THE INCREASING ROLE OF USING AIR TRAINING EQUIPMENT IN THE PROCESS OF EDUCATION AND COORDINATION OF THE CREW DUTIES

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Abstract: The article shows a new approach to the vision of air training equipment in the process of training for flight and cabin crew. This approach allows for analysis and assessment of particular phases of theoretical and practical training. Moreover, this aspect influences on safety of aircraft and security of passengers.

Because of a broad context, the subject of the research has been limited to the most significant technical aspects of air training in the crew training process.

Key words: air training, flight simulator, crew work coordination.

1. INTRODUCTION

Nowadays we travel more and more. At the same time we are awaiting the highest standards of services. From the very beginning of coming to the airport and finishing in reaching our destination airport. There are various mechanisms, procedures and professionals who take care of particular parts of our trip. They perform their duties, support in necessary situations. It is: pilots, cabin crew, ground staff that is responsible for our safety and comfort. Airlines and aviation companies prepare their employees to work using available technical equipment.

2. THE NEW APPROACH TO GROUND HANDLING AND CREW WORK COORDINATION

The responsibilities of ground handling staff are very broad. Generally speaking, it is to ensure the safety and comfort of airline passengers and crew members. We can enlist at least checking baggage, cleaning the aircraft, stocking it with refreshments or refueling. People being in charge of defined scope of action at the airport must make sure the ramps, runways or the area nearby is deprived of any debris that could cause damage to the aircraft taking off or landing.

Each group of handling staff is in charge of different area of safety process. It is important to mention that all the actions taken by particular staff is a part of a huge chain process. The various actions include inspecting, storing and transporting luggage, stocking the aircraft with food and drinks that are distributed during flight, cleaning, refueling or preparing passengers to be boarded and begin a comfortable journey.

Good working order of the ground staff is inevitable although for an average passenger it is not so obvious and moreover, it does not have to be. The aim to gain for the passenger is to get to the plane in the shortest period of time. For some people saying
‘time is money’ is extremely true. Therefore, they appreciate their time, spending every free minute working while waiting at the airport [3].

Not all the staff has contact with passengers. Sometimes there is no need to work directly with customers. For example, maintenance staff. They take care of the proper and safe preparing the aircraft to the flight. They follow their own internal organizational procedures which allow us to fly well-maintained planes. On the other hand, we have to mention check-in staff or cabin crew who are on the first line, they are responsible for the image of the company. The image is created by companies’ managers, however the behavior and help of the staff in most cases is invaluable.

The fundamental knowledge of the staff is not enough in fast-developing companies, especially at the biggest airports. Coordination of the smaller actions of workers and first-line employees has to be forced by continuous trainings or workshops. Let us think about the shortage of time and the aircraft full of passengers, the charter flight with the necessity to clean the aircraft. Typical and well know situation. Coordination of the preparing the aircraft to the next flight in time shorter than 20 minutes? One could say ‘impossible’. Modern airlines try to have the shortest in-between flights operations. How to do that? The answer is very simple: ‘to have well qualified and well organized staff’.

The cabin crew and the flight crew are the groups of employees who can coordinate almost all the actions nearby the aircraft. Boarding and de-boarding almost at the same time? Of course, it is possible if the cleaning is planned before for certain destinations and the cleaning staff are ready at once without waiting for them. When the so-far passengers leave the aircraft using the rear door, the new passengers can be prepared to be welcomed at the front. Refueling or pre-departure check can be done during the presence of the passengers onboard, however certain circumstances must be filled in. Most companies allow to take passengers with the aircraft being just refueled. There are special procedures defined in so called Standard Operating Procedures (SOP). It provides a flight crew with a step by step guide to effectively and safely carry out operations. SOP's can also be developed and modified when necessary to incorporate improvements based on experience, accidents or innovations from other manufacturers or operators to meet the needs of a particular company.

All in all, we need continuous improvement within air transportation in customer care area. Treating the customer and their needs as a priority is obvious. When we start thinking as of the chain of service which is developing all the time and employees who can foresee some situations or even prevent certain unnecessary stoppage, the companies will always be on time and have only satisfied passengers.

3. AN ENORMOUS ROLE OF THE AIR TRAINING EQUIPMENT IN FLIGHT TRAINING

Working as cabin crew for a major airline is an exciting and challenging experience. In addition to jetting off to exotic destinations, the job also requires a high degree of responsibility and specialization to ensure the safety and comfort of passengers in line with industry regulations.

This job is ideal for young professionals, introducing the skills and responsibilities expected by the world’s leading airlines. Special emphasis is given to customer service and procedures for handling unusual situations during flight.

However, great preparation to the profession means hard work and a lot of trainings. In most cases, the trainings are provided by the airlines who are recruiting the cabin crew. The whole process is quite long and demanding. However, the practical training is the most important and at the same time final phase just before commencing the job.
about the training process of the cabin crew it is similar to flight crew process, however the specification is different.

The practical training include:
- Introduction to Aircraft and Aviation Familiarization
- Crew Member Coordination and Communication
- Customer Service and managing passenger interactions, including e.g. oxygen administration to passengers if necessary
- Safety and emergency procedures, including water survival training, aircraft evacuation, etc.

Using the original aircraft parts we produce a range of very effective, classroom install cabin kits, which can vary in size according to available space and class sizes in your training room.

However, a typical cabin kit would be one side of a narrow body cabin (Boeing 737 or Airbus A320) and four rows of Passenger triple seats, with kits comprising sidewalls, lighting panels, overhead luggage bins and Passenger Service Units (PSU) complete with passenger masks.

Simulators used for training for cabin crew is generally defined as flight simulators with one changing factor only, that is full flight simulator – moving the body cabin being the image of a real aircraft, changing the position of the board while emergency situation. It is electrically driven motion platform shown below:

![FIG.3.1 Electrically driven platform of a flight simulator](source: www.boschrexroth.com)

Another type of flight device training for cabin crew is narrow body cabin fixed on not moving frame. However, the height is very important, for Boeing 737 it is approximately 11 meters. Having a real fuselage of the aircraft, the training is very effective. It is possible to exercise using the emergency slide, passenger evacuation or opening the emergency exits [1].

![FIG.3.2 CSA flight simulator Source:author’s own material]
4. THE AIR TRAINING EQUIPMENT IN FLIGHT CREW TRAINING

Air training equipment in flight training is extremely important. New technologies present in modern aircraft place increasing requirements on air personnel, especially on the pilot operating an aircraft. Flying itself is a difficult and a complex task which requires from pilotsvast general knowledge and technical expertise as well as a wide range of skills appropriate to the aircraft type and the tasks performed. Particular attention is currently paid to the development of air training equipment, which is used in the process of basic training and professional development of pilots.

Air training equipment is a practical and well-tested tool used in assisting theoretical and practical training of pilots:

![Air training equipment](Image)

Now we will try to refer to air training equipment assisting practical flight training, with particular emphasis on a flight simulator. Specialized training with the use of air training equipment is an essential method for exerting the overall impact on the pilot’s abilities. This method brings about a comprehensive psychophysical development of desirable characteristics in the pilot. Diversity of demands on pilots of various types of aircraft means that not all air training equipment can be used in pilot training in the same manner.

Flight simulator is a device or a computer program which simulates the aircraft operation in real flight conditions. Flight simulator types include simple computer games to more advanced flight simulators that are full-sized functional duplicates of the cockpit with the on-board systems and instrumentation mounted on a hydraulic platform or on a hypergravity centrifuge producing G-load values reflecting those which are encountered in various phases of flight.

The simplest modern flight simulator usually consists of: one or more PC monitors providing visualization of internal and external (including airport infrastructure, terrain, weather conditions, etc.) environment as well as mission execution environment; aircraft control devices (controls stick, yoke, joystick, pedals). The aim of realistic mirror-like conditions is to enter flight control data (pitch, roll, direction); computer systems for internal and external communications, simulation of sounds that occur in the aircraft, computer systems used for processing the input signals selected by the pilot in IFR (flight control and navigation instruments, engine control devices, radio navigation systems, etc.).

Given the complexity of the design and the applied degree of imitation fidelity of the cockpit, equipment and aircraft systems, as well as the simulation of loads that occur during flight maneuvers, Flight Simulation Training Devices (FSTD) may be divided into four major groups:

1. The advanced simulator is Full Flight Simulator (FFS) (Fig.4.2) - the most technologically advanced type of flight simulator. A complete, full-sized and

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1 Part-ORA – Subpart FSTD, CS-FSTD(A)/(H)
functional replica of the cockpit of a given aircraft type, model and series, combined with the appropriate computer system necessary to simulate the aircraft operation on the ground and in the air. The visualization system provides a view outside the cockpit, and the system of actuators simulates physical sensations associated with motion. Devices of this type are used, i.a., to train crews in dangerous flight conditions, and to develop and reinforce flying habits/currency.

**FIG. 4.2** Full Flight Simulator Source: www.airbus.com

2. Flight Training Device (FTD) (Fig. 4.3) is a complete, full-sized and functional replica of the cockpit, instruments and control panels of a given aircraft type, combined with the appropriate computer system necessary to simulate the aircraft operation on the ground and in the air. Such devices do not necessarily have to be equipped with visualization and motion simulation systems.

**FIG. 4.3** Flight Training Device (FTD) Source: www.aopa.com

3. Flight and Navigation Procedures Trainer (FNPT) (Fig. 4.4) – Cockpit model combined with the appropriate computer system necessary to represent the type or group of aircraft during flight operations. Devices of this type are used, among other things, to train procedural flights and navigation.

**FIG. 4.4** Flight and Navigation Procedures Trainer (FNPTII) Source: www.ai.com.pl

4. Basic Instrument Training Device (BITD) is a device which simulates aircraft instruments (they can be displayed on the screen) to allow training at least according to the procedural aspects of the IFR flights.

Simulators admitted to be used in the training of licensed flight personnel must meet the requirements of Part-ORA (Subpart FSTD). Compliance with these requirements by the
device is confirmed by the relevant certificate issued by an authorized state institution. In Poland such a certificate is issued by the President of the Civil Aviation Authority.

Regardless of the type of aviation and the stage of flight training/professional development, flight simulators are a widely used pilot training tool. The result of experts’ opinions, flightsimulationstudies, and the author’s own opinion permit to conclude that the essential benefits of the flight simulator, including those relevant to the pilot's situational awareness can include the following points:

1. **High training effectiveness.** The tests related to measuring the effectiveness of flight simulation training demonstrated that the trainees develop knowledge and skills at a level similar to that achieved in a real flight.

2. **Maintaining high standards of training safety.** Due to the necessity of maintaining a certain level of safety during training, simulators sometimes provide the only way to learn some maneuvers, the elements of air operations performed in the event of dangerous weather conditions (wind shear, turbulence, icing, jet streams, etc.).

3. **Availability.** The fact that the use of the flight simulator in flight training is not dependent on the current ambient weather conditions, the state of the airport, or the good working condition of ground navigation equipment allows for a more methodical approach to the training from the human factor perspective.

4. **Repeatability.** The simulator does not require the implementation of the full cycle of a given air operation (pre-flight check, take-off, to discuss and repeat a specific part of the exercise by the trainee.

5. **Predictability.** Simulator training prevents the occurrence of such dangerous phenomena as air traffic collision, wind shear, icing, weather deterioration, turbulence, closure of airports, etc.

6. **Learning by mistakes** – with unlimited possibilities of applying in a number of ways to solve an in-flight operational problem with "zero" risk level, the simulator allows the student to select the solution which is the most optimal from his perspective and to test it.

7. **Maintaining pilot currency and proper attention allocation** - systematic training exercises on the flight simulator allows the trainee to consolidate the desired habits.

8. **Credibility as a tool applied in air accident investigation.** Flight simulators ensure accurate reconstruction of flight conditions, the situation onboard, and the evaluation of the actions taken by the crew of the aircraft in the event of an undesirable flight-related event.

9. **Simulator can be used for training for the prototype aircraft under design, or aircraft employing new solutions (systems).** Performing this task in practice, without the prior simulation and practice of selected flight maneuvers could be associated with a high level of risk and, in extreme situations, with a high probability of undesirable flight-related event.

10. **High comfort of performing the training tasks by the instructor.** An undoubted advantage of the flight simulator in comparison with the aircraft is the fact that the instructor can focus his attention fully on the trainee and the task performed.

11. **Optimizing the use of financial resources.** The use of the simulator can significantly reduce the training costs as compared to those incurred for the use of the aircraft [4].

Despite the advantages mentioned above, no simulator can currently be defined as a device that can replace the hands-on training in the air. It is still considered as a very important form of preparing or supplementing practical training in the air.

**4. CONCLUSION & ACKNOWLEDGMENT**

The coordination of the ground handling is inevitable. To get the success there should be well-organized staff being aware of different situations that can happen and to know
how to solve problems before they appear. The well-trained and qualified crew is the fundamental strength of every company. The profession of a pilot, flight attendant or any other person engaged in passenger care ought to be customer oriented approach. Customer care includes among others providing safety during the flight itself and convenience before and afterwards.

The technical systems are one of the mechanisms which are to help us and to make the work easier and more comfortable for the passengers. There is a continuous need to make the air trainings more effective and more and more realistic. They shall reflect as many aspects of real pilot’s work as it is possible.

In conclusion, taking into account all aspects mentioned, we can be convinced the better air training is offered the better staff is graduated from aviation training organizations (ATOs). And at the same time we can have highly qualified licensed personnel to fly all over the world.

REFERENCES
