO: World Health Organization

1   Introduction

Training or onboarding for almost any profession or job is important, often essential, as it involves not only training the employees but also helping them to meet their co-workers and peers, feel welcomed and get them familiarized with the company mission and values (Dessler, 2020, 238). Corporations and organizations need to be able to anticipate adversity and consider an array of options in case of training disruptions. May they be internal or external. In aviation, for most airlines, the implementation of cabin crew and flight crew instruction is mandatory classroom training with 100% presence. This is because every aspect of the training is highly important, and every day is packed full of information, and there are legal requirements to be fulfilled (EASA 2011). This is true for both, main instruction as well as recurrent training, when both flight & cabin crew, review the most important aspects of their training.

The end of 2019 brought with it the beginning of the COVID-19 pandemic, starting in China, and spreading around the world, bringing along worldwide quarantines, lockdowns, and affecting an insurmountable variety of industries, including aviation. This meant that not only workplaces were affected but also the way of conducting business, training personnel, and the inner workings of industries and corporations.
Industries and organizations worldwide had to review their procedures, training capabilities and adapt to this new world considering mentioned lockdowns, quarantines, and restrictions, like said recurrent training for aircrew.

The researcher had the chance to work and participate in some of the different training settings in FFA during the internship taking place during spring and autumn 2020. This gave a unique insight into the world of aircrew training, which in turn gave birth to the idea of the thesis topic. This thesis was commissioned by FFA and took place in the winter of 2020 through the spring of 2021.

The scope of this research includes the main question, which sets to investigate the airline's new virtual training procedures for recurrent training versus classroom training for Flight Crew and Cabin Crew to compare, analyze and improve said training.
By researching both methods of training and analyzing them, a comparison will be done to extract the advantages and disadvantages of each, allowing for improvement and preparedness for any eventual situation in the future which might call for similar measurements, as well as a new method for cost-saving, effective training that might be of interest for the researcher.

The research method chosen was qualitative research in the form of collection by interview of cabin crew and flight crew working as instructors for FFA, and responsible for the recurrent training of the airline's flight crew. FFA Instructors are active cabin crew members with years of experience, recruited, trained, and qualified to teach and share their knowledge. They work on a rotating schedule where they teach at FFA for 2-3 months and then they go on active duty to fly, and so on. Cabin Crew participants were considered important as well, for the insight and perspective they offered on the methods as well as desired changes to be improved in the future hence their importance.

To complete the research, a benchmark of other airline's procedures for recurrent training during the pandemic will be conducted. Ideally, it is expected to gain insight from at least 3 different airlines.

The duration for this research agreed with the commissioner was set for a maximum of 6 months, which started in December 2020 and finished on May 3rd, 2021.

Organizing the Research

There is not just one format or structure to write a thesis or research that is commonly accepted (Flick, 2007, ch.11), rather it changes depending on the institution, agency, or author.

The first step was to come up with a research problem and define it, as Walliman (2010, 29-30) states, this step is necessary to justify the why of conducting the study. Once this is done, the issue itself will produce the core of the subject, the aim, and goals as well as bring up an idea of what kind of data and information it is necessary to proceed with the investigation and the analysis needed to answer the inquiry.

Based on this common structure the researcher started by coming up with an issue that required further study, once it was defined, the aim, objectives, data to be collected and method were all thought and compiled in a research plan.

While the plan was being evaluated for approval, further research was done to develop a framework for the study.

At the time the study plan had been approved, the author set up to start writing. The first thing was to get an outline of the table of contents to give a palpable structure to work with. This gave the researcher a clearer starting point, allowing for more clarity of thoughts on the whole process.

With a tentative outline, then the theoretical framework started, the research work started by investigating and searching for literature associated with the core of the study, moving on to defining and explaining the methodology, selecting the samples for the interviews

conducted, and collecting and analyzing the data according to the selected methodology of the study.

After these steps, it was time for the conclusion and development, and delivery of the results to the commissioner of the project.

When the literature review was being conducted it was found that little to no research has been done for the selected topic, which in turn gave validity to the choice of topic, indicating that more research on virtual training for cabin crew was indeed needed if the subject was to be developed and improved, moreover, rendering the study also relevant and current.

Identifying the research topic
- Finnair Flight Academy is chosen as a commissioner.
- Virtual training vs. classroom training
- Look for literature gap if there is any.

Literature reviw
- Gather as much background information on the subject as possible on previous research.

Gather sources & data
- Research books, academic articles, different tools (Google Scholar, HH Finna, Elsieve, etc), academic reviewed articles & bibliography.
- Conduct interviews with Instructors, students, benchmark if possible.
- Observe actively and participate of both methods of intruction when possible.

Analyse data
- Go through all gather data, analyze it,filter it and write the results.
- Evaluate the results and their validity.

Final Stage
- Write the results and conclussions.
- Finalize the Thesis
- Make corrections and improvements where needed
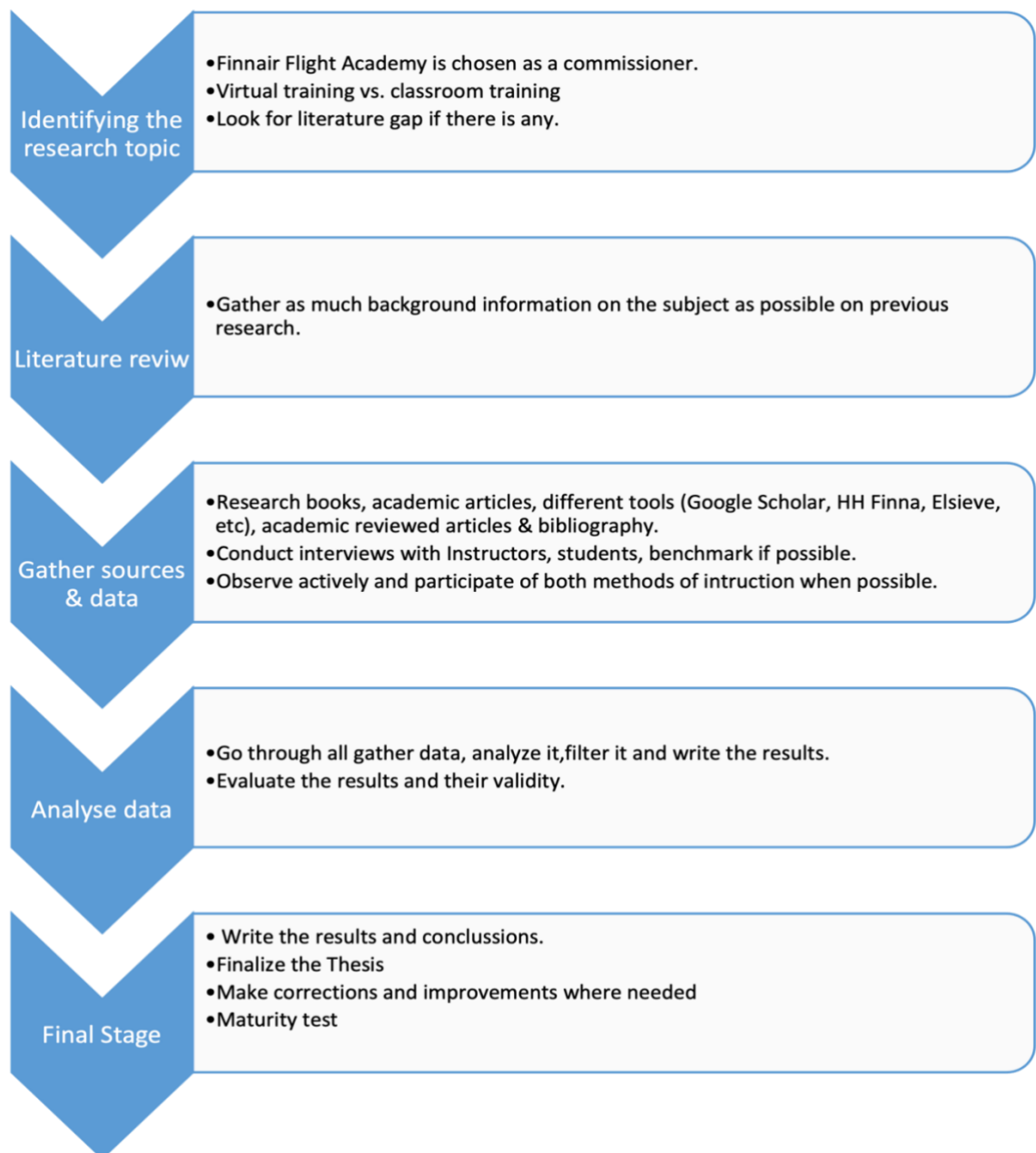- Maturity test

Image 4. Author's thesis structure plan

2   Background of the study

This chapter offers an insight into the current situation within the aviation industry, the training for CC professionals, the aviation authorities, and the commissioner of this thesis. It also explains how the study was organized.

2.1   Aviation Business

The air transport industry is responsible for approximately 65.5 million jobs worldwide, of which 10.2 million are direct jobs and another 3.5 million jobs distributed between airlines, ANSPs, and airports. Many also indirectly, related to tourism, which relies heavily on the air transport industry (ICAO, 2021).

Airlines operate for several reasons: for-profit, connecting distant areas of the world transporting important cargo, creating jobs, and promoting their own countries in the case of national carriers. (Gourdin, 2015). National governments used to take advantage of national carriers to promote public policy goals, like promoting foreign exchange and tourism, increasing international status and reputation, increasing employment, strengthening national security, etc. (Dempsey 2004). Though the underline idea of any airline is to make a profit, in many cases they operate for more than just one of these reasons. A clear example is an airline that runs an unprofitable route since sometimes it is not about the profit but the ability to keep remote areas connected, carry important cargo, and serve the area. Regardless of the reasons, the airline industry is a controlled and regulated one, all airlines worldwide, even air freight, are required a minimum of personnel to fly so it stands to reason that said personnel needs to have their training up to date as per required by law.

The airline industry is intrinsically unstable since airlines worldwide are affected by many internal and external factors (Doganis 2006). Internal reasons include costs, like personnel and training and some of the external factors include strong competition, fuel prices, economic and political factors, disease, natural disasters, etc. To quote some examples: in 2010 the eruption of volcano Eyjafjallajökull in Iceland, which caused the Air transportation industry in Europe to close for approximately a month; Instability in the Middle East causing restrictions in inbound and outbound traffic, disrupting commercial air travel; Venezuelan crisis ongoing since 2014 has caused air traffic to reduce and stop completely in some instances; And the SARS outbreak of 2002, which cause major disruptions across the globe with an emphasis in Asia. (Gourdin, 2015).

Now in the year 2020/21, the airline industry is once more brought to its knees by a Pandemic: COVID-19 also known as novel coronavirus, only this time is not limited to an area or region of the world but rather affecting the world (ICAO 2021). This brings many changes and challenges including the way the recurring training must be carried on.
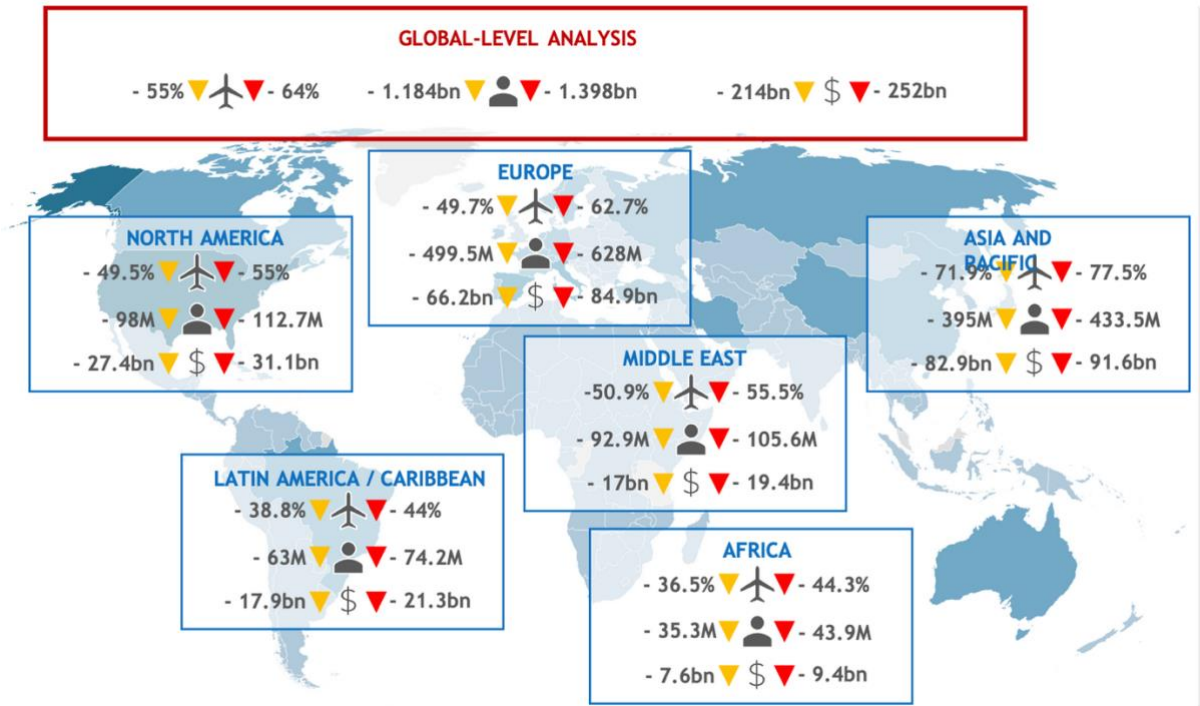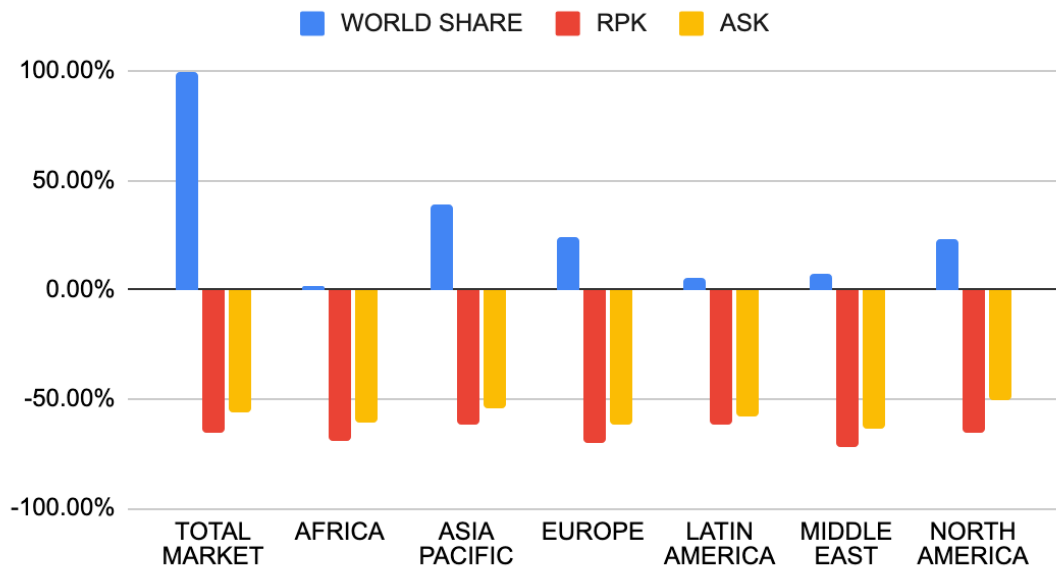
Image 1. Global-level analysis of Impact on International Traffic (ICAO 2021).

Table 1. Chart of the percentage of aviation demand in 2020.

2.2 Finnair & FFA

Finnair is the flag carrier of Finland and one of the oldest airlines in the world, with over 90 years of history, operating a wide network of over 100 routes from its hub in Helsinki and

specialized in traffic between Europe and Asia, and extending to North America. (Finnair 2020).

Any training institution that provides aircrew training, must be approved by TRAFICOM according to EASA regulation 216/2008 and included in the different annexes there is a list of requirements on installations, theory to be covered, and practice to be covered according to each type of training and personnel.

Finnair provides training (new entry, conversion, and recurrent) for its cabin crew and flight crew on-site at its facilities at FFA, as well as training solutions for other airlines and partners. Located in Vantaa, just off Helsinki airport and Finnair's hub, it is equipped with 2 Airbus simulators (Airbus 320 and Airbus 350), door trainers for A350, A330/340, A32, E170/190 and B752, fire & smoke simulators, evacuation and ditching simulators with a pool, and several different slides (Finnair 2021). This means that FFA is open 24 hours, 7 days a week for the flight simulators as they are used not only by Finnair's pilots but also for other airlines. Different types of flight crew and cabin crew courses are organized for other airline personnel on request as well.

Image 2. A319 Service trainer utilized for new entrant courses

At FFA, the training for new personnel (new entry) takes 8 intensive weeks, consisting of days of 8-10 training hours each with short breaks. These include theory and practice with a variety of subjects like first aid, safety, survival with real practice outdoors, etiquette, regulations, dining services, on-board products, aircraft basic design, emergency

procedures with practice in fire simulators, pool for ditching, rafts, slides and a much more. This training is divided into two, the first part qualifying all-new CC for their attestation, once obtained, the training moves on to conversion training and includes as well on-board, service-specific, and real flight training. For CC which already holds attestation the first part is not mandatory just this second part.

The once-a-year recurrent training consists of 2 intensive days, where on the first day flight crew and cabin crew train together in the morning and then are separated in the afternoon. On the second day, both the flight crew and the cabin crew train by themselves for the whole day.

This training includes a review of first aid, crew resource management, real cases analysis and discussion, emergency procedures review, and door training. Door training is the practice on-site of door opening procedures for different aircraft models used by the airline in case of emergency, following the established emergency procedures.

It is important to note that for both pieces of training, Finnair has pre-course online courses and exercises that need to be completed before starting training. It also requires the participant to pass the classes, practices, and exams with an 80% minimum, and no absences are permitted as per their quality standards. If the participant has compelling reasons to miss a class, they are usually given a chance to re-take that class or subject, and for the exams, they do have more than one chance, but training is strict and taken seriously, as it should.

2.3   Aviation authorities/entities and training

The Chicago convention of 1944 also known as The Convention on International Civil Aviation was responsible for the creation of PICAO, later ICAO, as a specialized agency of the United Nations to promote cooperation and understanding between its member states. Nowadays it has 193 member states, all working together and in agreement with the International Standards and Recommended Practices (SARPs) and the annexes (ICAO, 2021). It is important to remark that these SARPs are the foundation of legal regulations in each national member state (Gourdin, 2015) and assist its member states with the management of aviation safety and its risks (ICAO, 2021).

Within the European Union the oversight of safety is set by several entities working together: the EU commission, EASA, EUROCONTROL, national regulatory agencies, or CAAs (Gourdin, 2015), all usually ICAO members or partners. The set of rules include aircrew, aerodromes, airworthiness, air operations, and the supply of air navigation systems (European Commission 2021).

The local or national regulatory agency or CAA in Finland is TRAFICOM. It is also the delegated safety institution in Finland and as such, it plays a key role in training as it

authorizes training institutions, instructors, course syllabus, oversees changes, and has a say in everything about safety in transportation, from road to water, rail, and air (TRAFICOM, 2021). While EASA, previously known as JAA, is the regulatory body of the EU when it comes to safety, drafting regulations, and overseeing them, each national or local CAA has the authority to implement both EASA and ICAO rules and are the responsible body for the national ruling and oversight, working in close cooperation with these organizations. Henceforth, it falls onto TRAFICOM to regulate, oversee, and police airline training, making sure that the necessary regulations are fulfilled and met when training cabin crew and flight crew (TRAFICOM 2021, EASA 2012).

Each airline decides and carries its training, however, due to the nature of the job, Flight Crew and Cabin Crew courses must meet certain standards and regulations.
on EASA's Annex IV to Regulation (EC) 216/2008 establishes that all cabin crew involved or presumed to operate in certain aircraft needs to fulfill and comply with certain requirements. The same applies to pilots, specified in Annex III of the same regulation (EASA, 2020).
As with the personnel participating in the training, the same way, instructors need to qualify, go through training, and then be approved by the CAA TRAFICOM.

2.4   Training in Aviation and Cabin Crew training

CC is defined by EASA on its Commission Regulation (EU) No 1178/2011 Aircrew, Article 2 as a suitably qualified crew member, not part of the flight crew nor mechanical or technical crew, who has been designated by an operator to carry out duties and tasks related to safety during flight. Aircrew definition includes both cabin crew and flight crew (EASA, 2011).
CC concerned in the operations of the aircraft needs to fulfill certain requirements as per Annex IV and hold attestation as for Annex III established in regulation (EC) 1899/2006 of the European Parliament amending the previous regulation (ECC) 3922/91 as per member state. Said attestation can be provided by training entities and operators certified to do so (EASA, 2008).

EASA regulation 965/2012 ORO.FC.130 states that the flight crew needs to participate in recurrent training once a year, while it refers to the same requirement for cabin crew on ORO.CC.140. Said regulations also specify the requirements to be covered in these pieces of training, like crew resource management, emergency drills and procedures, doors, and evacuation, etc. (EASA 2012).
There are many airlines, and each one has its own rules and periodicity in recurrent training. This means that while they must fulfill EASA's minimum requirements they can

decide if they want the recurrent training to be once a year, twice a year, divided into two days, three or eight.

There are many definitions for recurrent training, BAA training defines it as a type of training planned to keep up with the same degree of competencies and skills and strengthen the knowledge used by CC, including theory and practice (BAA Training, 2021).
This is a good generalization as recurrent training can be different for each airline to include aircraft-specific training and airline-specific procedures.
This training includes normal situation procedures as well as emergency cases.

Training varies from one airline to another with most airlines quite tight-lipped about their training since these include many trade secrets and procedures. For the purpose of this thesis, only the Recurrent Training provided to Finnair was considered.

Basic training for cabin crew varies with some airlines taking 4 weeks to others more demanding with training ranging for up to 12 weeks. Many Airlines have their training centers or facilities. However, in some other cases, training is outsourced like the case of Crewlink being the recruiter and trainer for Ryanair Holding PLC and its subsidiaries Ryanair UK, Buzz, Laudamotion, etc. (Crewlink, 2021).

In the case of the flight crew, it is very diverse with most pilots attending individual and private flight academies, studying for approximately 2 years to become a commercial airline pilot. Once they are recruited by an airline, the process is different in every case. In the case of recurrent training for aircrew in Europe, the process repeats through different airlines with yearly training as per EASA regulations.

CABIN CREW TRAINING

TRAINING DURING CAREER

RECURRENT TRAINING

Each cabin crew member must complete recurrent training and checking every year. You have to pass the multi-choice test with a pass mark of at least 80%.

Recurrent training takes two days, including safety and first aid training.

Image 3. Finnair's Recurrent Training (Finnair, 2021)

2.5 Current State of the Aviation training environment

It is important to understand the current situation, to understand how it affects something so vital as its training and daily workings.

The airline industry faces, even nowadays, a myriad of difficulties and obstacles and this is due to its environment, it is exposed to external disturbances and as such, vulnerable (Samunderu, 2019).

In 2017 IATA's Industry Affairs Committee (IAC), composed of the heads of government affairs in 20 airlines, commission a study to predict and foresee the opportunities and key risks of commercial aviation on a global level between the commissioned year and 2035 (IATA, 2017, 3). It states that aviation is constantly changing and faces continuous challenges and with the participation of experts and over 50 senior representatives from different airlines, this report intended on investigating forces or "drivers of change" to prepare for the future. Information was gathered from interviews and over 200 sources to identify Drivers of change using a STEEP analysis consisting of Social, Technological, Economical, Environmental, and Political trends both relevant and weak (IATA, 2017, 6).

Table 2. 50 drivers of change adapted from IATA's report

Society	Technology	Environment	Economy	Politics
Urbanization and growth of megacities	Robotics and automation	Carbon quotas	Oil prices	Geopolitical stability and/or lack of.
Terrorism	Cybersecurity	Activism	Global wages inequality	Corruption and bribery
Global aging	New techniques & 3D printing	International regulations on emissions & noise	Aviation sector supply chain integration	Government possession of air space & infrastructure
Passenger ID and fraud	Growing Human Potential	Resource Nationalism	Concentration of wealth	Changing borders & boundaries
Growth of the middle class in Asia-Pacific region	Internet of Things (IOT)	Major weather events	Volatility of global economy	Decisions against competition
New models of consumption	VR and Augmented reality	Water & food security	Knowledge-based economy	Power of governance
Tensions between surveillance & data privacy	Alternative energy sources and fuels	Human controlled weather	Privatization of infrastructure	Defence preferences over civilian needs
Global Population growth pushed by Africa & Asia	Substitute modes of fast transport	Infectious disease and pandemics	Shifting nature of labour and rivalry for talent	Climb of populist movements
Changing political, religious & ethnic ID	New aircraft designs	Rising sea levels	Unionization of work & regional independence	Growing influence of non-standard institutions.
Health, fitness & disability	Geospatial technologies	Circular economy	Open data transparency	Open borders & trade shielding

Out of the drivers identified in the research conducted by IATA, infectious disease and pandemics were categorized in the category for "Higher than average impact and uncertainty". It explains that many times before viruses like HIV, SARS, and Zika virus as well as other diseases were considered to be restrained and in check. It ponders on the possible restriction of passengers to travel and the financial problems it could bring to the industry (IATA, 2017, 9).

During the analysis of this risk, it explains that even though airports might be perceived as high risk and hotbeds for spreading of disease, this could constitute an opportunity for both airport and airlines to assert their strategic position as assets to the government and public health, helping detect and manage the pandemic (IATA, 2017).

Before the pandemic, however, the aviation industry was steadily growing (Airline Business, 2019), with Finnair actively recruiting and training personnel permanently as was the case with many airlines.

As the pandemic progressed, a big percentage of personnel in many airlines was reduced, fired, and temporarily laid off. Such was the case with Finnair, which in the autumn of 2020 was forced to both fired 600-700 people and continue the temporary layoff of most of the personnel, keeping only a skeleton crew (Helsinki Times, 2020; Reuters 2020) this included FFA instructors, bosses, and personnel that included a whole reorganization.

By the end of 2020, the numbers for the aviation industry had fallen to the lowest in aviation history. The measures for December indicated that traffic fell 69,7%, International passenger demand fell in 2020 a 75,6%, capacity measure in ASK 68,1% and load factor 19,2% from 2019. On the simplified chart below, we can compare the negative percentages of 2020's values per region (IATA, 2021).

Until February 2020, courses for Finnair CC new personnel were starting every 2-3 weeks and recall training taking place every day.
The COVID-19 pandemic arrived in Finland in January 2020 and by January 30th the World Health Organization (WHO) declared a pandemic.
On March 16th a state of emergency was declared in Finland putting in effect measures like lockdown to prevent the fast-spreading disease (YLE News, 2020).

The first case of COVID-19 was confirmed in Finland on January 29th, 2020 when a Chinese traveler visiting Rovaniemi was admitted to hospital with symptoms, she had allegedly exposed 15 other people (Yle, 2020). Shortly after, the first wave of COVID-19 hit Finland, then, the government decided on a set of recommendations to prevent the spreading of the virus, including, remote teaching in teaching institutions, a limited amount of people allow gathering at one place and remote work was suggested for all employees when possible (Finnish Government 2020). This presented a challenge for FFA, since it runs flight attendant courses almost non-stop for both new entry and recurrent training, with fewer courses during the summer holidays. Translated into numbers it means some 3-4 overlapping training courses of approximately 20-25 students each, plus instructors and other working personnel like technicians and planners.

From this point on, all courses were canceled, with exception of recurrent training, which had to be adapted to suit remote training to comply with new government recommendations to avoid further spread of the pandemic.

For remote training, FFA chose to use Microsoft Teams as their training platform since it was already in use between personnel, however, not among the cabin crew previously.

2.5.1   Classroom Recurrent training

Classroom training requires specialized, and carefully trained, skilled personnel.
Any classroom lesson well carried can leave a lasting positive impact.

Recurrent training, as explained before, is under normal circumstances carried out on location, in this case at the FFA's training facilities, where there are classrooms as well as different types of simulators, equipment, and infrastructure to support all kinds of training for aircrew, where they can practice and go through the required training review in theory and practice as per regulations imposed by EASA and TRAFICOM.

Training is divided into three types: (1) safety, (2) first aid, and (3) service. During basic training, instructors go through all of these with the new entrants throughout 8 weeks. During Recurrent training, however, the instructors go through different case scenarios and review the basic safety and first aid training with the personnel in 2 days reviewing real-life cases and practice as well.

Another very important aspect of the training is Crew Resource Management or CRM. Crew Resource Management is a training technique developed in 1979 to improve communication and interaction between crew personnel to diminish the Human Error Factor and causing an improvement in safety (Muñoz-Marrón, 2018).

CRM has been studied in-depth and taken into other industries like medicine, as it is attributed to improving communication and management in crisis and emergencies. For these reasons, CC and pilots participate in CRM training together, as they learn to interact with one another, emphasizing communication and teamwork.

CRM is included in EASAs regulation 216/2008 and amended in 1178/2011, Annex V, Part- CC. where it specifies that CC must participate in Human Factors (HF) and CRM training as part of the basic requirements for CC.

Human Factors or HF has many definitions, in most of them it central elements are the same: Is a science that incorporates exploration and studies from different disciplines like psychology, engineering, sociology, and biology. Its focus is to improve the safety and proficiency of an environment or systems. These systems or environments can comprise

several elements like devices or instruments, humans, and procedures (Moriarty, 2015, 3).

Human Factors has grown into a specialty across several disciplines that extracts from several different fields practices and theories comprehending social and behavioral sciences, physiology, and engineering to improve human performance while minimizing or eliminating human error (Kanki, Anca, Chidester, 2019, 3). Human factors can then be contemplated as a team of individuals working in cooperation with instruments or devices. Like an instrument or system can fail, improper training or guidance of CC duties can also cause safety or performance to be affected. CRM is the implementation of human factors in aviation (Kanki, Anca, Chidester, 2019, 4).

CRM training includes improving the interaction between machine and people, obtaining on time and accurate information, as much as mutual actions like leadership, problem-solving, successful team establishment, decision-making, and situation awareness maintenance (Kanki, Anca, Chidester, 2019). To estimate the effectiveness of CRM, evaluation is used, this is an important consideration since CRM continues to improve and evolve.

CRM plays a fundamental role in aviation regulation, and it is included in the EASA Syllabus for the training of airline personnel under regulation (EU) 965/2012. FFA Includes CRM training in both new entry and recurrent training.

Classroom training can be quite long for instructors working alone, these trainings take an average of 8 hours, without including preparation of the materials, cleaning afterward, and everything in between. By comparison, a basic primary and secondary school in Finland is an average of 32 hours per week (Finnish National Agency for Education, 2018, 11)

Even though virtual methods of training have been becoming more popular, classroom training remains a preferred method. A with everything else, it also has its advantages and disadvantages. Classroom training advantages include: (Hunt, 2013)

- Teaching in a safe, neutral, prepared environment.
- Allows for "human touch" unlike virtual methods.
- Interaction intensifies learning as participants learn not only from instructors but also from peers.
- The environment further teaches participants how to act with peers professionally, in a professional setting.

The disadvantages according to Hunt (2013) include:

- Taking employees of their schedule.
- Can be hard to schedule
- Removing employees from their actual environment and placing them with fake tools, and equipment which not always replace the "real deal".

The popularity of classroom training has decreased in the last 10 years, while the popularity and usage of virtual methods have tripled (LaBorie, 2014).

Table 3. Pros and Cons of classroom training adapted from LaBorie

Pros	Cons
Abundant training teaching opportunities. Excellent for role-playing and practical skill teaching/development. A natural method of teaching. Cooperative training, interacting with other members. Natural socialized learning.	On-site training/On Location. Transport/travel to the training location. Lack of immediate feedback by all participants. Can result ineffective, depending on the amount of material to be covered.

When it comes to CC, the advantages of classroom training, as its popularity continues, especially considering the importance of interaction between members, as well as the need for hands-on and skill training.

2.5.2 Online Recurrent training

EASA developed a new set of guidelines in 2020 because of the COVID-19 pandemic to assist in guiding the different departments and companies in aviation to be able to work and continue to train their personnel like CC safely through the pandemic. In between those guidelines, there is a specific set created for the training of aircrew (EASA, 2020).

Some of the guidelines that EASA released include "Guidance for allowing virtual classroom instruction and distance learning" referring to regulation 965/2012 and "Cabin Crew Recurrent Training" both put into use as a temporary measure for working during the COVID-19 pandemic (EASA, 2020).

CC Recurrent training guidelines start by explaining the limitations during the current situation globally and the health and social distancing restrictions imposed by governments. It asserts that many training centers and facilities are either closed or working at a minimum and facing the situation of having to keep the aircrew personal training, relevant. It does emphasize the fact that this is only temporary. It allows for the practical part of the training to be postponed and if needed the CAA can grant exemptions (EASA, 2020).
The first option for training is, of course, classroom training first, but if not achievable, theory can be conducted through digital methods. However, door training is to be conducted normally on the training facilities, and if not available on real aircraft i.e., parked aircraft, in a hangar, etc., and as a last option postponed if impossible (EASA 2020).

In compliance with EASA regulation ORO.CC.140 as well as government and WHO recommendations (EASA, 2020), FFA interrupted completely new entry training and switched to virtual recurrent training.

These types of training were organized quite fast, with the collaboration of instructors and FFA personnel, so given the speedy switch in methods, it was to be expected that some problems would arise.

The author of this thesis oversaw going through the lists of pilots and CC to participate in recurrent training and organize and send the invitations for participation through MS Teams, a digital tool that allows for the instructors and students to participate from their own homes with a laptop, computer, tablet, or even mobile device, giving everybody the chance to participate actively while keeping safe in lockdown. This application allows for access to the camera, microphone, chat, and the possibility to share documents, pictures, videos, and material, making the training as real as possible.

Meanwhile, the practical training was temporarily postponed for a few months to avoid human contact and keep in with the social distancing as well as the government recommendations to work from home whenever possible and reducing the number of people that could gather in one place.

Currently, virtual meetings, training, and interviews are part of our everyday life, for some more than others but it is not as easy as it sounds. Virtual training presents some challenges, usually, that have to do with the technical side of things, like a participant getting kicked off and having troubles getting back into the session, or audio problems, or even software problems (LaBorie, 2021, 14). So not only delivering the training is important, but also how much attention is set aside for the preparation and not just the materials, but the technical aspect of it.

According to LaBorie (2021, 14-15), virtual session production includes the setup, the planning, real-time management while in session, and the respective follow-up of not only the session itself but the technical aspect as well. This is a successful meeting or event. Sometimes a facilitator or producer is present to assist the presenter or trainer in the technical aspects of the session, this might also be handy in participant engagement, taking notes, etc. (LaBorie, 2021, 14-15).

By having someone else deal with the technical part of the session, the host is making sure that the focus remains on the training while preparing for eventualities that might affect the participant's engagement and experience.

All virtual meetings, regardless of their nature have a few things in common (LaBorie, 2021, 17):
- A link is generated and required to participate
- The host needs a way to share & showcase materials
- There should be a way for host and participants to share their webcams

- There should be an audio option for both parties.

There are of course a few other considerations, like for example, participants connect using different devices, so it is good for the host and assistant to familiarize themselves with the software from other devices since the program will probably look and have its features a bit different than a laptop or computer. Such is the case with Zoom and MS teams, where not necessarily all the features are available or easy to find. By familiarizing themselves with the software, an assistant can be provided.

All the features available can present a challenge. It is good to be ready 30 minutes earlier, to assist participants to connect, and with the basics of for example sound (LaBorie, Stone, 2014, ch.1).

To assist with the virtual training, Huggett (2014, cp. 5), explains the different tasks for the instructors or facilitators and the ones for the assistant/producer, with the hopes of making the management of the software or technology easier and having the training run smoothly.

By having a training organized this way, the instructor can focus on the training at hand, with no distractions and interruptions helping the participants stay focus as well. This, in Aviation and giving the sensibility of the subjects being reviewed (like safety and emergency procedures), is vital for success.

Table 4. Division of tasks for the online virtual training (LaBorie, 2021).

Train: Facilitate Learning	Produce: Manage Technology
Welcome participants to the class; get to know them and why they are attending.	Welcome participants to the class and help them technically connect to the session through audio, chat, and so on.
Lead group discussions.	Direct participants to the raise hand and feedback icons and watch for comments that may come in the chat.
Coach participants during skill practices.	Assist participants with using annotation tools, webcams, or feedback icons.
Ask questions to help make content connections.	Remind participants to answer questions by using the tools properly, such as chat or feedback icons.
Listen to responses from participants and comment appropriately.	Ensure audio is clear and is working properly.
Clarify participant questions, ideas, and responses to help make connections.	Type what the trainer and participants say on the whiteboard or in the chat.
Deliver clear activity directions related to the purpose.	Give clear technical directions to complete the activity in the online classroom.
Take the lead in the class by creating an environment that is safe, inclusive, collaborative, interactive, and effective.	Follow the lead of the trainer by ensuring the technology being used supports the safe, inclusive, collaborative, interactive, effective, and fun classroom!

Even though any training should be tailored to meet the needs and goals of each training.

It is not easy to create virtual training, so how to keep it as engaging, interactive, and full of impact as classroom training? For this, certain skills are necessary (Laborie, Stone, 2014 ch.6):

- Addressing a specific time for questions.

- The instructors direct the focus to the materials, references, learning tools, etc.
- Asks for support of the assistant, producer, or peer instructor when needed.
- Keeps calm in front of unexpected circumstances. Have a backup plan.
- Clear speech, with authority but approachable. Changing the tone of voice to keep the participants interested.
- Not background noise and good lighting. Speaks to the camera.
- Knows what to present/instruct and is on time. Good time management.
- Encourages participants to answer, collaborate and engage. Makes them think deeper.
- Listens actively and is empathetic.

All these skills can be mastered, however, the importance of activities needs to be remarked, since a training consisting of all lectures and no activities can become heavy and boring with little to no engagement (LaBorie, Stone, 2014 ch.6).

According to Huggett (2014, ch.5), The skills for successful virtual training are quite like the ones describes by Laborie previously:
- Use Adult teaching concepts on the virtual training
- Good with technology
- Can capture the participants' attention, even if he/she cannot see them
- Eases participants and gives them a sense of a safe environment and technology
- Can multitask
- Transmits credibility and knowledge with the material.

3   Methodology

This chapter contains the theoretical methodology chosen for the study, starting with a view into qualitative research, the aim of the study, the research question, and the methods chosen. Then exploring further, the explanation of why the methodology was chosen and the steps followed including data collection, participants, data analysis, and validity and reliability of the study.

3.1   Choosing a research method

Research method means the technique and tools used to conduct a study or investigation (Walliman, 2010, 1) It can be done in different ways. Most commonly in academic research are quantitative, qualitative, or mixed, where both methods are used.

The nature of the research problem or inquiry usually demarks the appropriate research design for research. Once the research question has been defined, the researcher will think of how to achieve the objectives set out by choosing the design, which in turn allows for a framework that will be used for data collection and analysis (Walliman, 2010, 13). Data is defined as quantitative or qualitative by their characteristics: expressed as numbers or in words. The type of data will determine the method utilized for collection and analysis (Walliman, 2010, 71).

Data recorded as numbers, like costs, or the density of a geographical area, population, is considered quantitative data. On the other hand, data that collects information such as perspectives, beliefs, emotions, is considered qualitative (Walliman, 2010, 71). A simple definition would be that quantitative data gathers information about quantities while qualitative data collects information about qualities. (Walliman, 2010, 71).

3.2   Qualitative Research

Qualitative research has been chosen as a method since the aim is to achieve an understanding of both methods of training and the benefits and challenges both present, to be able to compare effectively and objectively henceforth developing recommendations for FFA that are feasible and realistic.

Qualitative research is defined as a research method with several characteristics: it uses empirical or text material, unlike quantitative which uses numbers. The focus is on the participant's perspective and experience on the subject being explored and its methods need to be open and appropriate to extract an understanding of the matter at hand being studied (Flick, 2011).

When the basis of qualitative exploration is on the significance within certain conditions, the data collection method needed should be sensitive to the in-depth substance. The ideal candidates for this are humans since observing, interviewing, and analyzing constitute the core of qualitative research (Merriam, Tisdell, 2015, 2).

One of the main motives for qualitative research is due to an occurrence or situation for which a theory is not working, failing, or lacking (Merriam, Tisdell, 2015, 17).

Another trait is that the investigator conducting the study is frequently involved in the field, participating along with the participants for a significant amount of time (Merriam, Tisdell, 2015, 18).

According to Ray Rist (1977 as cited in Taylor, Bogdan & DeVault, 2016, 17-18), the qualitative method alludes to research that brings, as a result, descriptive data, like a person's own opinion and views and behavior that can be observed. Qualitative research has several characteristics: it extracts from literature-based for its empirical material as opposed to numbers used in quantitative research, the interest or focus is on the participants' point of view and the daily processes to be researched. The chosen method needs to be appropriate to the research in question and be open to permit for an understanding of the issue in question and its processes (Flick, 2007, ch.1). Different research requires different methodologies.

The research methodology indicates the tools utilized to conduct the study and build on a theory or arguments when deciding which tools to use and who to use them with (Lapan, Quartaroli & Riemer, 2011, ch.4).

Like many published and accomplished researchers, the idea for this research was born out of the experience and need. Experience after an internship with the FFA, where the familiarity with the processes began and need due to a necessity for further knowledge in a new imposed training methodology by external factors, in this case, a virtual training due to restrictions in a pandemic.

After the idea for the research has been defined, the next action should be to take a research perspective, which will be used to understand and analyze the process, like for example taking a biographical approach based on personal experiences from participants that have experienced these processes. This gives the participants the platform to talk about these events in an interview. Once the information has been gathered and analyzed the following step could be to generate a theory though not necessary (Flick, 2007, ch.2). There are different approaches and perspectives when it comes to research, these are just some that applied to this work.

The methodology used for the research can be a mono method, where only one data collection technique is used or multi-method, indicating two or more data collection techniques are used and this applies to either quantitative, qualitative, or mixed methods (Saunders, Lewis & Thornhill, 2016, 168).
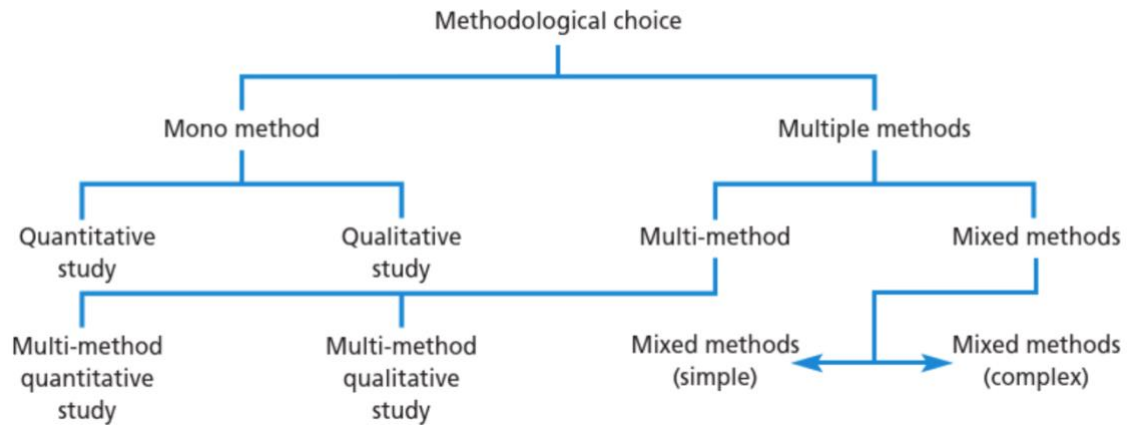

Image 5. Example of methodological choice (Saunders, Lewis & Thornhill 2016).

The author aimed to conduct virtual interviews with other airlines (competitors and partners) for benchmarking where possible and applicable, as this could offer a unique insight on how other airlines managed their training normally as well as through this crisis as this further helped increase the applicability of the findings, validating the results. After the data was collected it was analyzed and compared.

All the interviews were confidential and recorded with the participant's knowledge and permission, keeping to the code of ethics in doing research, then the transcripts were analyzed, and together with the gathered data and literature review, the report was written with the results and recommendations.

John W. Creswell (2013, 90) explains that ethnography's focus is on a whole group that shares the same patterns, regardless of the size of the group as it can be small too, like a group of teachers, though in typical conditions the groups tend to be large. He further describes that ethnography as a process often entails the researcher's participant observation of a group into their daily activities and interviews of said group members, henceforth, observation was utilized as a method too.

3.3   Research Question

Gough et al. (2003 in Clarke & Braun, 2013, 44) remark that in qualitative research the questions ought to be of "social relevance" and be original. Otherwise, why would

someone research something that has been thoroughly examined and all the knowledge about it has been extracted.

Before embarking on a thesis, a researcher should have an idea of a topic or subject they want to study and while it is difficult to define it, this is going to be the most important part of the research. Without knowing what to study, it will be very difficult to plan on how to research it (Saunders, Lewis & Thornhill, 2016, 26).

Once the idea has been born, it will still be necessary to turn that idea into a question, along with the aim or goal and objectives (Saunders, Lewis & Thornhill, 2016, 27).

On this opportunity the research topic was not provided to the author, instead, while participating in an internship, several theses and a variety of topics were investigated to give the author ideas on what they wanted to write about.

As time went on, and circumstances changed due to the COVID-19 pandemic, an idea was conceived. This was investigated further and defined and redefined until the topic was more specific and feasible.

The main research question was then suggested by the researcher and discussed with the commissioner, and lastly, it was defined as follows:

> RQ1) What are the challenges and benefits of virtual training in comparison to classroom training for recurrent training?

And the sub-questions are as follows:

- Which are the factors that need to be taken into consideration when planning a virtual course?
- What kind of competencies are needed from the FFA instructors who teach virtually?
- How to make sure that virtual instruction fulfills the European Union Aviation Safety Agency (EASA) and therefore the Finnish Civil Aviation Authority, TRAFICOM standards.

3.4 Data Collection Method

This research thesis aimed to gain perspective into the benefits that could be extracted from virtual training of CC as well as the challenges it presented for both the instructors and the students in comparison to regular classroom training.

By analyzing and comparing both methods, the commissioner can understand better, plan, and prepare for the future, to continue training its personnel effectively while being compliant with the regulations. Considering not only pandemics, disruptions, or natural disasters but also technological advances, trends, and developments as well as cost-saving methods that might have a big impact on the FFA revenue.

Data collection was divided into two parts. The first part was the collection through observation since the researcher had the opportunity to participate during the internship period of both classroom training and online training. And a second part consisting of

semi-structured interviews with FFA instructors that have been active during both in-classroom and online training.

Most definitions of observation as a research method were found to be linked to the field of anthropology, where a culture or group of people are being observed.
Filed observations, consists of data being collected which focuses on people interacting in a determinate socio-cultural environment or conditions (Smiley, 2015, 1813).
Ethnography is utilized to investigate a culture or lifestyle of a group. Its translation means a written description of a population or tribe and it has been used since the early days of anthropology (Saunders, Lewis & Thornhill 2016, 187).

The use of ethnography, however, changed in the 1920s since the University of Chicago started using this technique to study the problems of different groups in the USA of urban and social nature. Later, different approaches were developed for other types of focal points than the one ethnography was focusing on. (Saunders, Lewis & Thornhill 2016, 187-188).

Ethnography, however, does not come without its challenges, like limitations of time to collect the data, lack of understanding of the basic cultural concepts involved in the study, the researcher might be compromised when involving itself in the process, difficulty understanding the literature, etc. (Creswell, 2013, 96).

Observation is often used as a complementary method in qualitative research, when possible. With Observation, the researcher can induce themself into the environment and notice things, actions, and processes first-hand, which cannot always be done just by conducting interviews.

On the other hand, interviews are one of the most common methods utilized in qualitative research (Merriam, Tisdell, 2015, 106).
Interview research is a method utilized where the researcher engages in conversation with one or more people and asks specific and clear questions, with the participant willing to listen and answer. This can assist in gathering reliable and valid data applicable to the research (Saunders, Lewis & Thornhill 2016, 388).
Interviews can be defined differently according to their structure or lack thereof. Several different categories exist, the most common being: structured, semi-structured, and unstructured (Saunders, Lewis & Thornhill 2016,.390).

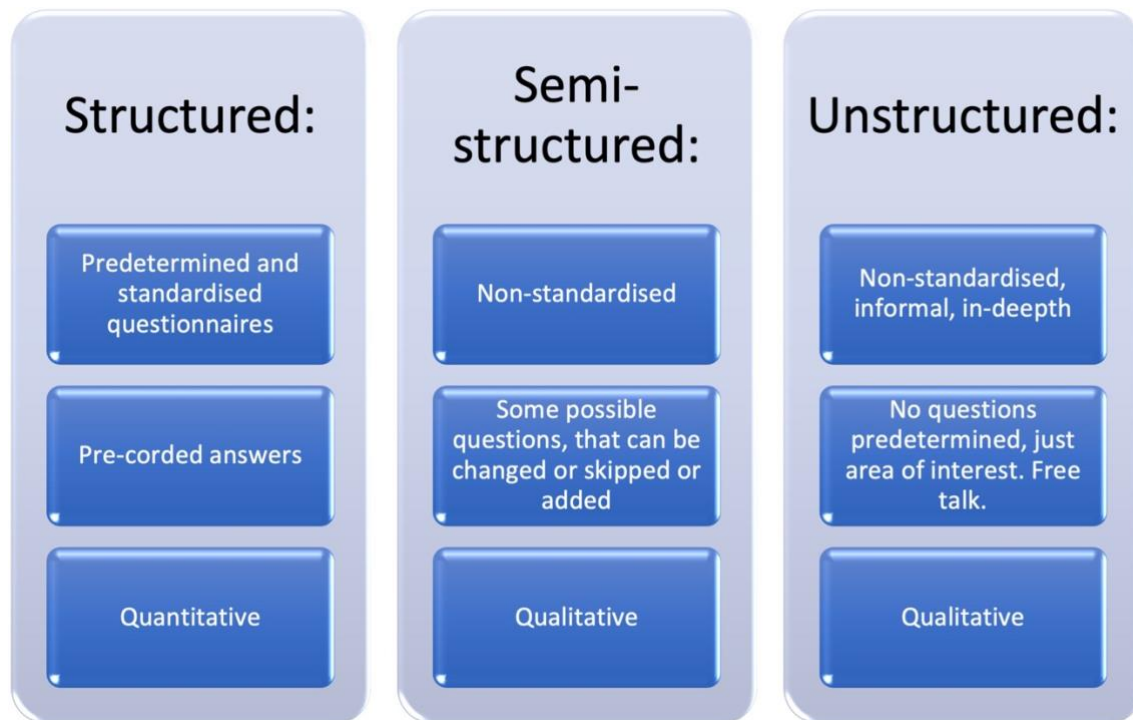| Structured:	Semi-structured:	Unstructured:
Predetermined and standardised questionnaires	Non-standardised	Non-standardised, informal, in-deepth
Pre-corded answers	Some possible questions, that can be changed or skipped or added	No questions predetermined, just area of interest. Free talk.
Quantitative	Qualitative	Qualitative

Image 6. Types of interviews based on Saunders, Lewis & Thornhill (Kallonen, 2021).

Structured Interviews involve using a standardized script with identical questions and pre-coded responses. The focus of these types of interviews remains in collecting quantifiable data, so they are known also as quantitative research interviews (Saunders, Lewis & Thornhill 2016, 391).

Unstructured Interviews are casual, there is no need to previously decide or choose questions, rather choosing a theme according to the research and having a clear idea of what the researcher would like to ask to collect in-depth information about the research subject or area of interest. The responder talks freely about their views, experiences, and actions on the matter, while the interviewer guides the interview. This method is used in qualitative research (Saunders, Lewis & Thornhill 2016, 391).

In semi-structured interviews, the central, basic questions are thought and written in advance through the interviewer adapts and change them according to the situation as the interview flows. The order in which the questions are asked might change, some questions might be omitted completely, while some new questions might be asked. These types of interviews are often recorded, or notes are taken. The methodology is considered as a qualitative research method (Saunders, Lewis & Thornhill 2016, 391).

According to Merriam & Tisdell (2015, 111) most commonly in qualitative studies, open-ended and fewer structured interviews are conducted.

Since the chosen method was qualitative research, structured interviews were ruled out as a method for conducting interviews.

It was considered that unstructured interviews would provide a scope of data too broad to be analyzed, and not in line with the research question, at the same time, semi-structured

interviews would be optimal to keep the scope limited to the theme according to the main research question and objectives of the research. For these motives, the method chosen was semi-structured interviews.

Once the interviews were developed, they were tested and corrected before the interviews took place.

For the reasons previously mentioned, the chosen research method for this thesis was multi-method qualitative research carried out by the means of individual semi-structured interviews conducted with the FFA instructors and cabin crew participants, also active observation to gain understanding and perspective.

The tools used for the research were several and varied ones from HH Finna, Google Scholar, Google Forms, Zotero, Skype for Business, Adobe tools, and MS Teams.

3.4.1 Benchmark as a comparative method

Benchmarking is defined as the undertaking of identifying, comprehending, and modifying or adjusting practices from companies to assist in the development and improvement of your organization (Tuominen, 2016, 5).

Benchmarking is simply a method, or a common practice utilized to improve an area or a company or organization by analyzing and comparing the same area of a similar company.

Benchmarking is about learning, understanding, and adapting the best practices by other organizations to the company's own, to improve performance (Tuominen, 2016, 9).

Any product, service, or process can be benchmarked, depending on the aim and goals (Tuominen, 2016, 10). It is important to first learn the company's, or in this case the commissioner's process, and be familiar with it, to understand it before it can be compared.

In this case benchmarking was about identifying the process for recurrent training that works best for other airlines, learning from them, analyzing, and adapting them to create a set of feasible suggestions for FFA.

This method was chosen as a complementary method to qualitative research and took place in the form of interviews with 5 different airline professionals. By conducting this benchmark research and analysis, more objective information was collected that was used to further improve the currently used methods by Finnair and FFA.

All participants in this benchmark portion of the study were fully informed of the topic of this study as well as the aim. They were all voluntary and informed that not trade secrets

were being asked nor going to be published, keeping with the quality and ethics of the study.

3.4.2 Sample

Qualitative research calls for sampling. As is the case many times, the researcher does not need to sample all data. it will depend on the amount of data needed, so in this case, where most of the collected data came from people, the next step was to decide how to select participants. (Braun & Clarke, 2013, 55).

Purposive sampling was used. Purposive sampling, also known as judgmental sampling, means the researcher uses her/his perception and common sense to select the best candidates that would allow to answer the research question and achieving the objectives (Saunders, Lewis & Thornhill 2016, 301). The selection of participants was based on their experience with both approaches being studied in this research, so they would have valuable data and insights into both classroom training and virtual training as per the research question and aim. This approach also permitted to reduce the pool of potential participants, and from there, the volunteers were interviewed.

For the FFA interviews, 12 CC instructors voluntarily participated with approval from their supervisor. These instructors have years of experience as active CC and have been trained to become instructors as well as approved by TRAFICOM.

These instructors teach both new entry CC as well as recurrent training CC. They actively investigate, educate, and discuss the methods used, the materials, cases, and most of all they keep updated on their knowledge, which in the aviation industry is essential to keep up-to-date, relevant, and fulfill the legal requirements.

To also get perspective from the student point of view, 7 Finnair active CC that had participated in virtual recurrent training were interviewed as well. It was considered of extreme importance to the author to gain access to their unrestricted point of view, with the idea in mind that this would enrich the knowledge offered to the commissioner as well as help develop more effective training techniques or improve the existing training where it is due.

Due to time constrictions, some interviews were conducted some over the internet, some over the phone, and some participants answered a semi-structured, open questionnaire where there was free space for them to add information if deemed necessary as well as to express opinions. (Appendix 3).

Some of the qualitative data can be collected through skype, email, and social media of different kinds. (Merriam, Tisdell, 2015, p. 115).

To safeguard the identity of the participants and keep with the ethics of the research, the responses analyzed were confidential.

The base questions utilized in this research can be found in appendixes 2 & 3.

For the benchmark section of the research, the researcher contacted several airlines, as well as EASA, approved training organizations, and training partners including Lufthansa Aviation Training, British Airways Global Learning Academy, and Air Baltic Training. Interviews were conducted with CC training teams from British Airways and Air Baltic as well as interviews with CC from Sunclass Airlines/Thomas Cook, Avion Express, Turkish Airlines, and Norra. This permitted an insight into the methods applied elsewhere.

3.4.3   Limitations

The Limitations were varied: originally meant to start in the summer/autumn 2020, it was delayed due to the limited resources of the airline and its uncertain working relation to the researcher, who was in the middle of an internship with the company.
Other limitations were presented in the form of employees being let go off, and limiting the pool of potential interviewees, uncertainty from the commissioner's part, whether this research was something it could be carried but the most important one was the limitation on the scope due to lack of specific literature review on the COVID-19 pandemic.
Due to the COVID-19 pandemic still raging at the time of the study, most instructors were temporarily laid-off on a rotating schedule, this meant that all of them were working as instructors and/or flying actively at some point during the pandemic, likewise previously to it.

3.5   Data Processing and Analysis

Qualitative data is often varied. Data collected in qualitative research can be complex, rich, and full, deriving from the researcher's opportunity to investigate the topic or issue. In quantitative research, the meaning is extracted from numbers, while in qualitative research it is obtained from words and images. Images, as well as words, can be sometimes ambiguous, imprecise, or can simply have different meanings, and might need further clarification. So, the quality of the research will be based on the interexchange between data collection and data analysis. (Saunders, Lewis & Thornhill 2016, 568).

Data analysis can be challenging. Qualitative research data analysis involves more than simply analyzing images and words. The most common approaches, entail organizing data into themes, coding it, a thorough read of the database, and interpretation of said data (Creswell, 2013, 179-180).

There are several methods for data analysis, but the most common method consists of analyzing the data as it is being collected (Creswell, 2013, 197; Saunders, Lewis & Thornhill 2016, 571, Braun & Clarke, 2013, 204). That way, if more questions arise after the first interview, they can be added or tailored for the second interview and so on. This process can continue for a very long period, as more questions arise and more people could potentially be interviewed, so it is important to know when to stop. There is such a thing as data saturation, this term marks the point when more data collection fails to produce new information (Creswell 2013, 199).

According to Braun & Clarke (2013, 173-174), qualitative analysis deals with different types of analysis the likes descriptive, interpretative, interrogative, etc. One of the most common methods used for social sciences is Thematic Analysis or TA.
Many authors and researchers were using this method with other names. Disappointed by this and the lack of a proper description, Braun & Clarke (2013, 178) decided to take upon themselves to name this method, after which, it grew, becoming accepted in many circles. Thematic analysis can be applied and used to analyze different types of research because flexibility is one of its strengths and because it is an analysis method, not for data collection or any of the sort. Another benefit of this analysis method is that it is available for researchers with not so much experience, so perfect for a student project or research work. (Braun & Clarke, 2013, 178).

Thematic analysis is about focusing on themes or patterns found in the collected data by coding the latest to identify said themes to analyze further. The way to proceed and analyze the data follows a logical order, so it can be used for both big amounts of data or smaller amounts (Saunders, Lewis & Thornhill 2016, 579).
According to Saunders, Lewis & Thornhill (2016, 579) thematic analysis has many uses:
- For the larger and differing amount of data
- To gather into one data from separate notes and transcripts that are related
- Recognize themes to analyze in more detail
- Create an explanation or representation of the data
- Originate and test theories built on the data
- Produce and confirm conclusions

To identify themes, the codes and the combined data need to be reviewed and evaluated, to recognize patterns that are similar and overlapping (Braun & Clarke, 2013, 225). Good themes fit together and fall into place on their own. Subthemes encapsulate and expand distinct details about the main point of a theme (Braun & Clarke, 2013, 231).
Given the flexibility of thematic analysis, this was the chosen method used to conduct the analysis of this research work.

The analysis followed the 7 steps described in Braun & Clarke (2013, 202) as described below.
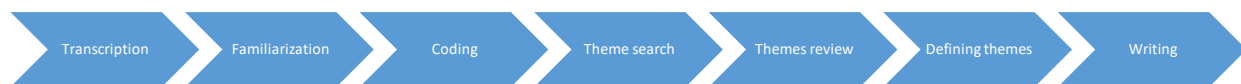

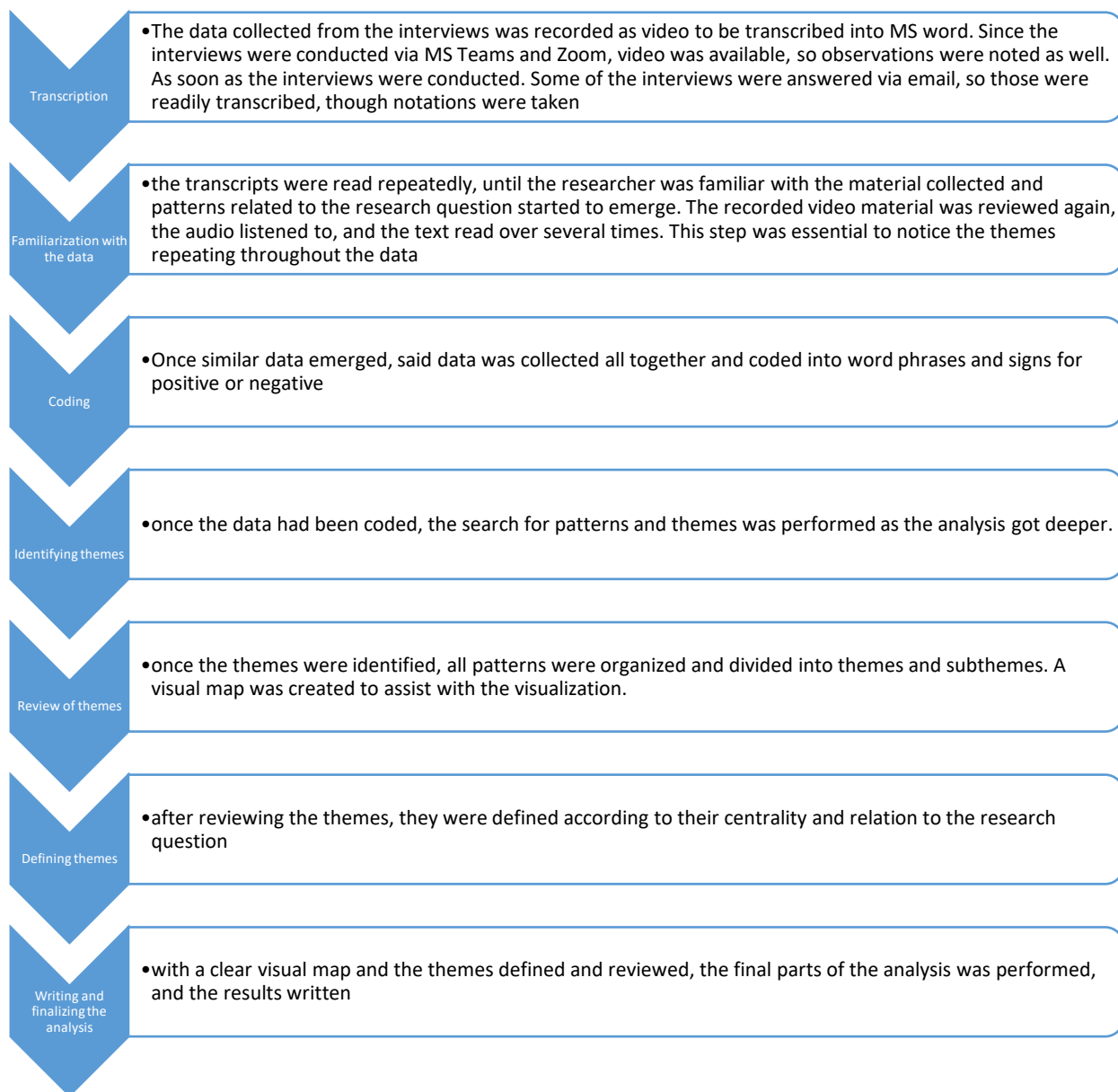Image 7. Steps of thematic analysis adapted from Braun & Clarke's method

Transcription
- The data collected from the interviews was recorded as video to be transcribed into MS word. Since the interviews were conducted via MS Teams and Zoom, video was available, so observations were noted as well. As soon as the interviews were conducted. Some of the interviews were answered via email, so those were readily transcribed, though notations were taken

Familiarization with the data
- the transcripts were read repeatedly, until the researcher was familiar with the material collected and patterns related to the research question started to emerge. The recorded video material was reviewed again, the audio listened to, and the text read over several times. This step was essential to notice the themes repeating throughout the data

Coding
- Once similar data emerged, said data was collected all together and coded into word phrases and signs for positive or negative

Identifying themes
- once the data had been coded, the search for patterns and themes was performed as the analysis got deeper.

Review of themes
- once the themes were identified, all patterns were organized and divided into themes and subthemes. A visual map was created to assist with the visualization.

Defining themes
- after reviewing the themes, they were defined according to their centrality and relation to the research question

Writing and finalizing the analysis
- with a clear visual map and the themes defined and reviewed, the final parts of the analysis was performed, and the results written

Image 8. Steps followed while conducting the analysis according to TA.

3.5.1 Validity, Reliability, and Generalizability

All research is scrutinized for validity and reliability. A way to approach research, while considering these notions, is by carefully contemplating the conceptualization of the

research, the data collection, analysis, subsequent interpretation, and presentation of the findings. (Merriam, Tisdell, 2015, 238).

However, validity and reliability are polemic terms. Many authors and researchers debate that these terms are right for quantitative research but not so much for qualitative, opting instead for alternative terms (Creswell, 2013, 244-246; Merriam, Tisdell, 2015, 237). Another consideration to be had is that different types of qualitative research bear a variety of criteria in reliability and validity (Merriam, Tisdell, 2015, 240).

According to Adri Labuschange (2003, 103) reliability in qualitative research centers its attention on recognizing and documenting repeated, precise, and congruous (or not) characteristics, like themes, perspectives, and patterns, or any occurrence under investigation in the same of different environments.

Reliability tells about replicability and consistency of the study results; this means the feasibility of replicating a previous study and reaching the same results and findings. If this is the case, then the study is reliable (Saunders, Lewis & Thornhill 2016, 202). For these reasons, all findings were reported in the conclusion section of the study, regardless of their result. The study was conducted ethically and unbiased.

Table 5. Threats to reliability adapted from Saunders, Lewis & Thornhill 2016

Threat	Explanation
Participant error	Factors that affect a participant response. Example: a participant filling a questionnaire when in a hurry, like before going home, a break, etc.
Participant bias	Factors that produce a false answer. Example: a participant that participates in an interview where they can be overheard, so it is not truthful.
Researcher error	Factors that affect the researcher analysis. For example, a researcher not familiar with the subject of the study, might not interpret answers correctly.
Researcher bias	Factors that affect the researchers' report of the answers. Example: a researcher letting its feelings towards an interviewee interfere with reporting the results

Above there is a list of factors that can affect reliability. All these factors were considered and addressed when conducting the study.

To avoid participant error and bias, it was asked of the participants to participate in the interviews during their free time, voluntarily, avoiding being overheard or in a hurry.

To avoid researcher error or bias, the researcher was very familiar with the subject beforehand, was prepared and knowledgeable. Another factor was that the participants were both familiar and unfamiliar with the researcher. The ones that knew the researcher,

however, were considered acquaintances with no ties to this. These characteristics keep in line with Saunders, Lewis & Thornhill's (2016 p.401) definition of preparedness and demonstration of competence and credibility when conducting semi-structured interviews.

Another factor was the method of collecting data by observation, while most instructors were familiar with the researcher at the time the data collection took place, the participation of the virtual training was completed in quality of silent observer, not engaging nor participating, previously agreed and with permission of their supervisor. This latter fact gave the researcher a new, neutral point of view, whereas data was collected from the environment, the participants from both sides, and the platform used.

The methods chosen for this study were in line with the aim set up by the researcher and commissioner. The study was conducted ethically and professionally. All factors were central to the validity of the study.

Validity touches on how suitable the methods chosen were and how correct the analysis of the results and the external validity was (Saunders, Lewis & Thornhill 2016, 202). External validity, also known as generalizability, means that the findings of a research study can be or not applicable to different settings.
Generalizability touches on the possibility of applying the research results to a different group or community (Braun & Clarke, 2013, 280). A way to demonstrate generalizability is for example to replicate the results using different samples chosen by another sampling method (Saunders, Lewis & Thornhill 2016, 295). Generalizability can be proven by applying the same result findings to a new group like for example a group of university students with similar circumstances, comparing classroom lessons to virtual lessons.

As per internal validity, there is one method utilized in qualitative research known as triangulation. It consists of using for example 3 methods to converge in one point. Merriam & Tisdell (2015, 244-245) point that when collecting data, and using several methods, the results of an interview can be cross-checked against the researcher's observations or documents read. By following these steps, it can be considered that triangulation was done since three methods of data collection were employed: observation, interviews, and documents.
There are several different ways of employing triangulation. It can be done by using several data collection methods, several researchers, or several theories. All these factors contributing to the internal validation of the study (Merriam & Tisdell, 2015, 245).
It is usually applied to case studies and the most usual procedure is to take the data collected from the interviews, observations in the field, and archived data. Applied to this research piece, the archived data is in short supply since the pandemic presented a

unique, unparalleled situation. The author of this study employed several methods of data collection, crossing the information obtained, thus, increasing the validity of it.

Having participants from both instructors' and CC's points of view helped with the validity of the research since the questions were semi-structured and similar and reflected on the same issues (Merriam, Tisdell, 2015, 245). Saunders, Lewis & Thornhill (2016 p.400) argue that while semi-structured interviews can be lacking validity, if these interviews are done carefully, and taken from different angles or points of view, a high level of validity can be accomplished.

4   Analysis and Results

This chapter addresses the results and findings from the collected and analyzed data. The interview section was divided into three, separating the interviews with FFA instructors from the ones with CC and the ones with other airlines.
In the end, a general analysis of the results is presented.

All interviews took place in late March and early April 2021, according to the participants' time and availability. The interviewees were contacted via email and LinkedIn, and participation in all interviews was voluntary. The participants were informed of the purpose of the study and the confidentiality previously as well.

4.1   Interviews with Cabin Crew

These interviews added a fresh point of view in several aspects. Gender or age was not asked for this study, rather their experience with both methods of training since it was considered essential for the analysis and comparison.
While many subthemes were almost equal to the ones collected and analyzed from the interviews with FFA instructors, many had new opinions and suggestions to add.

Since the main subject of the thesis is to compare classroom training versus virtual training for CC Recurrent training, it was quite clear that these two subjects would provide our two main themes. The subthemes were chosen based on the responses as seen in table 5.

Table 6. CC interview analysis

Classroom	Feedback	Virtual	Feedback
Easier interaction	++	Flexibility	++
Hands-on practice	+	Lack of communication	-
Better results	+	Loss of interest	-
New case studies	+	Safety	+
Long days	--	Lack of interaction with Colleagues	-
Lots of theory	--	Harder to concentrate	-
Better concentration	+	Long Hours	-
Socializing	+	Technical difficulties	--
Better communication	+	practical examples: videos	+
Bad air	-		
Old Installations	-		
Support from colleagues	+		

The signs on the side marked as feedback are used as indicators of whether the response was intended as a benefit or a challenge. Where there are multiple signs repeated it

means that 3 or more participants gave the same response. The Bold phrases indicate that more than two people answer in the same way if not the exact words.

A second, more precise analysis, as table 5 previously shown, could be extracted several common points.

The benefits of classroom training, according to CC include easier interaction, better concentration, socializing with other CC members, better communication. On the side of challenges, there are very long days and a lot of theory for the participants, which can make the training feel heavy.

The benefit of virtual training includes more flexibility since it can be done almost anywhere. The challenges were found in many technical difficulties, long hours becoming too much to be on the computer, and lack of communication.

In the end, the interviewees were asked which method of training they preferred, the answer was either classroom training or combined.

The reasons behind the choice comprise the facility to interact with instructors and colleagues, pros of classroom training being bigger than virtual training, no distractions. As for the participants choosing a combination of both, they argued that not everything needed to be taught in person, e-learning before the virtual training allows for more practice.

- Classroom training
- Virtual training
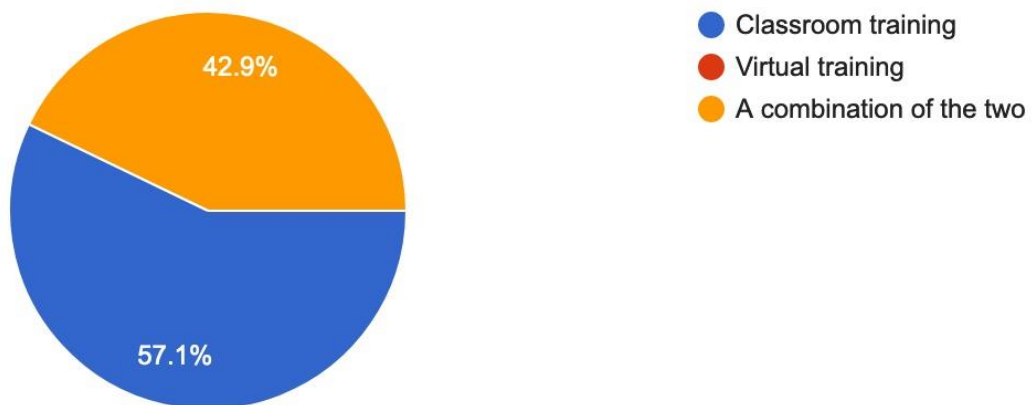- A combination of the two

42.9%

57.1%

Image 8. Pie chart showing the preferences of CC based on their interview responses

About the future, many respondents did not have suggestions or insights, rather hopes that virtual training could be considered at some point for theoretical training. One of the participants wished for longer Recurrent training and another for the training to be conducted in their mother tongue since sometimes this can impact understanding of the subject being taught or reviewed.

4.2   Interviews with Instructors

The pool of FFA instructors interviewed for the study consisted of both senior and junior instructors, both sexes, and all different ages ranging from the late twenties to mid-fifties. This allowed for wider perspectives.

Like with CC interviews the main themes were divided into Classroom or Virtual training to allow for comparison while building underneath them.

It was noted quite soon that many subthemes were very similar, and there were unanimous opinions in many aspects of the Recurrent training for CC.

Table 7. FFA Interview analysis

Classroom	Feedback	Virtual	Feedback
Interaction w/Students	++	**Lack of Interaction in person**	--
Students' eagerness	+	Dislike of computers	-
People	-	**Lack of VR tools**	-
Better Interaction	++	Good simulations	+
Lots of theory	--	**Technical problems**	--
Sharing knowledge	+	Need for capable personnel	-
Too little time for discussion	--	**Costs of VR programs**	-
Better results	+	Difficult to build communication	-
More communication	+	**flexibility**	+
Long days	-	**Long hours on the computer**	--
2 days of training is good	+	**Lack of control on who's active**	-
		difficult by yourself requires help/moderator	-

Participants were asked which type of training they preferred. Like with CC participants, the instructors chose either classroom training or a combination of the two. When asked about the reasons, for many, classroom training works better while for others a combination of the two allows for all kinds of learners to have access to the knowledge in a way that is more integrative, more flexible for the instructors and from a personal aspect, convenient as it includes no commute. Another aspect was the possibilities that might be available in the future with VR technology.
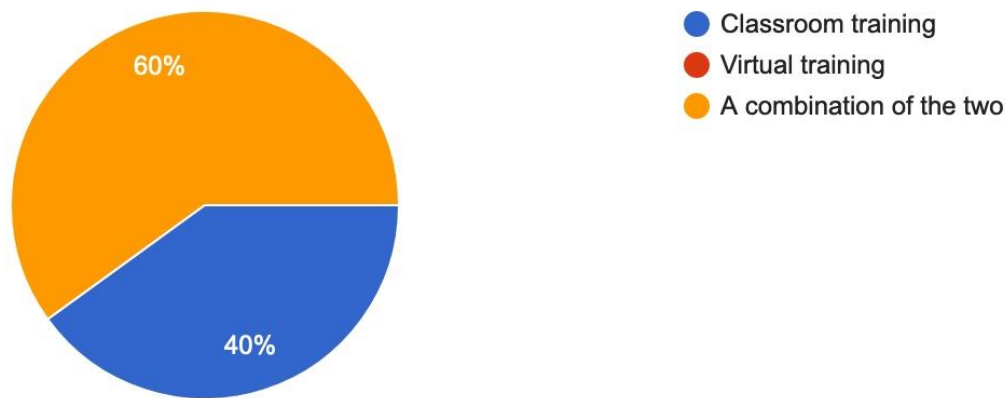
Image 9. Pie chart of the preferences of FFA instructors based on their interview responses

The virtual training feedback and opinions are harder than the classroom training ones as visible in the tables, however, when considering the future, many instructors agreed that there might be room for virtual training if some requirements are met.

These requirements are splitting days in half so that virtual training is not too long, and students don't lose focus, only theory should be taught virtually, where no special equipment is needed, people with computer skills could carry this training with a moderator to assist.

In the past, when recruiting was at its best and training was heavily imparted, FFA, often encountered problems due to the lack of facilities, as in free classrooms. Virtual training on theory could allow for these issues to be partially solved if it is carried efficiently.

4.3 Interview with other Airlines

Participants from five airlines were interviewed. Two or more members from each airline participated. Once more, themes and subthemes repeated themselves, though the methods utilized in many cases differed from the ones used last year at FFA.

Table 8. Comparison of Recurrent Training methods

Airline	Duration normally	Type of RT during the pandemic	preference
Sunclass/Thomas Cook	2 days/8 hours each	combined with safety measures	classroom
Norra	2 days/8 hours each	normal classroom	classroom
Avion Express	3 days/8 hours each	combined with safety measures	classroom
Turkish Airlines	1-4 days	combined with safety measures	classroom
Air Baltic	3 days (1 practical, 2 self-study)	combined with safety measures	indifferent

All the participants were asked why their preference and given a choice to add anything extra they thought relevant. Here's what they had to say:

- Sunclass: Recurrent Training is too important to be done online, classroom training is more natural, CC likes the hands-on training and drills, it is easier to communicate, the interaction between different cc members is good.
- Norra: Recurrent Training is too important to be done online, classroom training is more enjoyable, and there should be more training added after long layoff periods, as CC needs to refresh their training and is more important than ever now.
- Avion Express: CRM cannot be done virtually, and on classroom training, there is more interaction with the instructors. For the members with lots of years of experience, the theory part of the training should be allowed to be virtual.
- Turkish Airlines: Classroom training is better.
- Air Baltic: Practical training (hands-on and drills) is always a favorite. Wishes recurrent training could take more hours, especially CRM (3 h) minimum as per EASA. Would like practical Fire and smoke fighting annually! Wet ditching could be mandatory at least once per 3 years as well. The virtual classroom is the future – it is more flexible. Instructors should be trained to work with online tools and devices to keep a virtual classroom as effective as regular classroom training.

4.4 Observations

The author participated in both settings, classroom training, and virtual training. Several different classroom training settings as well as drills and hands-on training and a few virtual training sessions as well. All these observations from pieces of training were collected in the spring of 2020.

Another factor was the tasks performed during the internship at FFA, these gave the researcher opportunity and access not only to training, instructors, and facilities but also to the participants of these training sessions.

Some of the tasks performed were following up on the e-learnings the participants had to complete before starting training, gathering feedback from the participants, assisting them with technical problems when possible, assisting instructors with materials and different needs, assisting with drills, etc.

All these tasks played an important part in gathering information and observations for the study conducted.

The first and maybe one of the most important observations was the environment. FFA is situated in an old building, however, it is very welcoming. But most important the warmth and affability/approachability of the personnel, not only instructors but planners, chief instructors, maintenance team, and everyone involved.

This is important because it plays an important part in the participants' enthusiasm and motivation.

4.4.1 Classroom Training Observations

While the classroom training was taking place, students often approach to express happiness with the instructors and the courses, even when days are long and theory is vast, most seemed happy to be there, smiling and commenting positively directly to the researcher about how pleased and happy they were for being part of something bigger.

Behavior from the participants is always positive towards training, the instructors, and themselves, with a few exceptions. Participants are on time, prepared and ready to learn and interact. They were observed collaborating with their peers in a friendly and polite manner.

While theory learning is interesting, the enthusiasm noticed during different types of drills cannot be compared. The camaraderie observed was impressive, students interacted, helped, and encouraged each other through the most difficult parts.

The classroom training observed was interactive, even when the subject is theoretical, instructors like to make participants think and interact, developing the understanding further. This considering that participants, while they might know 2 or 3 people participating as well, most of CC are new or have not worked together, but the airline's motto of working as family, functions.

The instructors create strong bonds with the students, probably partly because of their friendliness and professionality and partly because they are active CC and fly often with other CC members.

Instructors also support each other and form strong bonds between themselves as well, going as far as interacting and becoming friends outside of work.

On a professional aspect, they often confer, they exchange opinions on effective techniques, and methods of instruction, materials, and suggestions for improvements and or changes.

Many days are quite long for instructors as they teach actively sometimes up to 8 hours in comparison to a basic schoolteacher who usually teaches a maximum of 6 hours. There is, however, transition and support, so while the days might be long, alternating with other instructors helps. When training is single-handed conducted by one instructor, it can feel sometimes long and tedious, and afterward, the instructors are very tired, without even counting the time that it might take to organize and clean the classroom afterward.

The theoretical material used in training is shared by instructors and pre-approved by their supervisor. Different pieces of training use different tools and aids, making it often visual and hands-on.

4.4.2   Virtual training observations

When the virtual training started, there were multiple issues. The training was divided into three parts, each with its link sent via email. Sometimes students had deleted the email with the access link to the training, had clicked on the link for the second one, or couldn't access it. In the emails it was explained and asked of them to download the program and test it beforehand, however, this did not always happen. When these access problems happened, the participants did not know who to contact.

A couple of times, the emails were sent to the wrong person, who happened to share the same name as the one meant for, though this was usually corrected a few days in advance.

A few times the screen would freeze, the voice would not work, and the instructors were alone, meaning they had to multitask and troubleshoot problems while lecturing. The last one was later addressed, and a moderator was added to attend to these issues and allow the main instructor to focus on the training itself.

A few instructors were familiar with the software utilized, MS Teams since it is used by FFA personnel. However, not all were familiar with the video side of it. To help other instructors, many were added as participants of the training, so they could learn from what the main lecturer was doing.

How the training is organized is usually very methodical and structured, it did, however, at the beginning of the virtual training felt messy and very improvised, with lack of a few considerations, like the usability of cameras for better interaction with the students, while allowing for control on participation, or preparedness of the instructors for such tasks. Some of these factors were later corrected, as the instructors gave feedback and other measures were adopted, like the inclusion of a second instructor in the training.

An important detail is that instructors were allowed access to the FFA facilities to carry on recurrent training as the environment for conducting the training needs to be appropriate, with no noise, and the necessary technology, which not all instructors have at home. Otherwise, it was easy for many who had the chance to work from a home office or a similar quiet space.

Many students actively engaged in the virtual training, participating, answering in the chat, giving examples, and being active. This was not the case for all, though.
During these pieces of training, the participants did not have their cameras on, so it was hard to tell what they were doing, especially when they were not so active in the chat or the lecture.

The days were as long, as they are in-classroom training at FFA, though it was quite clear that it is more strenuous to sit and participate on an electronic device for 8 hours with only a lunch break. At the end of the lectures, often the active dropped and there was this feeling in the air of just waiting for the training to end.

The adaptation of instructors to virtual training seemed varied, and while some seemed to enjoy it more than others, the skillset was very different. It was observed that some instructors took to it quite quickly while others struggle more.
A user guide along with some short, quick training in MS Teams for teaching could go a long way.

By the time this report was written, training has once more changed. It is now being conducted as classroom training with safety measures in place, reduced to one day only. This was not observed, only reported by instructors currently training participants.

4.5 Results of the analysis

A visual map was created for easier visualization of the data collected. The red color represents classroom training data, the blue one represents virtual classroom data, and the green one, the commonality of both. The bold letters emphasize the most recurrent subthemes and the signs + and -, whether the feedback was seen as a challenge or a benefit.
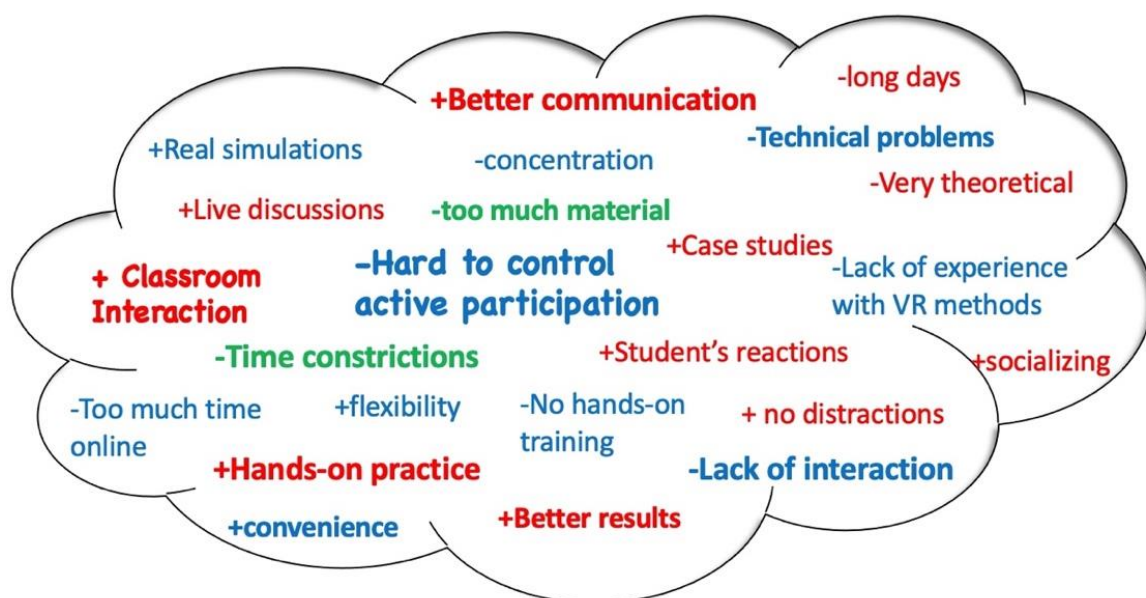
Image 10. Visual map used for data analysis

The visual map described in image 10, contains some of the subthemes collected from both CC interviews and FFA instructors' interviews. They were analyzed together to allow for consistency throughout the interview results.

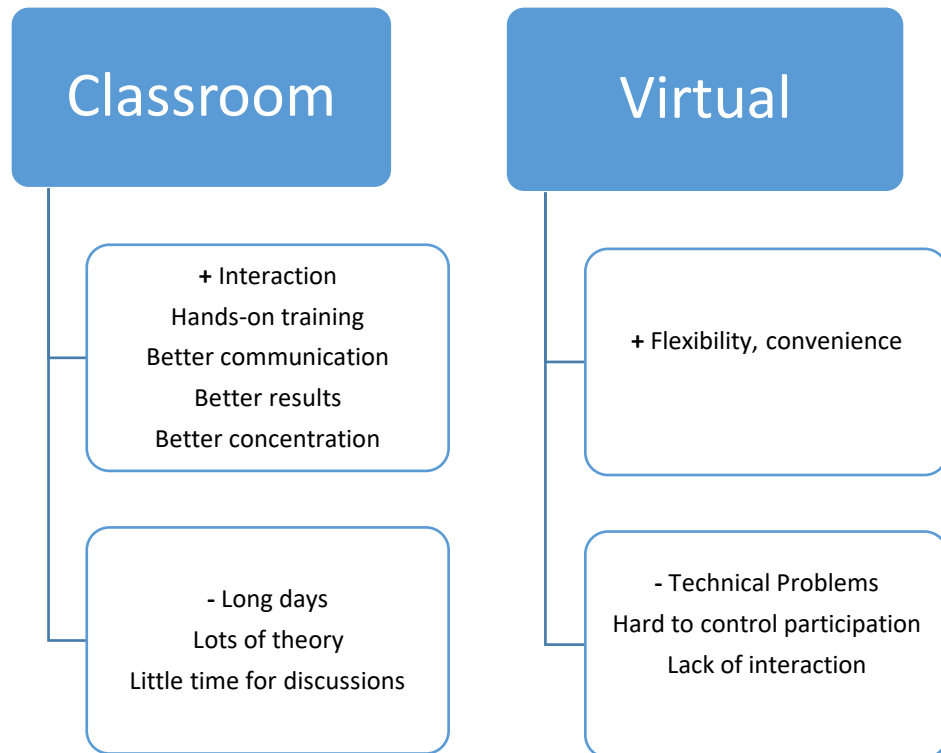| Classroom	Virtual
+ Interaction Hands-on training Better communication Better results Better concentration	**+** Flexibility, convenience
- Long days Lots of theory Little time for discussions	**-** Technical Problems Hard to control participation Lack of interaction

Image 11. Simplified graphic of the analysis results of CC and instructors' interviews

Classroom training is definitively a favorite between both groups, furthermore, it gathers more positive opinions than virtual training.

The benefits of classroom training were several and varied.

Classroom interaction referred to both positive interaction between CC members, as well as with the instructors, going together with better communication as well. This was one of the strongest subthemes.

Hands-on training referrers to both practical training, including but not exclusively drills, and simulations. These parts of the training are a CC favorite.

Better results mean both groups think classroom training to have more and better impact than virtual training.

Better concentration because on classroom training there are no distractions, unlike in a virtual environment when many factors can influence the attention span of the participants (family, pets, many hours in a pc, availability of other devices, etc.).

The challenges of classroom training are quite straightforward and related to each other.

Many participants of both groups consider the training to be too long, packed full of theory, and often with little time for discussions, as the days cannot be extended since the instructors need to follow up the schedule in the CC rosters and stick to it.

Other challenges include taking employees off their rosters to schedule training while

considering their flight time and free time.

For virtual training, the benefits are mostly flexibility of being able to participate from anywhere and convenience since it does not involve transportation.

However, the challenges are more. These include technical challenges like screen freezing, people not being able to enter the training or dropping, voice delays, video problems, etc. Another factor, in the beginning, when virtual training was first implemented, some instructors were alone, so they had to multitask and fix these problems while giving lectures.

Also, for the instructors is hard to control who is actively participating and who is just shy and quiet, some participants do not have their cameras on, as it is not a requirement, and this fact makes it more challenging to see what the participants are up to.

Finally, 8hs on a device (laptop, tablet, phone, pc) is too long. These many hours not only cause tiredness but also, loss of focus, boredom, and drops the interaction.

The observations gather during the data collection brought similar results, classroom training produces better interaction, carries better communication, and seems to bring about better overall results.

While the days are long, and the theory is plenty, participants seem to enjoy it, even more so in comparison to virtual training.

Virtual training brought on a few technical problems though they were dealt with, the fact remains that interaction and participation are hard to keep up with. And the skills needed need to be fine-tuned and developed further.

The benefits of virtual training were the flexibility and convenience as well as the development of new skills for the ones willing to do it.

5   Discussion

This chapter offers a discussion and exploration into the results of the study and its correlation to the research question and sub-questions. It also offers prospects for further possibilities on research and suggestions for the FFA.

5.1   What are the challenges and benefits of virtual training in comparison to classroom training for recurrent training?

The data showed that the only benefit extracted from virtual training was mostly the flexibility of being able to conduct the training in a pandemic when restrictions are in place. The challenges of virtual training collected from interviews included lack of control, lack of interaction, and technical problems, all of which are not small issues.

These need to be addressed if a protocol for emergency training is going to be put into place. There are methods and techniques as seen in the data collection that can be used and focus on how to conduct effective virtual training, surpassing all these problems.

Most of the participants of all 3 groups interviewed agreed that while virtual training might be useful in the future, it has not proven that effective yet, nonetheless organizations should plan and prepare for it.

The literature by LaBorie (2021) and Huggett (2014) analyzed in chapter 2, implies that virtual training can be used effectively if it is carefully planned and considerations are considered for technical issues that may arise, communication, and active participant engagement.

So, we can confirm that improvised virtual training, while it did its job, it is not the solution unless it is carried as suggested.

The interviews, observation, and benchmark data also showed that participants as well as instructors preferred classroom training, as it is more natural, communication and interaction are both better which in turn bring better results.

A factor that cannot be overseen is the fact that practical and hands-on training is needed and required by authorities and it cannot be replaced by virtual training. This is an essential part of the training that keeps CC skills up to date in case of emergency.

The challenges for classroom training were long days, with lots of theory and little or not enough time for discussion. All these issues can be easily addressed.

Suggestions included extending the number of training days and reducing hours, splitting training into theory online and practice at FFA facilities, and investing in VR programs to support VR learning in the future.

Other factors found in the literature reviewed in chapter 2 (Hunt 2013) showed that people like the "human touch" and socializing with peers, and classroom interaction enhances the learning experience, facilitates role-playing, and the development of skills.

At this point, the benefits of virtual training are limited and outweighed by far in both challenges and the classroom training itself, furthermore, the virtual training conducted by FFA was later interrupted and replaced by a one-day classroom training with safety measures in place.

5.2 Which are the factors that need to be taken into consideration when planning a virtual course?

Data shows that a well-planned virtual training can be successful if certain factors and considerations are considered.

Some of these were first and foremost, to train and educate the personnel who will be giving the virtual training. It is essential to be familiar with the software to avoid delays, look competent and effective. Preparing and testing the equipment is also important to make sure the camera and video work properly. Once this is done, have a moderator, other training, or someone who is also familiar with the software and can aid participants if or when technical problems arise. This way, the main trainer or lecturer can focus solely on the training, without having to deal with technical issues.

Having more than one trainer in the session further assists with handling interaction, like for example handling the chat.

The place where the instructor is located should be a peaceful environment, with no external noise and good lighting.

Many companies and organizations continue to adopt virtual training, proving that well done it can indeed be effective.

The case for CC is a bit different so far, as practical training is a legal requirement, however, this does not mean that theory needs to be done in person when no specific facilities are needed.

Data also showed that when FFA was at its best it did indeed have space problems, lacking classrooms, and physical space to keep training answering to the demand. Something that could be addressed by permitting more theory to be conducted live via virtual training, even saving costs.

5.3 What kind of competencies are needed from the FFA instructors who teach virtually?

First, all the personnel can be trained, however, virtual training should be done by instructors who feel comfortable with this method, and familiar with the software.

Based on the data, the skills needed were:

Active listening skills, patient, and calm, speaks clearly and keeps the participants interested and engaged, speaks to the camera, knows how to direct attention to the materials, has good time management, encourages participants to participate and collaborate, is empathetic, and knows when to ask for assistance.

Image 12. A chart on needed skills to conduct virtual training

As instructors back each other and assist each other, it can be assumed that anyone willing to participate in the instruction of virtual training needs to be tech-savvy, as moderators deal with tech problems from other users, not just the lecturing instructor.

The qualities can be learned and practiced, and so they should if FAA is to be prepared for future eventualities, which would affect its training capabilities, like with the pandemic.

5.4 How to make sure that virtual instruction fulfills EASA and therefore the Finnish CAA, TRAFICOM standards?

The study explored the data on the requirements set by EASA and followed by TRAFICOM for CC recurrent training. It is quite clear that part of the training cannot and should not be carried virtually but there is an opportunity for part of the theoretical training to be carried virtually if the syllabus is being followed and criteria are met.

However, at the time of this study, virtual training is only allowed temporarily due to the pandemic. Certain aspects are allowed to be taught as e-learning or virtually, but in normal circumstances, if changes were to be made, they need to be approved previously by the CAA.

The data from the interviews did indicate that some participants, hoped indeed that this aspect would change in the future and both EASA and the local CAAs would review their procedures, allowing for more flexibility.

5.5   Suggestions and Further research

Based on the data, several suggestions can be made for the FFA:

1. FFA needs to develop further plans and prepare for the future, in case of unforeseen events affecting training or simply further technological advances.
2. Instructors need further training and preparation on the use of software in case of virtual training being needed again.
3. The used software should be evaluated for effectiveness as other available software could prove better suited for said virtual activities.
4. Once Finnair has recovered financially, training should be re-evaluated, maybe considering, or exploring the possibility of investing more in VR capabilities.
5. Virtual training should not be discarded rather explored for improvements, considering conditions, training method improvements, and cost-saving capabilities.
6. Serious consideration should be given to other forms of training combining both capabilities, like splitting theory batches of 8 hours virtually into 2 days of 4 hours maximum and practical training at the FFA, to address the length of training for both instructors and participants.

This research proved valuable as there is nothing similar done before, it is current and in line with the actual situation affecting airlines and the findings will help FFA better prepare in the future. Further research is needed in CC virtual training, and procedures for CC training in emergency cases as data is scarce and limited.

Many airlines are quite tight-lipped about their training, the mandatory syllabus dictated by EASA is nonetheless the same for all European Airlines. More collaboration between airlines, about their training, would only strengthen the business, helping for better training development, raising the standards. A further, longer study with more participants would be interesting to follow.

Considering the technical advances like VR and the growth of popularity with some virtual platforms, it would be valuable to explore and compare the training position of Finnair and FFA in 5-7 years.

This pandemic, tested the capabilities of the FFA to adapt to change in a fast manner, dealing with safety measures and keeping with the requirements imposed by the

authorities. It provided a unique opportunity to, in fact, explore the solutions implemented and evaluate the results.

6   Conclusion

This study aimed at exploring and answering a comparative research question of challenges and benefits in training methods between classroom training and virtual training for CC recurrent training to explore further possibilities for virtual training in the future for FFA with requirements for doing so.

The interviews with both CC and FFA instructors provided insights into the advantages and disadvantages of both methods, backed by the literature.

- The main benefits of classroom training are access to practical and hands-on training, better flow of communication, and interaction between instructors and participants as well as participants themselves. All these benefits are closely related to the perceived success of classroom training.

- Participants of training, admitted to classroom training being long and riddled with theory, they still opted for classroom training over virtual training as the only benefit they saw for it was the flexibility of doing it from just about anywhere.

- The challenges, on the other hand, comprised technical problems, lack of interaction, and difficulty controlling active participation. Results of the studied literature data showed that these issues can be addressed and solved.

- Improvements can be made to virtual training if planned accordingly for successful training.

- There are benefits in technology to be explored, that could further assist virtual training in the future, though more research is needed.

The aviation industry is an old and regulated one, changes are not implemented easily, and these require approval from the pertinent authorities, in this case, TRAFICOM and EASA.

When this study was written, training methods had once more changed, not including virtual training, so the pool of participants to be interviewed was limited to those who had participated and could give insights into both methods of training.

Suggestions were made for further improvement on the discussion section of the study and this research paper itself was presented to the commissioner.

There were limitations as the participant pool for all three groups of interviewees was voluntary, the original research meant to be started during summer 2020 was postponed starting on December 2020 and personnel changes meant the research lost contact with the person who had commissioned the study had been agreed with.

Other limitations included the lack of material of the COVID-19 pandemic as well as material on CC training for both new entry or recurrent training.

7   Author's learning outcomes and reflection

During the planning phase of the thesis, I found myself overwhelmed by the prospect of conducting a research study on my own. This is where the previous course on thesis writing came in handy, as the steps had been demarcated. and while I have been a project manager for several projects and written report papers, I had never done a long project like this by myself.

This research taught me to focus, where and how to search for appropriate material related to my topic of study, and it helped me learn how to organize myself to conduct a study I could be proud of, promptly.
I learned more about theoretical methods of research, as well as data collection and analysis. My knowledge of training for cabin crew and training expanded, as my interest in aviation and particularly in airlines grew even further.

The literature review proved a challenge for me, as it meant going through lots of sources, searching for material related to the topic, and data that would back the data collected through interviews. The challenge was not only on the amount of data to be read through but finding actual material as there is not much written on CC training. This did, however, gave me motivation as it meant my topic of study was current, new, and relevant.

I enjoyed the data collection as I was familiar with semi-structured interviews as a method and had conducted them before for previous projects.
 The benchmark part of the study allowed me to network and get new professional contacts that could prove useful in the future.

The analysis of the results was time-consuming but the preparation of tables and visual aids to present was fun and enjoyable.

All in all, the challenges and new tasks encompassed by the thesis, further developed my skills and competencies.
I can say I am happy with the process and the result obtained from it, and even though I wish I would have had more time and more reach with other airlines for a wider benchmark data collection and analysis, I was still surprised by the result I was able to achieve, by myself.

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Appendices

Appendix 1. Original Research Plan

Research background information

The title of the thesis aims at giving the reader a quick overview of what this research project is about. As the work progresses and according to the commissioner's wishes, it may still change, as is a work in progress. The initial title is "Benefits and Challenges of Virtual Training Vs. Classroom training for Cabin & Flight Crew." Commissioned by Finnair Flight Academy.

Finnair Flight Academy, also known as FFA, is a branch of Finnair, where Finnair training for all flight attendants, simulator training for pilots, and recurrent training take place. It is equipped with 2 Airbus simulators (A320 & A350), door trainers, fire & smoke simulators, evacuation and ditching simulators with a pool, and several different slides.
This means that FFA is open 24 hours, 7 days a week for the flight simulators as they are used not only by Finnair's pilots but also for other airlines. Different types of flight crew and cabin crew courses are organized for other airline personnel and Finnair partners like OSM Aviation.
OSM Aviation is a Finnair partner, providing part of the crew for some of the Asia flights. The company offers different airlines full range crew management from recruitment, training, employment, etc. In this case, it means that they recruit flight attendants from their hubs in Hong Kong, Singapore, and New Delhi and employ them to work as cabin crew for Finnair whereas their employer is OSM Aviation. This crew is trained by Finnair at FFA, hence the importance.

When the first wave of COVID-19 hit Finland, remote work was suggested for all employees when possible. This presented a challenge for FFA, since it runs flight attendant courses almost non-stop, with the exceptions of summer holidays. Translated into numbers it means some 3-4 overlapping training of approximately 20-25 students each, plus instructors and other working personnel like technicians and planners.
From this point on, all courses were canceled, with exception of recurrent training.
The Author, who was doing her work placement with the FFA and working remotely, got a new job description, preparing and sending the invitations for both stewardesses and pilots, to participate in virtual recurring training. This, in turn, raised questions and the idea of the thesis research was born.

Objectives

This research thesis aims to gain perspective into the benefits that can be extracted from virtual training of flight personnel (cabin crew and flight crew) as well as the challenges it presents for both the instructors and the students in comparison to regular classroom training.

By analyzing and comparing both methods, the commissioner can understand better, plan, and prepare for the future, to continue training its personnel considering not only pandemics, disruptions, or natural disasters but also technological advances, trends, and developments.

The research questions are as follows:

> RQ1) What are the challenges and benefits of virtual training in comparison to classroom training for recurrent training?

And the sub-questions:

- Which are the factors that need to be taken into consideration when planning a virtual course?
- What kind of competencies are needed from the FFA instructors who teach virtually?
- How to make sure that virtual instruction fulfills the European Union Aviation Safety Agency (EASA) and therefore the Finnish Civil Aviation Authority, Traficom standards.

For Aviation, the controlling body or civil aviation authority in Finland, Traficom, has certain regulations in place which mean presence in these courses is required and mandatory, so it is important to establish if virtual training, other than temporarily or in extreme circumstances is a realistic possibility and if so, how.

The outcome of this project will be a report with the findings accompanied by a set of recommendations based on the results, which will then be presented on a date chosen by the commissioner.

Research strategy

Listed below there is a list of the thesis process or strategy to be followed by the author. By keeping to this strategy, the author keeps on track of the tasks and the timeline to be followed.
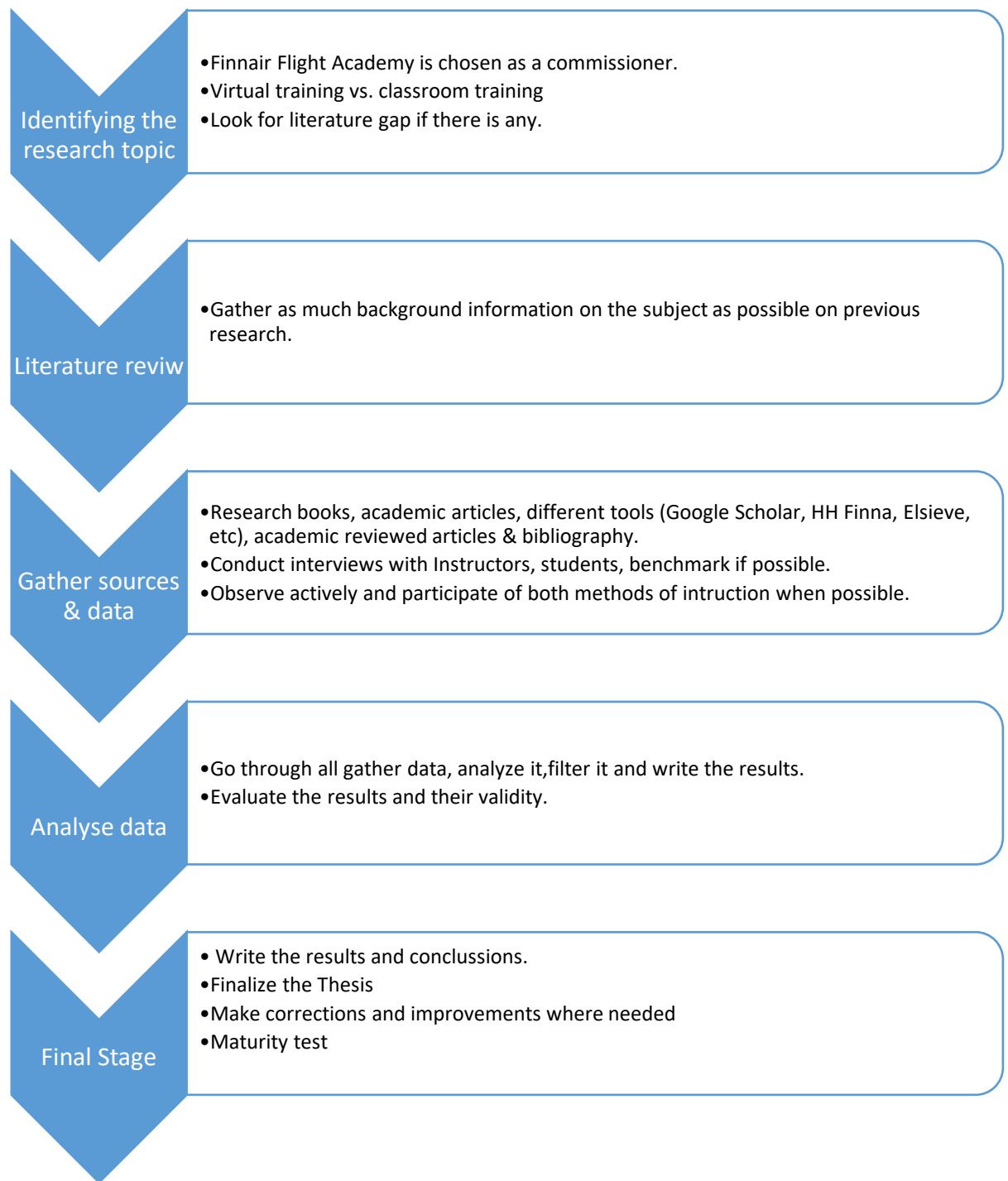
Identifying the research topic
- Finnair Flight Academy is chosen as a commissioner.
- Virtual training vs. classroom training
- Look for literature gap if there is any.

Literature reviw
- Gather as much background information on the subject as possible on previous research.

Gather sources & data
- Research books, academic articles, different tools (Google Scholar, HH Finna, Elsieve, etc), academic reviewed articles & bibliography.
- Conduct interviews with Instructors, students, benchmark if possible.
- Observe actively and participate of both methods of intruction when possible.

Analyse data
- Go through all gather data, analyze it,filter it and write the results.
- Evaluate the results and their validity.

Final Stage
- Write the results and conclussions.
- Finalize the Thesis
- Make corrections and improvements where needed
- Maturity test

Image 1. Author's thesis strategy.

Research Methods

The chosen research method for this thesis is qualitative research employing interviews to be conducted with the instructors, participants, and a Traficom representative to gain understanding and perspective from all 3 parts.

Traficom perspective, as the controlling body for aviation in Finland is key, as it determines which training is mandatory in the classroom, sets standards, and is responsible for overseeing that not only standards but requirements and law are followed.

The author aims to conduct phone interviews with other airlines (competitors and partners) for benchmarking where possible and applicable, as this can offer a unique insight on how other airlines manage their training normally as well as through this crisis. The author has had the chance to participate in the commissioner's classroom training and will do so again as well as the virtual training where possible, as a method of data collection by observation.

All the interviews will be recorded with the participants' permission, then the transcripts will be analyzed and together with the gathered data and literature review, the report will be written with the results and recommendations.
A presentation will be prepared for the commissioner as well.

The tools used for the research will be several and varied ones from HH Finna, Google Scholar, Zotero, Skype for Business, Adobe tools, and MS Teams.

Literature Review
The literature review is ample when it comes to the classroom or virtual training, however very limited when it comes specifically to cabin crew and flight crew. This is an opportunity to research and study more in the field.
The literature review will continue to be explored through the project. The list underneath is just preliminary.

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Appendix 2. Questions for the FFA Instructors:

Type of instructor *

◯ Safety

◯ Service

◯ First Aid

◯ other

How long have you worked as an FFA instructor? *

◯ Under 3 years

◯ 3 -5 years

◯ 5 years +

1. What do you enjoy the most about classroom training? (Recurring training in person) *

Your answer

2. What are the challenges of classroom training? (Recurring training in person) *

Your answer

3. What do you enjoy the most of virtual training? (Virtual recurring training) *

Your answer

4. What are the challenges of virtual training? (Virtual recurring training) *

Your answer

5. Which one you prefer? *

◯ Classroom training

◯ Virtual training

◯ A combination of the two

6. Please explain your previous answer (5). *

Your answer

7. Which one of the two do you consider to be more beneficial from an instructive point of view?

◯ Classroom training

◯ Virtual training

◯ both done right

◯ Not entirely sure

8. Do you have any suggestions for improvement?

Your answer

Appendix 3. Questionnaire for Finnair Cabin Crew

How long have you worked as a flight attendant? *

○ Under 3 years

○ 3 -5 years

○ 5 years +

1. What do you enjoy the most about classroom training? (Recurring training in person) *

Your answer

2. What are the challenges of classroom training? (Recurring training in person) *

Your answer

3. What do you enjoy the most of virtual training? (Virtual recurring training) *

Your answer

4. What are the challenges of virtual training? (Virtual recurring training) *

Your answer

5. Which one you prefer? *

○ Classroom training

○ Virtual training

○ A combination of the two

6. Please explain your previous answer (5). *

Your answer

7. Do you have any suggestions for improvement?

Your answer

Appendix 4. Benchmark

Base Questions for *Airlines* on Cabin Crew Recurrent Training

This research aims at improving the current methods utilized for recurring Training in Cabin Crew & Flight Crew. The results of this interview will be posted anonymously, just mention of the airline will be used.

Date:

1. How is the CC recurrent training conducted in normal circumstances? (In the classroom, virtual, combination, outsourced)

2. How long does the CC recurrent training last? (days, hours)
—

3. How did you manage to keep your CC Recurrent training during the pandemic? (In the classroom, virtual, combination, outsourced).
—

4. Was part of your CC recurrent training postponed (ex. practical drills, door training? Or was it conducted normally keeping social distancing?
—

5. If virtual recurrent training was arranged, what kind of feedback was received? Positive, negative, mixed?
—

6. How did the instructors receive/liked the virtual training if this happened?
—

7. Could you name some of the challenges and advantages of conducting virtual training if such took place?
—

8. Which kind of training do you prefer? why?

9. Anything you and your team would like to add?
—