

## **COMPETENCE BASED TRAINING IMPLEMENTATION PRINCIPLES**

**Ján Pitor<sup>1</sup>, Karel Havel<sup>2</sup>**

### **Introduction**

Majority of students around the world attend school every day in order to study various subjects. The courses aimed at teaching these subjects are based on a time schedule, encompassing certain amount of teaching hours during a school year. As these courses are time-based, the teacher has to follow some kind of schedule when he should be in which part of the curriculum or the textbook. However, not every student is capable of following the rate of the teacher. Some students may fall behind and never learn the whole volume of the lesson. On the other hand, there exist students which are faster than the prescribed rate of teaching and get bored or lose time sitting at school for longer than needed. Similar situation exists in case of pilot training. A student learns to fly for a prescribed number of hours. This amount of flight hours is prescribed by the licensing authority. But, does this amount of training guarantee that the student pilot is capable of correctly doing his job and all the related tasks. And on the other hand, if a pilot doesn't have his training completed (all the flight hours flown), does it mean he is not capable of doing the job? The bottom line is, that every student pilot needs various flight time for successful mastery of all the skills and abilities needed for effective conduct of his job, which is safe flight in the real environment. The time-based training system, which is currently in place, doesn't have the ability to provide such possibility.

### **Essence of competence based training**

'Obviously, the time-based educational system used in schools and universities is not appropriate when conducting training. A more appropriate approach is competency-based

---

<sup>1</sup> Ing. Ján Pitor, PhD., Air Transport Department, The Faculty of Operation and Economics of Transport and Communications, University of Žilina, Univerzitná 1, 010 26 Žilina, SR, pitor@fpedas.uniza.sk

<sup>2</sup> Ing. Karel Havel, CSc., Air Transport Department, The Faculty of Operation and Economics of Transport and Communications, University of Žilina, Univerzitná 1, 010 26 Žilina, SR, pitor@fpedas.uniza.sk

training (CBT).’ [1] Competence based training system doesn’t guarantee the flight time, but instead guarantees real mastery of the skills. In this training system, some pilots would fly more hours, some even less hours than the prescribed number. On the other hand, it doesn’t preclude setting a strict minimum of flight hours required, even if the student is learning quicker. The point is, that every student should proceed in training with his own comfortable speed and repeat the lesson as long as he isn’t considered proficient.

### **Competency based training definition**

Competency based training is a structured approach to training. It is directed toward achieving specific outcomes in opposite to achieving specific time or volume targets. It is aimed at teaching an individual to perform a task to a specified standard under specified conditions. In competency based training, the outcomes to be achieved are clearly stated so that learners know exactly what they have to be able to do, trainers know what training or learning is to be provided and organisations know the skill levels required of their people. The emphasis in competency based training is on ‘performing’ rather than just ‘knowing’. [2] In a traditional educational system, the unit of progression is time and it is teacher-centred. In a CBT system, the unit of progression is mastery of specific knowledge and skills and is student- centred. These skills and knowledge are essential to perform the task correctly to the specified standard. Two key terms used in competency-based training are:

Skill - A task or group of tasks performed to a specific level of competency or proficiency which often use motor functions and typically require the manipulation of instruments and equipment.

Competency - A skill performed to a specific standard under specific conditions. [1]

A competency must be defined in terms of:

- what a person is required to do (performance)
- under what conditions it is to be done (conditions)
- how well it is to be done (standards) [3]

A competency not only describes the task to be performed, it also addresses the knowledge, skills, and attitudes needed for a person to perform the task to a required standard.

Competencies can be gained through a multitude of ways like life experience, formal education, on-the-job experience and training programs. All of these together contribute to job competence in an employee.

Formal education in aviation is theoretical knowledge (for example airline transport pilot licence (ATPL) theory credit or academic degree), life experience and on-the-job experience is the experience gained through the pilot's previous flight hours and finally training programs are flight training modular or integrated courses, type rating training, line training or other form of training outside of the actual job environment.

The flight instructor acts as a supervisor, assessing the competence of the trainee. The trainee must know the actual level of competence (outcome of assessment) and appropriate steps to enhance his or her performance in affected areas.

The competencies can be divided into essential and universal competencies. All pilots need some basic flying skills and, speaking in terms of commercial aviation, usually also multi-engine flying skills and instrument flying skills. As these skills are required for performing every pilot job, they can be marked as universal competencies. These competencies can be acquired in airline transport pilot (ATP) integrated course or modular courses up to commercial pilot licence with multi engine and instrument rating (CPL/IR/ME) licence. These universal competencies are also enhanced throughout any other type of training and practical on-the-job experience (flying the line). On the other hand, there are competencies that are very job-specific. An example of this type of competency can be the ability to adhere to SOPs of the particular airline, or the ability to correctly perform multi crew cooperation in an airliner cockpit. Other possibilities are the competencies needed to perform some kind of special aerial works like crop dusting (low level flight and navigation), aerial photogrammetry (flying precisely the assigned track and altitude manually), helicopter rescue missions (ability to hover as steadily as possible in all weather conditions).

As a conclusion, universal competencies are to be taught by the FTO, but should be trained and enhanced throughout entire professional life of a pilot. On the other hand, essential competencies are taught by the type rating training organisation or the company hiring the pilot itself. As with the universal competencies, essential competencies are also enhanced throughout entire professional life of a pilot.

Competency is valid if it:

Correlates with job performance

Can be measured against specific standards

Can be improved, developed, learned, and acquired [4]

The competency in competency based training materials must be defined in a measurable form in order to permit assessment of the trainee's performance against a specific standard. This means that some attributes or variables must be set, which can be measured and which correspond to specific action needed for performing the task. There must be such number of these variables so that every aspect of the task performance can be assessed. The competency must also define the required knowledge, skills and attitudes affecting the job or task performance. The knowledge may be achieved through academic education, theoretical training and examination (ATPL theory credit or other), self studying of the trainee or by instruction from the flight instructor. The most notable is the fact, that it is not important from which source the trainee obtained the required knowledge, as long as he meets the assessment criteria for this knowledge.

In competency based training, competencies to be achieved are carefully identified, verified and made public in advance. [1] This leads us to the transparency of the competencies being trained. Not only the instructor has to have thorough knowledge of the competency based training principles and system, also the student has to know which competencies will be taught. What is more, he has to know how correct performance of the skills should look like and what parameters will be assessed. All these information shall be provided by the instructor and by the competency based training materials.

After completing major parts of training (modules, phases), participants receive a transcript or list of the competencies they have achieved. [1] Even after every flight there should be a record in writing made into student's logbook or any other register of training process history. The instructor should consult the outcome of the flight lesson with the student. He should state which competencies were achieved, which competencies need more work and how to achieve these competencies (what are required correcting actions, which areas need improvement) and possibly which assessment parameters were exceeded.

### **Assessment**

The principle of assessment in competence based training is not based upon passing or failing. Your assessor is not an examiner. Your assessor's role is to work with you to ensure

that sufficient evidence is collected to establish competence, and that that evidence meets the required standard. [3] The student should not only be assessed at the end of the phase or whole training, but also throughout every flight. The instructor should work as assessor here, and provide the student further information about his current level of competency and corrective actions needed to enhance this competency. All this should be also recorded in written form after every flight. Successful mastery of a skill (result of assessment) should be the key for advancing to the next phase of training.

The assessment occurs in several stages. At first it is a formative assessment, which monitors learning process during instruction. The second stage is a diagnostic assessment, which measures the current trainee's skills, such as the formative assessment, but it is used to set the proper strategy to get rid of the student's learning difficulties. At last but not least, there is a summative assessment, which occurs at the end of training and compares the trainee's skills to the set competency standards and determines if the instructional objectives were achieved. The competency based pilot training programme can be completed only when every required skill is assessed as mastered in such way, that it is considered a competency in performing this skill.

A list of competencies, which have to be demonstrated during a skill test, shall be created. Student must demonstrate all of these competencies in compliance with the competency standard in order to pass the skill test. The rules of assessment must also be published. These rules consist for example of criteria, standards and influence of meteorological conditions on the assessment.

Assessment has to always be a collaborative process. Both student and instructor have to have information on assessment criteria and assessed competencies. The trainee gets the information about outcome of the assessment. The instructor than cooperates with the student on any residual deficiencies elimination.

### **Conclusion**

Although there are substantial advantages of competence based training, this approach can also have disadvantages, or else said quirks that must be watched out for. One of these is a tendency to teach as we were taught, thus there has to be a well constructed course for the teachers or instructors themselves in order to eliminate this tendency. It must be provided not only at the beginning, but there should be some kind of mechanism in order to assure the

instructors don't have any difficulties teaching under the new system (supporting materials, inspections, questionnaires or other form of feedback).

A CBT course is only as effective as the process used to identify the competencies. When little or no attention is given to identification of the essential job skills, then the resulting training course is likely to be ineffective.

A course may be classified as competency-based, but unless specific CBT materials and training approaches (e.g., learning guides, checklists and coaching) are designed to be used as part of a CBT approach, it is unlikely that the resulting course will be truly competency-based. [1]

If all the principles mentioned in this paper are closely followed, it is highly probable that the resulting competence based training will be effective and will provide enhanced results in comparison to traditional ways of training.



**Bilateral Cooperation  
with  
Industrialised Countries**

This paper shows outcomes of project Aviation Education Enhancement - AV EDEN, co-funded by the European Union. European Union supports research activities in the Slovak republic.

### **Literatúra:**

- [1.] Sullivan, Rick. The Competency-Based Approach to Training. [Online] JHPIEGO Strategy Paper, September 1995. [Dátum: 06.. 11. 2011.]  
<http://www.reproline.jhu.edu/english/6read/6training/cbt/cbt.htm>.
- [2.] Commonwealth of Australia. NVSC Handbook – A Guide to Writing Competency Based Training Materials. [Online] October 2003. [Dátum: 12.. 11. 2011.]  
<http://www.volunteeringaustralia.org/files/R3Q9Y0OQY0/Revised%20Writers%20Guide%202.pdf>.
- [3.] Professional Performance Australia. Assessment Principles. [Online] [Dátum: 05.. 11. 2011.] [http://www.managementfoundations.net/html/assessment\\_principles.html](http://www.managementfoundations.net/html/assessment_principles.html).
- [4.] Mohd, Mubeena. Competency-based Training and Development. [Online] [Dátum: 12.. 11. 2011.] <http://www.slideshare.net/mubeena/competencybased-training-and-development>.

**Referee:**

prof. Ing. Antonín Kazda, PhD., University of Žilina

**Enter to publishing:** 30<sup>th</sup> October 2012