CHALLENGES AND DEVELOPMENT OF TRAINING IN THE AVIATION INDUSTRY

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Abstract In the field of development of employees in the aviation industry, according to trends and changes in time and space, new paradigms of operation or conducting employee training are developing. It goes from the classical principles of education, which directs training in the program development based on the assessment of employee competencies. The paper addresses a specific area of training development developed in synergy between the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), the International Federation of Aircraft Pilots Associations (IFALPA) and other partners. An integrated approach to employee training focuses, on the one hand, on development and, on the other hand, on the ongoing assessment of employees' knowledge, skills and attitudes.

1   Introduction

Competencies are the most important good and means by which the individual, organizations and society in general progress. From this point of view, regardless of the organization, it is necessary to be aware of how to accelerate the development of employees and consequently organizations, and how to enable organizations to grow, in parallel with changes in time and space.

In the aviation industry, employee development needs are as important as in other industries. That is why it is appropriate to present in the conference article the area of how to promote knowledge, skills and attitudes of employees, which, given the characteristics of the training, represents a framework for further directional development of employees in the aviation industry.

The beginnings of competence based learning come from the ICAO organization, which in 2017 presented the characteristics and deviations of the mentioned training of employees from traditional forms.

Traditional forms are described as a training program (required hours, practice, etc.), with the design and content of the program, which is also influenced by e.g. employee testing.

Competence based training is an integrated and "targeted" training program, which includes the design of the program (based on needs analysis, adjust the skills of employees) and feedback on the success of training.

2   Knowledge, skills and attitudes

Competence is generally defined as consisting of integrated pieces of knowledge, skills and attitudes (Lizzio & Wilson, 2004), and is assumed to be prerequisite for adequate functioning on the job (Eraut, 1994, Hager et al., 1990).

Theories on competence development emphasise that learners must not only acquire but also integrate knowledge, skills and attitudes to achieve vocational competence (Eraut, 1994, Kaslow et al., 2007).

From a cognitive psychological perspective, different kinds of knowledge can be distinguished, and the distinction between declarative and procedural knowledge is the most widely used. Declarative knowledge is the factual information that a person knows and can report on (Anderson & Schunn, 2000). Procedural knowledge is the connection or use of pieces of declarative knowledge, and generally refers to knowledge that cannot be communicated. Often, a third form of knowledge is added, called strategic or metacognitive knowledge, which pertains to knowledge about the task, context, problem-solving processes and oneself (Krathwohl, 2002).

Knowledge focuses on the understanding of concepts. It is theoretical and not practical. An individual may have an understanding of a topic or tool or some textbook knowledge of it but have no experience applying it. For example, someone might have read hundreds of articles on health and nutrition, many of them in scientific journals, but that doesn't make that person qualified to dispense advice on nutrition (The Balance Careers, 2022).

Skills are interwoven with knowledge and pertain to the psychomotor domain in manipulating and constructing (Morrison, Ross, & Kemp, 2001). Fitts and Posner (1967) define skilled performance as an organised sequence of activities that includes both the organisation of movement and symbolic information (i.e. both motor skills and cognitive skills). Skilled behaviour is goal-directed and sensory information and feedback about response movements is continuously used during performance. We thus view skills as doing or acting in practice, involving motor skills as well as cognitive skills.

The capabilities or proficiencies developed through training or hands-on experience. Skills are the practical application of theoretical knowledge. Someone can take a course on investing in financial futures, and therefore has knowledge of it. But getting experience in trading these instruments adds skills (The Balance Careers, 2022).

Attitudes are regarded as important learning objectives (Gagné, 1985, Krathwohl et al., 1956). They are part of the affective domain and influence people's choice of actions (Ajzen, 1991). In social psychology, attitudes have been an important subject of research for almost a century, but debates continue about its proper definition. Definitions differ with regard to a number of aspects: (1) whether attitudes focus on

general or more specific objects, (2) whether a distinction should be made between implicit and explicit attitudes, and (3) whether attitudes are stable, trait-like or more context-specific.

Often confused with skills, yet there is a subtle but important difference. Abilities are the innate traits or talents that a person brings to a task or situation. Many people can learn to negotiate competently by acquiring knowledge about it and practicing the skills it requires. A few are brilliant negotiators because they have the innate ability to persuade (The Balance Careers, 2022).

3   KSA training – what is it?

Area 100 KSA is a new philosophy in pilot training that concentrates on moving away from fact-based education towards competency-based training and assessment (CBTA). The new holistic approach to pilot training aims to develop and assess pilots' Knowledge, Skills, and Attitudes (KSA) from day one at ground school and underlay the whole theoretical knowledge training system (Aviation voice, 2018).

Area 100 KSA is a part of a broader concept – CBTA – developed mutually by the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), the International Federation of Air Line Pilots' Associations (IFALPA), and other industry partners (Aviation Voice, 2018).

CBTA, which stands for competency-based training and assessment, is oriented towards helping student pilots to develop and demonstrate core technical and behavioural competencies to do their job successfully. Among the technical ones, for instance, there are two Aircraft Flight Path Management related competencies – Manual Control and Automation. In contrast, a combination of Knowledge, Skills, and Attitudes (KSA) make up the following behavioural competencies (Aviation voice, 2018):

–   Communication (COM)
–   Leadership and teamwork (LTW)
–   Problem-solving and decision-making (PSD)
–   Situation awareness (SAW)

- Workload management (WLM)
- Application of knowledge (KNO)

4 Are employees making any progress?

As students' progress with their KSAs, the assessments' contents will be levelling up as well. The first formative assessment must create room to develop the competencies and ask questions. The following two summative assessments must collectively give the student opportunity to demonstrate the competencies in all KSA learning objectives. The instructors will use ATO's performance indicators to assess the students' KSAs and provide feedback. The mental math test should be scenario-based and include estimations and calculations. There will be no multiple-choice questions, and students will not be allowed to use calculators (Aviation voice, 2018).

The competent authorities will not take the competency-based approach, and the examination system in CAA will remain the same. However, ATOs will be responsible for assessing student pilots' ability in each of the Area 100 KSA competencies before they take their final theoretical knowledge examination (Aviation voice, 2018).

Ultimately, ATOs can implement Area 100 KSA in a reasonably pragmatic fashion, utilizing best practices to meet airlines' needs and develop a "thinking« pilot mind-set. Based on EASA "European Industry Questionnaire," 97.3% of the respondents answered that "developing the trainee's understanding and knowledge, skills and attitudes is important and should commence on day one of the GS (Aviation voice, 2018). "

EASA emphasizes that flight academies should expose students to real-world situations, encouraging them to develop effective strategies to deal with emergency events, foster resilience, etc. However, ATOs do have flexibility in terms of the range of exercises as long as they meet the KSA approach. "Tell me, and I will forget. Show me, and I will remember. Involve me, and I will understand forever," – this Chinese philosopher's Confucius's phrase unveils the meaning of KSA. In other words, ATOs will have to adequately prepare students not only for the moment of examination but for the entire pilot career (Quality fly, 2021).

The most commonly used word pictures are based on performance indicators, which explain what the student should demonstrate in order to attain the specific Learning Objectives that are addressed by the assessment exercise (Quality fly, 2021).

A word picture is normally constructed with elements containing (Quality fly, 2021):

- HOW WELL the core competency was demonstrated in the exercise.
- HOW MUCH assistance was required from the trainer or assessor (e.g. tell or show, prompt, hint)
- in the exercise (when the exercise is used for development as well as checking or assessing).
- HOW OFTEN (e.g. rarely, occasionally, normally, always) and HOW MANY of the indicators
- occurred, to enable the OUTCOME (how successfully the exercise was achieved).

5   What's next?

Knowledge and skills are best developed through training activities that incorporate theoretical learning and hands-on application of key concepts and tools. For instance, a person who wants to be a project manager must understand the key concepts of that role, such as scope, work breakdown structure, and critical path, but must also gain experience incorporating elements of those concepts into a real project (The Balance Careers, 2022).

Strengthening natural abilities is primarily a coaching challenge. Observation, feedback, and improvement can be applied to nurture abilities (The Balance Careers, 2022).

Area 100 - Knowledge, Skills and Attitudes (Area 100 - KSA) are new Learning Objectives (LOs) in ATPL/CPL theoretical training. The subject is not a part of the CAA theoretical knowledge exams, but will be assessed at the ATO level. Theoretical knowledge exams can be started before the assessments of the new LOs are completed, but the Area 100 KSA statement is necessary at the first attempt at the last subject that is left to complete the whole set of examination subjects. The

statement shall be issued by the ATO (signed by HT or CTKI). Together with the new LOs of Area 100 KSA comes the new ATP/CPL learning syllabus which is related to the new set of examination questions (i.e. ECQB 2020) (RS Agencija za civilno letalstvo, 2022).

It is therefore about the near future of development and training of employees in the workplace, which directs and encourages development on the main springboard - competencies. Knowledge is important and relevant for entering the work environment. Upgrading it is part of the everyday life of learning organizations. Skills are developed and promoted on a daily basis. The more development there is in the field of employee skills, the better employees face work challenges. Attitudes towards work are the third dimension, which in the triad of success in the development of employees in the aviation industry, actually represents the future development of the individual and aviation organizations.

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